UNITED STATES DEPARTMENT OF INTERIOR GEOLOGICAL SURVEY

SUDS: Seismic Unified Data System

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1. Note

This open-file report is a collection of documents written about SUDS at many different times. They are collected here as a formality to provide public release of this information.

2. Overview

The Seismic Unified Data System (SUDS) is a system for storing, accessing, and processing all types of seismic data efficiently. The goals of SUDS are:

- 1). To promote widespread exchange of data.
- 2). To promote widespread exchange of programs for analyzing and displaying data.
- 3). To make it easier for most seismologists to get their work done.
- 4). To reduce the effort required to write new programs.
- 5). To provide a transparent way of dealing with the proliferation of computer architectures now often being networked together.

SUDS is a bus. In the figurative sense it provides a vehicle for many people traveling together. Like a computer bus, SUDS provides a standardized way to plug together a wide variety of devices or modules so that they can communicate with each other efficiently. SUDS is also a workshop, a friendly place containing many of the specific tools needed to complete a project quickly and easily. While SUDS is based on standardization, it also provides numerous channels for growth and adaptation to fit the needs of an independent-minded research community. SUDS is developed around seismic data, but its methods and major tools apply equally well to any type of data in any field.

Overcoming the coefficient of static friction to learn about a new concept, language, or piece of hardware or software can appear difficult. It seems easier to stick with the familiar. There are many intricate details to SUDS, but most people will be able to derive the benefits of SUDS without having to learn these details. It is simply necessary to understand the overall concepts and then proceed to use the tools. You can fill in the details later when needed.

The building blocks of SUDS are natural, logical groups of data. These data groups are arranged end to end in a stream of information that can be stored and accessed sequentially, for example in a file or on a tape, and can be loaded sequentially into a database system where they can be accessed more randomly. Streams can be directed between different processes running on the same computer or over networks between processes running on different computers.

3. Introduction

The need for easy exchange of seismic data and data-analysis programs is increasing rapidly as digital recording systems are added to existing seismograph stations and networks and as we plan and build major global, national, topical, and portable networks. The advent of relatively inexpensive but powerful desktop workstations makes it feasible for most seismologists to do sophisticated waveform processing that we barely dreamed of a decade ago. In the last decade, major amounts of resources, especially in terms of trained scientific personnel, have been diverted to computer programming. This trend is likely to increase significantly as the data sources increase by orders of magnitude and our processing goals increase in complexity. In theory it is a relatively trivial programming job to convert from one data format to another and to create analysis programs that input or output (I/O) several optional data formats. In practice, however, input and output becomes onerous, and some popular programs contain little scientific code but major amounts of I/O code. Furthermore many scientists now wish to use

database management systems to provide rapid indexed access to large collections of data. Thus a whole new layer of software is becoming necessary.

A major step forward in seismic data organization was made at Lamont-Doherty Geological Observatory with the creation of the **ah** or **ad hoc** data format. Their approach was to group related information into C language structures and then to group structures into a header that is added to waveform data. This grouping leads to a data and file format that interfaces cleanly with dozens of programs or filters that they have developed.

The purpose of this document is to suggest an extension to Lamont's approach that is applicable to a wide variety of seismic data and seismic data processing. The primary concern is to define a common but succinct set of data that would typically be archived for seismic stations and networks and to group these data in a manner that will be efficient in terms of storage space, processing time, and programming time. The secondary concern is to make sure that this core format is readily extensible to meet the developing needs of research pursued by independent thinkers spread around the globe. If a common ground can be defined, we will all be able to exchange easily data and, even more important, data analysis programs. Such exchange would provide the most rapid route to accomplishing our individual and collective scientific goals.

4. Scope

My interest in a data system relates primarily to local seismograph networks and the flavor of this document reflects this interest. Most other users of earthquake related seismic data have similar needs, however. We all use waveforms, descriptors of waveforms, features picked from waveforms, and events calculated from these features. There are many areas where these interests overlap with people doing seismic refraction and reflection processing, strong ground motion analysis, etc. Thus I wish to encourage readers who have quite different interests not to be put off by the emphasis on local earthquakes and to provide advice on how their interests can be represented.

I have tried to take into account other major interests such as the database designed for the Center for Seismic Studies (Berger, J., North, R.G., Goff, R.C., and Tiberio, M.A., 1984, A seismological data base management system: Bull. Seism. Soc., v. 74, no. 5, p. 1849-1862)and the Proposed Seismic Data Distribution and Interchange Format developed at Albuquerque for world-wide data. I have also reviewed the typical PDE tape formats, ISC formats, and formats being used or developed for CALNET, the Southern Alaska Net, and SAC (Seismic Analysis Code). Some details from these representations will need to be added later to the structures discussed here.

The goal of this document is not to present THE ultimate data organization for seismology but to suggest and illustrate an approach to see if others would think it valuable to march to the same drummer. We could then work together to develop Version 1.

5. Levels of Agreement

There are four primary levels for agreement:

- 1.) Agree that a common, widely used, and extensible data format is desirable.
- 2.) Agree on the groups of data that are most important.
- 3.) Agree on the specific variables that most people need for present or anticipated routine and research processing.
- 4.) Agree on the actual bit representation of each variable, the manner in which variables will be grouped, and the manner in which groups will be combined to form files, archive tapes or disks, and databases.

In this document these levels are intermixed in order to organize the topics logically. Readers may wish to focus their attention at specific levels depending on their degree of interest.

6. Groupings of Seismic Data

Computing typically consists of grabbing groups of data, processing these data, and creating new groups of data or images of data. Thinking involves much the same process. Just as our thinking is typically clearer when we can quickly and easily grab a small group of coherent ideas often represented by a precise scientific term, computer programs tend to be more efficient and shorter when we can easily grab related pieces of data.

Seismic data have certain natural groupings. For example:

- 1). Information about the station and component on which data was collected: Name, location, gain settings, component orientation, instrument type, etc.
- 2). Information about a station component, such as calibration information, that typically involves interpretation and calculation and may not be available at the time a waveform is recorded.
- 3). The digital waveform data for an event often expressed in digital samples or volts.
- 4). Descriptive information about a waveform such as maximum and minimum amplitude, average noise, signal to noise ratio, number of clipped samples, etc. Such information is not only useful for scaling and plotting waveforms but also for searching for waveforms with certain characteristics.
- 5). Information derived from a waveform such as phase arrival time, phase first motion, phase period, amplitude, coda length, etc.
- 6). Event information resulting from analysis of a group of phases, etc.

As research processing continues more derivative forms of data arise:

- 7). The waveform data expressed as ground velocity or displacement or as spectra or in other numerically filtered forms such as rotated or summed components.
- 8). "Phase" type data derived by advanced processing techniques.

These groups of data are created at different times. Thus before an event is detected by an online computer, only group 1 exists. After the event is detected groups 1 and 3 exist. After a small amount of automatic processing groups 1, 3, and 4 exist. The other groups might be generated automatically but generally will only be believed after human interaction.

A general data format should recognize these natural groupings and should allow for the fact that not all groups exist or are utilized at the same time.

7. Overview

A suggested data model is summarized in Figure 1 that reflects the general flow of research which typically involves installation of instruments at many stations, observation of waveforms, interpretation of many features from each waveform, and processing these features to derive results. The topics in this figure are organized from those we create and thus know well at the top to those that involve the most interpretation and calculation at the bottom. Each box represents a topic or subject that has numerous attributes and each box will ultimately be represented by a data structure. The arrows with double stems designate the one-to-many relationships that are typical in these data. For one earthquake there may be many calculated origins. For one origin there are many arrival times. For one station there are many waveforms. For one waveform there may be many phase arrivals. Most database systems are built around these one-to-many relationships. A simple example is a table that presents data on a given topic or subject. The columns represent features of the subject and the rows represent instances of these features. In relational database terminology, the table is a relation, the columns are attributes, and the rows are tuples. The fundamental reason for establishing a new topic is to be able to represent succinctly these one-to-many relationships. The selection of topics is relatively straight-forward at the top and bottom of Figure 1 but becomes less clear in the middle. For example, most researchers group information on stations and events in different tables or files. On the other hand should information on moment be grouped with magnitude or even contained within the origin? Several principles appear to apply:

Logic: In many cases the data fall into natural groupings as discussed above.

History: Some features do not exist for much of the available data perhaps due to tradition or the development of new features such as moment. Thus while logically moment might be grouped with magnitude, it is typically not available for small earthquakes nor for most older earthquakes.

Extensibility: Uncertainties for earthquake locations logically should be included with the origin information, but there are a variety of ways to calculate and represent the precision. Thus it seems reasonable to include a simple measure of precision with the origin especially for uniform searching of the data but to assume that different researchers may need different ways to represent the precise errors such as by ellipsoids, by the covariance matrix, etc. Similarly there are many ways to represent the calibration of an instrument. While such extensibility will be needed to travel into the future, we should still strive where possible to find single, compact representations for common parameters from which a variety of traditional representations can be readily derived.

Storage Efficiency: Most computer efficient database and file formats involve allocation of a fixed record size for each instance. Inclusion of many attributes that exist rarely will typically waste significant storage space. If these same attributes are relegated to a new topic, then they need only be stored when they exist.

Half of the topics in Figure 1 can be readily defined to meet common needs either because the nature of these topics is closely related to experimental design or, as in the case of events, these topics have been traditionally tabulated for example by the ISC or NEIS. These topics represent the vast majority of the data and these are the topics that are most typically searched. Thus development of a unified data system for most of the data is not particularly difficult. Probably the greatest difficulty and disagreement regarding common formats will center on the rows marked Interpretation and Calculation. This is the area where there is the greatest diversity and where there will be the greatest need for expandability in the future. My approach here is to define groups commonly used making sure these groups can be indexed from the one side of the one-to-many relationships. New groups can then be defined as needed.

The box marked Association in Figure 1 represents the many ways we may chose to relate observations to calculations. Association is implementation dependent. In a database there might be a separate topic or relation that does this association. In the file system or on tape, this association is normally done by grouping the information in contiguous logical areas. Thus a disk or tape file might contain all data applicable to a single event.

8. Data Representation

The groups of data will exist in different forms with different goals:

- A). Off-line archival storage that ideally should include all relevant information about a given event and its data in contiguous storage space.
- B). On-line storage in a format that is indexed for rapid retrieval probably contained within a database management system. Typically for lack of sufficient storage devices, only waveforms of events being analyzed would be stored on line, but descriptive information of all events should be available.
- C). On-line storage in files using the file system to specify groupings.
- D). In-core storage as represented in analysis programs.
- E). In some cases the original events as output by the online detector might be archived.

Choice of data storage format involves tradeoffs. Using ascii files for storage enhances readability, allows use of existing editors and filters, and makes portability among machines easy, but reduces efficiency in reading, writing, storing and retrieving data. Efficiency has become an issue on the larger networks and will be an increasing problem as we expect to collect increasing amounts of data and to process these data with increasingly sophisticated tools. Since waveform data are most naturally and normally stored in binary format, I believe it is not much more of a problem if all the data are stored in binary format. I like Lamont's approach to using a group of data structures, each of which groups related data. Furthermore the database that we are presently evaluating as most promising for seismic



purposes, db_vista, uses data structures as the primary mode of data storage and retrieval. One of db_vista's major attributes, is speed. We can assure maximum machine efficiency with data structures. These structures also provide for excellent programming efficiency in C, Pascal, Modula2, PL/1 and VMS Fortran. It is rumored that the new Fortran standard expected this year will include structures.

Thus from my point of view, chosing data formats means first agreeing on what data needs to be stored and then designing a set of data structures that can be used as modules in storage, retrieval, and processing of seismic data. The rest of this document concerns my suggestions for these structures. It is assumed that while these structures are being adopted, utilities will be written to readily convert these structures into and out of ascii format. A good example of such a filter is the Lamont command ah2asc. Similarly it is anticipated that a common library of low-level routines will be made available for identifying and utilizing these structures. The structures are listed with a description of the data to be stored in the comment field on the right side of the page and the actual allocation of memory space on the left side of the page. Many readers may wish to focus only on the right side of the pages to be sure the appropriate information is stored.

9. Some principles:

- a). The structures should be self identifying so that in a general case such as a tape archive, the reading program could determine what structures exist, in which order they exist, and whether the program knows how to deal with them.
- b). The structures should define common groupings of interest, but new structures should be definable in the future. The structures discussed below might form a core set that is very extensible. The programs using these structures must be able to identify each structure and to decide whether or not they can be interpreted by that particular program.
- c). There is typically a conflict between storage efficiency and generality. These structures are an attempt to ride the middle ground. I encourage you to consider other variables that should be added but to temper your first urge with realism.
- d). To enhance portability among machines, some effort should be made to align appropriate byte boundaries.

10. A Short Primer on C Structures

The appendix is written in C syntax although the ideas presented here do not depend on adoption of C. A C structure is a grouping of variables of mixed types in a contiguous section of memory so that the whole structure can be passed between subroutines as a unit or by a pointer. In its simplest form a C structure is similar to a Fortran common block. In fact on many compilers Fortran common blocks are referenced in C as structures and C structures can be made available to Fortran programmers either as common blocks or, when more complex, as a small library of subroutines. Passing structures between routines and on and off of disk or tape is highly efficient.

In C new variable types can be defined using typedef. typedef x y means henceforth define all variables of type y to be type x. Thus typedef int phase; phase x; means x is of type phase which is of type int. Typedefs are used to make the code more modular, readable, and portable and to isolate custom definitions. Use of typedefs will allow us in the future to take advantage of new languages such as C++ that allow complete specification of new variable types so that the compiler can check for improper usage. The following basic typedefs are used throughout this document:

typedef char CHAR A single ascii character typedef char STRING A character string, null byte terminated

STRING c[10] means a character string with a maximum length of 10. The active length may to 0 to 9 characters terminated by a null byte. Thus note that if a station name is, for example, defined as STRING name[6], it can contain only 5 characters.

typedef char typedef short typedef long typedef float FLOAT A 32 bit fleld, used for on-off flags to the signed integer typedef float FLOAT A 32 bit floating point number, IEEE

6

typedef double DOUBLE A 64 bit double precision number, IEEE

11. Special Types of Variables

TIME: A single number representation of time provides the most efficient form for storage, search, and computation. Such a number is typically defined in terms of seconds from some standard time. One possible standard is that used by the UNIX operating system, which is now widely used in seismology. In UNIX time is kept in terms of the number of seconds since 00:00 GMT on January 1, 1970. The newest releases of UNIX also provide for a structure with two long integers, the number of seconds and the number of milliseconds. A double precision number takes the same storage as 2 longs and can provide time resolution finer than microseconds from the birth of Christ to a long time in the future. This precision is more accurate than needed in seismology. Thus I adopt the standard:

typedef DOUBLE ms_time;

The value of ms_time variables can then be easily defined from the system clock and ms_time variables can be easily converted to ascii strings and other representations using UNIX utility subroutines.

A common use of time is to identify when an instrument was changed or calibrated, when a location was calculated, etc. In this case accuracy to 1 second is more than adequate. Given the number of cases where such a timestamp is desirable, the use of only 4 bytes of storage becomes valuable. Thus I adopt a second type of time:

typedef LG_INT st_time

LONGITUDE-LATITUDE: A single number representation for degrees is also desirable for storage, searching, and computation. By defining

typedef LG_INT lonlat;

and counting in units of millionths of degrees, we obtain a variable that uses only 4 bytes, is easily derived from true degrees, and is accurate to about 0.1 meters. This same type could be used for all angles, but in most cases a FLOAT seems adequate.

IDENTIFIER: Each phase, waveform pick, etc. needs to be associated with a given station, instrument type, and component. It is useful to adopt a structure of this information:

```
typedef struct {
    STRING network[4];
    STRING name[5];
    CHAR component;
    CHAR type;
    CHAR recorder;
} ident;
```

Component would typically be v, n, e, r, t but could be any other character. A list of common types of components and instruments would need to be developed and a subroutine written that returns a character string describing each code represented by a character or short integer.

12. Structures and Their Use

The structures are listed in the Appendix in a manner that is compilable. Before getting lost in the details of each structure, it is important to understand how these structures might be used. The reason for defining structures is to group related variables in a manner that they can be readily accessed as a unit. The bit representation of this unit would be identical whether the unit exists on disk or in memory, it should be identical on magnetic tape for the most commonly used computers, and probably would be identical when the unit exists in a database depending on the database design. User programs would read or write these units and would access individual variables by addressing them as components of these units. In Fortran a subroutine would be called to read the next unit, load the values into a common block, and return the number of the common block loaded. Of course the values could also be passed as subroutine arguments when desired. A fundamental feature of this design is that structures are identifiable, so that they can be combined in any order deemed appropriate and any subset of structure types could be used. Let's look at specific examples.

In some seismic networks the data are collected on a computer with a detector algorithm and written to tape for transport to another computer for processing. Each file on this tape might be

formated as follows:

For each station in order data are multiplexed: structtag; stationtrace; structtag; muxdata; structtag; data;

In a different application the multiplexed data might be transmitted to a central recording center via satellite. Since the station information is known to the receive site, the data format might simply be:

structtag; muxdata; structtag; data;

Many seismic networks do automatic processing online. The data would be demultiplexed and might be stored in a disk or tape file as:

For each station:

structtag; trace; structtag; data;

We might wish to integrate the same data into a database. In this case the trace and and loctrace structures would be loaded into the database and the preceding file either kept as is or the trace structures could be removed.

A useful format for processing might be labeled by origin and contain:

structtag; event; structtag origin;
For each station:
 structtag; trace; structag; data;
 For each marker:
 structtag; marker;

An archive tape on the other hand might contain most of the structures as follows:

structag model;
For each layer:
 structtag; layers;
For each event:
 structtag; event;
 For each station:
 structtag; trace; structag; data;
For each origin:
 structtag; origin; structtag; error;
 For each station marker:
 structtag; marker; structtag eventread;

The point is that the groupings can be set to meet local needs and to reflect the order and degree of processing. Programs would typically ask for the next structure and proceed according to what that structure is. A program could skip unknown structures or complain about them as desired.

The simplest way to link relevant structures is to group them together within a file. Another way is to include header information for example about each event within each marker. This is essentially how a relational database is usually set up. A network database, on the other hand, stores these links invisibly for the user. Putting the links within the structures creates less ambiguity but increase the complexity of implementation details and the storage space required. I have designed these structures to minimize redundancy and to use physical grouping in files to define logical grouping. Thus all arrivals pertain to the previous mentioned solution. All features refer to the previously described waveform, and so forth.

13. Physical Tape Format

The unified data system does not require any particular physical tape format. The data are treated as a stream of information and can be blocked onto tape in any number of ways. I think the easiest is to use physical block sizes of 20 times 512 or 10,240 bytes or less and to truncate the last block in a record. This upper limit is the largest block some systems will read. Unix tar tapes provide a nice way to label and manage multiple files but other standards such as an ANSI Labeled tape format might work. A standard byte order will need to be adopted and filters provided to swab bytes and change

data types as necessary. It would be most efficient to adopt the bit formats of the most heavily used computers in Seismology. Another more general approach would be to use the eXternal Data Representation language developed for networking.

14. Examples

An example of a structure viewed using st2asc follows:

```
% ls -l st.sample
-rw-r--r-- 1 ward
                        76 May 20 13:41 st.sample
% st2asc st.sample
5 64 0 "kat" "ksv" 'v' 1 0 0 60.130000 -154.230000 675.000000 'b' 0 't'
   'u' 115 'g' 'v' 's' 'd' 'n' 4 1000000.000000 1024.000000 55.669998 581100999
% st2asc -v st.sample
     STRUCTURE: stationcomp (length=64+0=64 bytes)
     station/component
           STRUCTURE: station ident
           network
                                             "kat"
           station name
                                             "ksv"
           component
                                             'v'
    | component | instrument type | : 1 | {sp | component azimuth | : 0 | component incidence | : 0 | latitude | : 60.130000 | longitude | : -154.230000 | elevation, meters | : 675.000000 | 'b'
                                                        {sp usgs}
                                            'n,
     enclosure
     annotated comment:
                                            0
                                                        {no comment}
     recorder type :
                                            't'
     rock class
rock type
                                            'u'
                                            115
                                                        {this code undefined}
     site condition : sensor type :
                                            'g'
                                             'n,
                                            's'
     data type
     data units
                                            'd'
                                            'n
    polarity
                                      4 {nitc.
1000000.000000
1024.000000
55.669998
May 31, 1988 1
     status
                                                        {filtered}
    maximum gain : clipping value :
     convert factor
     effective date
                                           May 31, 1988 16:56 39 GMT
```

An example of a data file viewed with stdescribe follows:

% stdescribe st.871005040607

File st.871005040607:

```
0 5 stationcomp length 64 + 0 bytes kat.ksv.v.1
1 7 descriptrace length 52 + 4312 bytes kat.ksv.v.1
2 5 stationcomp length 64 + 0 bytes kat.kbte.e.1
```

```
3
    7 descriptrace
                    length 52 + 4312 bytes kat.kbte.e.1
 4
    5 stationcomp
                    length 64 +
                                     0 bytes kat.kbtn.n.1
 5
    7 descriptrace
                    length 52 + 4312 bytes kat.kbtn.n.1
6
    5 stationcomp
                     length 64 +
                                     0 bytes kat.kbtv.v.1
7
    7 descriptrace length 52 + 4312 bytes kat.kbtv.v.1
8
                                     0 bytes kat.krbe.e.1
    5 stationcomp
                    length 64 +
9
    7 descriptrace length 52 + 4312 bytes kat.krbe.e.1
10
    5 stationcomp
                     length 64 +
                                     0 bytes kat.krbn.n.1
                    length 52 + 4312 bytes kat.krbn.n.1
11
     7 descriptrace
12
     5 stationcomp
                     length 64 +
                                     0 bytes kat.krbv.v.1
13
                    length 52 + 4312 bytes kat.krbv.v.1
     7 descriptrace
14
     5 stationcomp
                     length 64 +
                                     0 bytes kat.ksm.v.14
15
    7 descriptrace
                    length 52 + 4312 bytes kat.ksm.v.14
16
    5 stationcomp
                     length 64 +
                                     0 bytes kat.ktp.v.1
17
    7 descriptrace
                    length 52 + 4312 bytes kat.ktp.v.1
18
     5 stationcomp
                     length 64 +
                                     0 bytes kat.kkcn.n.1
19
    7 descriptrace
                    length 52 + 4312 bytes kat,kkcn.n.1
20
    5 stationcomp
                     length 64 +
                                     0 bytes kat.pub.v.14
21
                    length 52 + 4312 bytes kat, pub.v.14
    7 descriptrace
22
    5 stationcomp
                     length 64 +
                                     0 bytes kat.blm.v.14
23
                    length 52 + 4312 bytes kat.blm.v.14
    7 descriptrace
24
    5 stationcomp
                     length 64 +
                                     0 bytes kat.kkce.e.1
25
    7 descriptrace
                    length 52 + 4312 bytes kat,kkce.e.1
26
    5 stationcomp
                     length 64 +
                                     0 bytes kat.kkcv.v.1
27
                    length 52 + 4312 bytes kat,kkcv.v.1
    7 descriptrace
28
    5 stationcomp
                     length 64 +
                                     0 bytes kat.www.v.14
29
                    length 52 + 4312 bytes kat.www.v.14
    7 descriptrace
                     length 64 +
30
    5 stationcomp
                                     0 bytes kat.kkr.v.1
31
    7 descriptrace length 52 + 4312 bytes kat.kkr.v.1
```

An example of a data files viewed with st2asc follows:

% st2asc -v st.871005040607

```
STRUCTURE: stationcomp (length=64+0=64 bytes)
station/component
    STRUCTURE: station ident
    network
                             "kat"
    station name
                             "ksv"
                         :
                             'v'
    component
    instrument type
                             1
                                     {sp usgs}
component azimuth
                             0
component incidence:
                             0
                             58.591702
latitude
                             -155.320007
longitude
elevation, meters
                    :
                             488.000000
enclosure
                             0
annotated comment
                                     {no comment}
recorder type
rock class
                                     {none given}
rock type
site condition
sensor type
```

```
's'
     data type
                             :
     data units
     polarity
                                      0
     status
                                               {none}
     maximum gain
                                      NODATA
                                      0.000000
     clipping value
     convert factor
                                      NODATA
     channel
                                      -32768
                                      11648
     spare
     STRUCTURE: descriptrace (length=52+4312=4364 bytes)
     station/component
          STRUCTURE: station ident
                                      "kat"
         network
                                      "ksv"
          station name
                                      ' v '
          component
          instrument type
                                               {sp usgs}
                                      1
                                     Oct 5, 1987 04:06 07.077 GMT
     beginning time
     local time diff
                                    NODATA
     data type
                                      's'
     data descriptor
                                     0
     digitized by
                                               {not given}
     processed by
                                      0
                                               {not given}
     number of samples
                                      2156
                                      100.000000
     samples per second
     minimum data value
                                      -14.000000
                                     73.000000
    maximum data value
                                     212.949997
     average noise
     num clipped samples:
                                     0
    Waveform Data:
                                                                          205
                                                                                  234
        263
                131
                        - 14
                                 146
                                         175
                                                 219
                                                         175
                                                                   14
        234
                175
                        146
                                 161
                                         234
                                                 234
                                                         175
                                                                   29
                                                                          219
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        190
                161
                        190
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                 73
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                          29
        161
                102
                                 146
                                          73
                                                 263
                                                         131
                                                                 102
                                                                           43
                                                                                  117
        190
                263
                        161
                                 131
                                         205
                                                 307
                                                         307
                                                                 190
                                                                                  190
                                                                          117
        234
                234
                        190
                                 146
                                         234
                                                 336
                                                         263
                                                                 117
                                                                          234
                                                                                  380
        351
                175
                        161
                                 322
                                         307
                                                         234
                                                                          380
                                                                                  424
                                                 366
                                                                 205
        263
                249
                        175
                                 263
                                         351
                                                 234
                                                         263
                                                                 263
                                                                          307
                                                                                  351
etc.....
    An example of reading structure in a C program:
  stream = st_open(input_file, "r");
  while (st_get (&st_ptr, &st_type, &st_len, stream)!=EOF) {
   switch (st_type) {
     case STATIONCOMP:
          load station list;
          break:
     case FEATURE:
          load feature list;
```

1)

```
break;
case DESCRIPTRACE:
plot trace;
break;
default: st_free ( st_ptr );
}
st_close(stream);
```

12

/usr/suds			33-A3-	1 ward		10:54 stdescribe.1
				1 ward	2403 Nov 1 10:54	4 stedit.1
COLET IO			./man/man3			
- I - I - A I	DIEM	Mar 29 10:25			•	
T-38-3XAJC		g :	•	l ward	T AOM	
7-18-778.7	DJEM 7	Mar 23 11:23		I Ward		
Z-ZE-ZXAJO		1		1 ward	T AOM	4 descr trace.3
		Mar 29 11:28		1 ward	HOA	
T-18-1EAT	Z Ward	Jan 26 16:01		1 ward	Mov 1 10:	4 st_close.3
T-18-ITAL		Mar 23 11:40	JJ-AJ-	1 ward	Nov 1	54 st_error.3
T-18-JIM		Mov 1 10:54	JJ-AJ-	1 ward	Mov 1 10:	4 st_get.3
T-18-JEAN	4 ward	Dec 28 11:46	33-A3-	1 ward	ដូ	
drwzr-sr-z	4 ward	Nov 1 10:54	JJ-AJ-	1 ward	7940 Nov 1 10:5	54 st intro.3
./bin			33-A3-	1 ward	1 10:	54 st_open.3
total 888				1 ward	Nov 1	
-INXE-XE-X	1 ward	08:35		1 ward	Now 1	
-INXE-XE-X	1 ward	4688 Nov 18 08:36		1 ward	4	
T-IX-IXMI-	1 ward	Nov 14 09:41		1 ward	896 Nov 1 10:54	4 st_undet.3
T-IX-IZAI-		Mar 23 11:23	./arc			
-INXI-XI-X	1 ward	Nov 18 08:36	total 2			
-INXI-XI-X		Nov 18 08:36		6 ward	1024 Mar 29 10:3	10 cmd/
-INZE-XE-X	1 ward	172032 Nov 18 08:36 stadit*	drwxr-gr-x		512 Nov 1 10:54	4 11b/
/doc			pany out			
total 72			total 1000			
II-MI-	1 ward	6158 Mar 29		1 ward	815 Nov 18 08:26	6 .Makefile
	1 ward	Mar 29 10:22		1 ward	Mar 22	_
./include			drawn-ser-s	2 ward	Mar 22	
total 78			N-LANGE	1 ward	Mov 18	
	1 ward	Most 17		1 1	More 17	
		Mor 17 16:17 Water		7	MON 18	
drager-an-r		77.97 /7			MON 12	
		77 77	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	D WELG	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
7 4 4	7 1 1	TC: CT 77 JEW	drwxr-8r-x		Mar 17	
- I - I - I		Mar 22 15:51	drwxr-sr-x		Mar 29	
			drwxr-sr-x	3 ward	Mar 23	
- I.AIA.I.		Mar 22 15:55		l ward	Mar 23	-
- IA-II-A		Mar 22 15:55 suds	-INTE-IL-I	l ward	23	
	1 ward	16:16 suds		1 ward	Mar 23	
	1 ward	Nov 17 16:16 suds		1 ward	Mar 23	_
./include/sccs	SCS		-TAXE-XXI-	1 ward	114688 Nov 18 08:27	_
total 56				1 ward	Mov 17	_
	1 ward	Nov 17 15:59	-TAXE-XX-	1 ward	Nov 18	27 stdescribe*
	1 ward	15:50 p.ahh		1 ward	1704 Nov 17 16:18	18 stdescribe.c
JJ-AJ-	1 ward	Mar 22 15:54	-INXE-XE-X	1 ward	Nov 18	
III-	1 ward	Nov 17 16:10		1 ward	19324 Nov 17 16:19	19 stedit.c
	1 ward	Nov 17 16:10	./src/cmd/atod	rod.		
	1 ward	Now 17 16:11	total 765			
	1 ward	Nov 17 16:11	33-A3-	1 ward	3154 Nov 1 10:55	55 CDDatod.c
		Nov 17 16:11		1 ward	-1	10:55 Makefile
./1tb		ı	33-A3-	1 ward	6756 Nov 1 10:56	56 atod.installation
total 0			X-3X-3X0-	1 ward	Nov 1	56 cdd*
./man				1 ward	MON	56 cdd. c
total 3				1 ward	Nov 1	56 parkfield.stats
-EWKEWKE-E	1 ward	539 Nov 17 11-19 MARKELTHESA	X-13-14-4-	1 ward	Now 1	56 plotatod*
drwxr-sr-x		Mar 20		Tan L	Mov 1	56 plotated c
drage-ar-a	2 ward	510 Mgs 17 11:14 mass/	A - 7 - 8 7 -	7	1 6	As about odt
/men/men/			-	Pare .		SK of an northfield
total 31			120 1 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1		2	Dipireradina na na
33-A3-	1 ward	1213 Mow 1 10.54 about 1	+otal 788			
	1 ward	Mov 1 10-54		1 ward	895 Dec 28 12:	28 12:18 Makefile
-IN-EE	1 ward	M O			S d	51 READING
	1 ward	1 10:54		1 ward	P OF	56 Testnet.
33-MI-	1 ward	Mow 1 10:54	X-1X-1XA1-	1 ward	Mov 1	10:56 a.out*
-IA-EE	1 ward	2845 MOV		1 ward	MOV	56 args.c
II-AI-	1 ward	Mar 23 12:29		1 ward		56 cache.c
	1 ward	Mov 1 10.54	7 7 87	, man	Mow	56 diag.c
1		-	4	; ! !	•	

_	II-AI-	II-AI-	- I.A. I.A.I.	-/arc/115/5		./£iles	total 231	II-AI-		II-AI-	+otal 10	drygrygrig		-IM-EE	JJ-MJ-		total 3	ZALEALEXAD	./SYS/Templ	total 0																																	- 			
			•	1	# C	4.7	r.options	U			hnete				g	n.vpi	, i		i, subnets			256122	9				,	ų į													•	rı	Ų	v :	n be. a	ย							5. E	0.0		v.
				equerector.	equerector. 18				gettim_c	Desder. h	inspect" Fatmai subnet	10:56 kev.h	lps.h	lpaopen. c			online.sts	outing.ses.com				ST.880805221942						equaemon.c						touch. c		08:08 Makefile			Clemnik. o		s.Makefile			•		s.stedit.c		/spns				sccs/	descr tra	find code.c	libsuds.	st_error.c
	10:56			10.16	10:56						90:07 7		10:56	10:56			1 10:56					10:06				1 10:56	15:59	10:36	10:56	10:56	10:56	10:56	2	1 10:56				3 11:35	200		2 09:44			7 15:54	10:04	tc:ct /		8 08:24			B 08:24					7 12:30
	Nov 1		Dec 28	MON	No a		4		7		MON				Nov 1	N	MOW			7						•		N See	MOM	MOW	MOM	MOW		MOM		Mar 2		Mar 23	Mar 4		Mar 22			MOV 17		AOM T.		Now 18				MON 10				Now 17
			50 (8217	1738				32/25	284	2127	1924	74		7/T		103	512		970757					2716	1713	1872	3941	13112	32768	631	861		233		6083	1 0880		1096	8878	5948	10624	1949	7/067		1024		900	820	3225	2180	867	121700	1835
	ward	Ward	Ward	par and	ward	ward	ward	Ward	Ward	METO	ward	Ward	ward	ward	ward	Ward	Ward	Vard	ward	ward	Ward	Marc	Ward	eqdetect/rtp		Ward	Ward	Ward	ward	ward	Ward	ward	ward	Ward		ward	ward	Ward			Ward	Ward	Ward	Ward	DIRA	Mara		Ward		7	Ward	pres	Ward	Ward	ward	ward
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						II-MI-						33-M3.	Z Z AZ-	II-MI-	II-MI-			-14-1-41-	II-MI-	drwzr-sr-z				\geq	total 61				-IA-EE	-EW-EE	II-MI-	-IMEL-IL-	JJ-MJ-	-EW-FW-F	total 144		-INKE-KE-K		/erc/cmd/8008	total 50						./erc/11b	total 1	drvzrvsrvz	./src/lib/suds		* - 1 = - 1		XX-AX-		II-AI-	II-AI
2008	•	1	. 1		F	1	,	•	; 1		1	'	,	'	•	'		1	1	7	•		'	•	4	1	V	<i>'</i>	,	,	1	1	1	•	٠ 4	'	•	, 1	'	υ,	'	1	ľ	, 1		•	. μ	70	• 4	. I		, 1	'	'	'	1

ah2st - convert an ah stream into a suds stream

SYNOPSIS

ah2st [-c clipvalue] [-n netname] [-o file] [-s factor] [files]

DESCRIPTION

ah2st converts a stream of ah or ad hoc structures in the Lamont-Doherty format into suds structures. For each waveform the suds structures stationcomp, origin, and descripttrace followed by the waveform are created. If calibration information is included in the ah structure, a suds structure calibration is created. If the ah fields ecomment and recomment include information, suds comment structures are also created.

OPTIONS

- -c Make the next argument the plus and minus value where clipping of the waveform begins.
- -n Make the next argument the network name.
- -o Put the output in the following file instead of stdout.
- -s Convert the waveform to short integers multiplying each point by factor.

SEE ALSO

st_intro(3s), asc2st(1s)

BUGS

The ah variable rmin is not translated into the suds structures.

AUTHOR

asc2st - convert an ascii stream to a stream of suds structures

SYNOPSIS

asc2st [-o file] [file...]

DESCRIPTION

asc2st converts a stream of ascii data into suds structures. Each input line is assumed to begin with the integer number of the structure type and to contain one data field for each variable within the structure in order. The data fields may be separated by blank spaces, tab characters, or commas. Presently this routine simply reads the non-verbose output of st2asc.

OPTIONS

- -c The following file contains a control file similar to /usr/include/suds/suds_descr.h. The input format and order can be changed from this control file. NOT IMPLEMENTED YET.
- -o Put the output in the following file instead of stdout.
- Field separators may only be one of the characters in the following string. NOT IMPLE-MENTED YET.
- -v Ascii data are in verbose format output by st2asc. The input routines will assume any characters on a line before an unquoted colon are part of the field label. The label is matched to the standard list to determine which field follows. Thus lines for fields may be in any order within a structure and may be left out. NOT IMPLEMENTED YET.
- -V List input as read. If asc2st fails, this option can show on what field it fails.

SEE ALSO

st_intro(3s), st2asc(1s)

DIAGNOSTICS

BUGS

This routine is presently bare bones and should be expanded to cover a variety of input styles.

EXAMPLES

AUTHOR

SEE ALSO

AUTHOR

plotatod(1s), atod(3s)

```
NAME
        cdd - contol CDD analog-to-digital converter
SYNOPSIS
        cdd
DESCRIPTION
        cdd is an interactive program for controlling the Cutler Digital Design analog-to-digital converter. It
        provides a menu:
                o open(type msec/sample and number of channels)
                r rezero atod
                g get data
                h get headers
                s send control information to atod
                t set time (Type day hour min sec)
                T set time to computer's clock(GMT)
                c change time(type milliseconds)
                q quit
       A typical sequence of commands to run the atod at 100 samples per second for 16 channels might be:
                o 10 16
                t 145 22 12 0
                r
                h
                g
```

plotatod - plot output of analog-to-digital converter in a window

SYNOPSIS

plotatod options stations device

DESCRIPTION

plotatod collects data from the analog-to-digital converter and plots it in a window on the SUN workstation. The program reads 1000 samples of data and calculates the average noise and DC voltage offset for each channel and scales the plot automatically so that the average noise fits within the part of the window in the vertical direction assigned to the station. The channel number and station name are plotted at the left together with the scale factor over the millivolts of DC offset. The scale factor is the number of millivolts from the bar above the name to the bar below the name.

stations is the name of a file containing STATIONCOMP structures (See st_intro.3s). The fields used that must be set are sc_name.st_name, con_mvolts, and channel.

device is the pathname of the atod, normally /dev/rst1

By pushing the right mouse button a menu is displayed to allow changing the vertical and horizontal scales by factors of 2, to begin autoscaling again, and to exit.

OPTIONS

- -d n plot every nth point. Default is 2.
- -f number of first station to be plotted counting from one.
- -g value Fix scale factor (gain) for all stations at this value in millivolts.
- -l number of last station to be plotted counting from one.
- -m value of milliseconds per sample atod is to be set for.
- -n number of stations atod is to be set for.
- -p print average noise and DC offset of the stations.

SEE ALSO

cdd(1s), atod(3s)

BUGS

AUTHOR

scanseis - scan digital seismic waveform files on a SUN3 workstation

SYNOPSIS

scanseis [-t tapename] [filenames]

DESCRIPTION

scanseis looks in the current directory, or on a tar(1) tape mounted on /dev/rst0 if the -t option is specified, for files beginning with eq. or ah. or ending with D that are assumed to contain seismic waveform data in the USGS online format, Lamont adhoc format, or University of Washington format respectively. The seismic data in each file are displayed and the user may choose descriptors for the file using the right mouse button and may then decide to save, delete, or compact the file. If compaction is chosen, the user may specify the beginning and end of the record to be saved and which stations are to be deleted. compactseis is then executed in a spawned, asynchronous process. A log of all transactions is appended to the file scanseis.log in the current directory.

Many aspects of the plotting and the contents of the descriptive menu can be specified in a file .scanseis in the current directory or if not there then in the user's home directory. The default for each item is used unless a different value is specified in a .scanseis file. The format for each line of .scanseis is label, number, and comment if desired. A label menu may be followed by a list of up to 50 menu items separated by commas. These may be clustered into as many as 5 groups separated by a slash character, /. Multiple lines may be used separated by . Only one item in each group may be selected from the menu by the user. This item is displayed in a different manner in the menu when selected. All selected items are appended to the line in scanseis.log describing the processing of the event. A complete sample of .scanseis including all default options is given below.

```
maxfiles
                        /* Maximum number of files to process at once */
decimation
                4
                        /* Decimation factor */
labelx
                1000
                        /* Pixels in X to first station name */
                        /* Pixels in X between station names */
eachlabel
                1000
labely
                6
                        /* Pixels in Y from center of strip to base of name */
overlap
                100
                        /* percent overlap of traces in Y direction */
height
                47
                        /* Pixels per trace window in Y direction */
                50
second
                        /* Pixels per second in X direction */
tickmark
                25
                        /* Length of time tics in pixels on Y */
xdelete
                920
                       /* Pixels in X to first delete message for compacting */
menu EVENT TYPE, Local event, Regional event, Teleseism,\
  Seismic noise, Telemetry noise, Calibration/SIGNAL LEVEL,\
  Weak signal, Clear signal, Clipped signal
```

EXAMPLES
FILES
SEE ALSO
DIAGNOSTICS
BUGS
AUTHOR

st2ah - convert a suds stream into an ah stream

SYNOPSIS

st2ah [files]

DESCRIPTION

st2ah converts a stream of suds structures into ah or ad hoc structures in the Lamont-Doherty format. The only structures processed are ORIGIN, STATIONCOMP and DESCRIPTRACE. The ORIGIN structure, if it exists, must preced the STATIONCOMP and DESCRIPTRACE structures and the STATIONCOMP structure must preced the DESCRIPTRACE structure. Data types allowed for waveforms are short, long, and float.

SEE ALSO

st_intro(3s), ah2st(1s)

BUGS

This is a quick hack for moving local network data into sunpick and needs to be made more general.

AUTHOR

st2asc - convert a stream of suds structures to ascii

SYNOPSIS

st2asc [-c file] [-h string] [-i string] [-l number] [-o file] [-s string] [-v] [file...]

DESCRIPTION

st2asc converts a stream of suds structures from binary to ascii. One structure is output per line. The number of the structure is output followed by the length in bytes of the structure, the length in bytes of any ensuing data, and then by the value of each field in the structure in order. The values are separated by a space, characters are included within single quotes, and character strings are included within double quotes.

OPTIONS

- -c The following file contains a control file similar to /usr/include/suds/suds_descr.h. The output format and order can be changed from this control file as well as the content of label strings used in the verbose option. NOT IMPLEMENTED YET.
- -h Place the next argument as a header at the beginning of the line for each new primary structure.
- -i Make the next argument the string by which lines are indented.
- -1 When the output line is greater than the following number, it will be output and the next line will be indented by the indent string.
- -n Do not list waveform data, simply list headers.
- -o Put the output in the following file instead of stdout.
- -s Separate the fields in the non verbose option by the following string.
- -v Verbose option. Output each field on one line preceded by the field title. Structures nested within a structure are indented three spaces. Numeric codes defined in suds_codes.h are followed by the appropriate explanatory string within brackets.

SEE ALSO

st_intro(3s), asc2st(1s)

DIAGNOSTICS

BUGS

EXAMPLE

Separate the fields by commas:

st2asc -s "," myfile

AUTHOR

stdescribe - describe the suds structures in a file

SYNOPSIS

stdescribe [-o file] [file...]

DESCRIPTION

stdescribe lists the file name followed by a list of structures within the file. The number of the structure from the beginning of the file is given followed by the structure number, name, the length of the structure, and the length of any ensuing data. If the first field in the structure is STATIDENT, this substructure is listed.

OPTIONS

-o Put the output in the following file instead of stdout.

SEE ALSO

st_intro(3s), st2asc(1s)

AUTHOR

stedit - edit the suds structures in a file

SYNOPSIS

stedit file...

DESCRIPTION

stedit displays one structure in a stream at a time and allows changes to be made to the values. Certain characters and values are not allowed for some fields where appropriate. The next structure is displayed by pushing the key F7. The editor may be exited without change by pressing the key F2. You change fields by pressing Tab, Return or the arrow keys. If any character is typed or changed in a field and Return is pressed, all characters after the last one typed or changed are deleted. Tab is equivalent to a Return except that all characters after the last one typed or changed are saved. Note that you may only type within certain parts of the screen.

stedit writes its output into a temporary file with a name of the form stedit.XXXXX. After completion of the input file, the editor asks whether to save the changes. If the answer is yes the temporary file is moved to be the input file.

The editor uses stform in suds_descr.h to get field labels, lengths, types, etc. The codes are listed in suds codes.h

EDITORIAL

This editor is a quick hack of some other code I had in order to demonstrate some of the features that might be nice in a real structure editor. It uses curses and is thus terminal independent on output but the input from cursor keys and function keys is not device independent and thus may not work on some terminals. UNIX System V curses might improve this. *stedit* may not start properly in a SUN-CMD window. Use Shelltool.

This editor should be integrated with the Lamont waveform editor to allow display and editing of waveforms in sequence. Waveforms are presently passed through but not noted. It should allow global changes, that is changes of a specific field for all instances of the given structure. It should allow input of code fields as numbers or strings.

This general type of editor could improve the quality control of data in seismology immensely and would help enforce a standardization that will allow computer processing of even the ancillary fields. It also provides a way for unskilled operators to get work done reliably.

BUGS

Many. Be patient.

AUTHOR

st_intro, suds - standard buffered input/output package for suds structures

SYNOPSIS

#include <suds/suds.h>

DESCRIPTION

suds or the Seismic Unified Data System consists of an extensible set of structures that associate related variables into logical groups. The initial structures relate to information about earthquakes, seismic waveforms, crustal structures, etc., but the methods and programs used apply equally well to any grouping of related variables pertaining to any subject. Data typically have natural logical groupings. The basic concept of suds is to simplify programming, data exchange, and program exchange by taking advantage of these logical groupings. The programmer can then simply say: "I want to deal with information pertaining to hypocenters, stations, or waveforms", for example, and not have to worry about the messy details of input, output, and data storage. Many general purpose utilities can be written to display, edit, store, filter, and massage these structures. The structures are designed to be extensible in order to allow them to grow and change with the whims of a wide variety of independent researchers. They also allow for a variety of styles of implementation so that individual institutions can decide on the best mode of use to meet their needs.

suds is built around streams of data where a stream is simply a sequence of structures contained in a file, in a pipe, on a tape, as output from an indexed database, etc. The basic input and output routines for reading and writing the structures are:

st_close: close an st_stream.

st flush: flush an st_stream.

st_free: free memory associated with a structure pointer allocated by st_get.

st_get: get the next structure in an st_stream.

st_open: open an st_stream.

st_peek: return the identification of the next structure in an st_stream.

st_put: put a structure into an st_stream.

st_rewind: rewind an st_stream.

st seek: find the nth structure in an st stream.

st_tell: return the number of the current structure's position in the st_stream.

st_unget: back up only 1 structure in an st_stream.

These routines are designed to look like standard, buffered I/O except that errors are handled using st_error. Fatal errors are reported and then call a user supplied subroutine die which may simply call exit or may also clear buffers, reset terminal characteristics, etc. st_error provides an easy to use, general error handling capability.

Programs using the st_routines should be compiled with the -lsuds flag.

WARNING: Do not mix these routines with stdio(3s) or rawio(2) routines for the same file at the same time. Follow st_open and other routines with st_close before using open or fopen, and so forth.

Many utility commands or filters are available to operate on suds streams. Basic conversion routines include:

st2asc: Convert suds streams to ascii streams.

asc2st: Convert ascii streams to suds streams.

ah2st: Convert Lamont ah streams to suds streams.

st2ah: Convert suds streams to Lamont ah streams.

ping2st: Convert ping (Carl Johnson andUniversity of Washington) streams to suds streams.

st2ping: Convert suds streams to ping streams.

segy2st: Convert SEG-Y format streams to suds streams.

st2segy: Convert suds streams to SEG-Y format streams.

st2xdr: Convert suds streams to eXternal Data Representation streams (A machine independent binary

standard used in the Network File System).

xdr2st: Convert eXternal Data Representation streams to suds streams.

st2db: Load suds streams into the db_vista database.

db2st: Extract structures from the db_vista database into a suds stream.

General commands for handling suds streams include:

stdescribe: List the names and sizes of structures in a suds stream.

stedit: Edit a suds stream.

stsubset Extract a subset of structures from a suds stream.

Subroutines for use with suds structures include

st_create create a new suds structure and initialize it.

st_init initialize a suds structure.

make mstime convert years through seconds to a suds time variable.

decode_mstime decode a suds time variable into years through seconds.

list_mstime convert a suds time variable to an ascii string.

get_mstime get the present time-of-day as a suds time variable.

find_code find number representing an ascii string.

list_code find ascii string explaining a suds code.

descr_trace calulate many fields in a DESCRIPTRACE structure from a waveform.

asc2field convert an ascii string to a suds structure field.

field2asc convert a suds structure field to an ascii string.

suds is designed to take advantage of the flexibility of the UNIX shell command language and the speed of C language I/O. Commands and subroutines that extend these advantages to FORTRAN programmers and other operating systems include:

The seismic structures and related constants are defined in suds.h The core structures include;

TAG: A label to identify structures and provide a basis to check for errors.

TERMINATOR: A marker to identify the logical end of a group of structures.

EQUIPMENT: Equipment making up a station/component.

STATIONCOMP: Station component information available before a waveform is recorded.

MUXDATA: Header for multiplexed data.

DESCRIPTRACE: Descriptive information about a seismic trace. LOCTRACE: Location of a seismic trace within the filesystem.

CALIBRATION: Calibration information for a station component FEATURE: Observed phase arrival time, amplitude, and period.

RESIDUAL: Calculated residuals for arrival times, magnitudes, etc.

EVENTREADINGS: Relation of features to a specific event

EVENT: General information about an event.

EV_DESCRIPT: Descriptive information about an event.

ORIGIN: Information about a specific solution for a given event.

ERROR: Errors related to a specific ORIGIN.

FOCALMECH: Focal mechanism solution.

MOMENT: Information on the seismic moment.

VELMODEL: Crustal velocity model.

LAYERS: Velocity characteristics of individual layers.

COMMENT: Free form comment that can be related to any field of any structure.

SHOTGATHER: Grouping of waveforms related to a given source.

PROFILE: Grouping of SHOTGATHERS into lines.

Extension of suds structures can be done by adding fields to the end of existing structures or adding new structures. Some care and close coordination with other institutions need to be exercised so that the wide portability can be maintained and so that old and new programs using these structures can co-exist harmoniously. Programs that use newly extended structures must check the length of structures on input and handle the older versions appropriately or give error messages. We strongly urge that you propose changes to these structures only after you are completely convinced that the existing structures can not meet your needs. In this way we can all work together to keep future confusion and complexity to a minimum.

SEE ALSO

ah2st(1s), asc2field(3s), asc2st(1s), descr_trace(3s), find_code(3s), st2asc(1s), st_describe(1s), st_edit(1s), st_close(3s), st_error(3s), st_flush(3s), st_get(3s), st_init(3s), st_open(3s), st_put(3s), st_rewind(3s), st_seek(3s), st_tell(3s), st_time(3s), st_unget(3s)

FILES

/usr/lib/libsuds.a

/usr/include/suds/suds.h

/usr/include/suds/suds_descr.h

/usr/include/suds/suds_codes.h

/usr/include/suds/st_error.h

AUTHOR

asc2field, field2asc - convert ascii string to a suds field, convert a suds field to an ascii string

SYNOPSIS

#include <suds/suds.h>
asc2field(string,ptr,type)
char *ptr,*string;
int type;
char *field2asc(ptr,type,verbose)
char *ptr;
int type,verbose;

DESCRIPTION

asc2field converts the ascii string to a variable of a specific type pointed to by ptr which is typically an address of a field in a suds structure. field2asc converts the field pointed to by ptr to an ascii string. type is defined by the "Integer defines for standard variable types" in <suds/suds.h>.

SEE ALSO

DIAGNOSTICS

Errors are reported by st_error and the routines return a zero value or NULL pointer.

EXAMPLES

AUTHOR

atod_open, atod_settime, atod_incrtime, atod_geterr, atod_reset - contol analog-to-digital converter

SYNOPSIS

int atod_open(device,ms_sample,numchan)
char *device;
int ms_sample, numchan;
int atod_settime(atod_fd,day,hour,min,seconds)
int atod_fd,day,hour,min,seconds;
int atod_incrtime(atod_fd,milliseconds)
int atod_fd,milliseconds;
int atod_geterr(atod_fd)
int atod_reset(atod_fd)
int atod_reset(atod_fd)
int atod_fd;

DESCRIPTION

These routines provide the software interface to the Cutler Digital Design (CDD) Data Sampler. atod_open opens and initializes the atod with the pathname given by device, typically /dev/rst1, and returns an integer file descriptor, atod_fd, used in the other subroutines. atod_open checks the byte order on the host machine and adjusts the CDD atod accordingly. The year is initialized in the atod with the last digit of the current year in the host machine's clock. The ms_sample, milliseconds per sample, may be any value such that the total throughput of the atod is 25,600 samples per second or less. Thus for 256 channels ms_sample may be 10 or larger, for 128 channels ms_sample may be 5 or larger, and for 16 channels (the minimum number of channels) ms_sample may be 1 or larger. numchan is the number of individual channels of data to be collected and may be any number from 1 to the maximum number of input channels installed in the Data Sampler. Since the Data Sampler digitizes in units of 16 channels, this number is rounded up to the next multiple of 16 by the software.

atod_settime sets the internal clock in the Data Sampler. If day is a negative number, the internal clock is disabled. atod_settime returns 1 if the time specified is impossible, such as a day of 34 or hour of 25, returns 4 if the atod buffer is overflowed, although the time will still be reset, and returns 0 if there are no errors.

atod_incrtime changes the internal clock by milliseconds, which may be positive or negative. atod_incrtime returns 4 or 0 as discussed above.

atod_reset clears the buffer in the Data Sampler and resets the digitizing process but leaves sample-rate, time, and other constants unchanged.

atod_geterr returns the error code from the Data Sampler. When an I/O error occurs the Data Sampler sends a message to the host machine that an error occurred. The host machine then asks the sampler for the error number and stores the value of the error in the driver software. atod_geterr returns this error value and resets the value to 0 so that a second call will return 0. Other return values are 4 meaning the atod's buffer overflowed and 5 meaning an illegal command was sent to the atod.

DIAGNOSTICS

These routines use st_error(3s) to report errors and call die, which you must provide, after fatal errors.

SEE ALSO

cdd(1s), plotatod(1s), st_error(3s)

BUGS

The maximum throughput rate of 25,600 samples per second may not be attainable on a continuous basis on a SUN 3/50, depending on the use of the SCSI bus by other peripherals such as the disk and tape drive. Digitization of 32 stations at 100 samples per second uses less than 10% of the system resources.

AUTHOR

descr_trace - calculate minimum, maximum, average noise, and number of clipped values in a suds waveform

SYNOPSIS

#include <suds/suds.h>
int descr_trace(sc,dt,waveform)
struct stationcomp *sc;
struct descriptrace *dt;
char *waveform;

DESCRIPTION

descr_trace calculates and sets the values in struct descriptrace for mindata (minimun value of waveform), maxdata (maximum value of the waveform), avenoise (average value of the first 200 samples), and numclip (number of clipped samples). If the waveform type is not short, long, or float, descr_trace has a return value of 1 and no change was made. Otherwise the return value is 0. If the pointer waveform is 0, the waveform is assumed to be contiguous to the end of struct descriptrace. The number of clipped samples is set only if the clip_value is not zero in struct stationcomp

AUTHOR

find_code, list_code - find or list codes used in suds structures

SYNOPSIS

#include <suds/suds.h>
int find_code(string,list)
char *string;
struct codes *list;
char *list_code(code,list)
int code;
struct codes *list;

DESCRIPTION

Many fields in suds structures contain a char, short or int that represent a specific line of a list. find_code returns the numeric code for a given string. The list is searched for a line beginning with all of the characters in string. If none is found, a 0 is returned. list_code returns a pointer to the string corresponding to the specified code. If the code is not found a string this code undefined is returned. list is a codelist specified in suds_codes.h.

AUTHOR

st_close, st_flush - close or flush a stream of suds structures

SYNOPSIS

#include <stdio.h>

st close(stream)

FILE *stream;

st_flush(stream)

FILE *stream;

DESCRIPTION

st_close causes any buffered data for the named stream to be written out, and the named stream to be closed. Buffers allocated by the standard input/output system are freed.

st_close is performed automatically for all open files upon calling exit(3).

st_flush causes any buffered data for the named output stream to be written out. The named stream remains open.

SEE ALSO

fclose(3s), st_open(3S)

DIAGNOSTICS

Errors are reported by st_error and then a user supplied subroutine called die(errno) is called (See $st_error(3s)$).

BUGS

AUTHOR

```
NAME
```

st error - general purpose error reporting and handling

SYNOPSIS

```
#include <suds/st_error.h>
st_error(function,errnum,format [,arg ]...)
int (*function)();
int errnum;
char *format;
extern char *progname;
```

DESCRIPTION

st_error reports errors on stderr and calls function before returning. progname should be set equal to argv[0] in the user's main. st_error outputs a message "ERROR in progname". The nextline is the message given in the printf type format and by args. The third line is the system error associated with errnum if errnum!=0. The following line is the system error associated with errno (INTRO(2)) if errnum!=errno. errno is then reset to 0 and the function is called, if it is not equal to NULL, with errnum as an argument.

function can be exit(2), any user defined function, or NULL.

Errors are normally output on stderr, however if st_errout is set to point at a file pathname before the first call to st_error, the errors will be put in that file.

Most st_routines call st_error . If the error should be fatal, the function passed is die. A user must define this function. A simple definition could be:

die(err) int err; { exit(err); }

If the user has set special tty modes, these should be restored in die.

errnum may be equal to errno(INTRO(2)) or one of the following manifest constants defined in st error.h:

0 ENO ERR Ignor errnum

extern char *st_errout;

1001 EBADDAY Illegal day

1002 EBADMONTH Illegal month

1003 EBADYEAR Illegal year

1004 EBADVALUE Illegal value

1005 EFEWDATA Not enough data

1006 ENOCONVRG Convergence failure

1007 EUNDERFLOW Underflow

1008 ENOSTATION No such station

1009 ESIZE Structure sizes mismatch

1010 ESINGULAR Singular matrix

1011 ETOODEEP Focal depth too great

1012 EBADPHASE No such phase

1013 ENOFEAS Constraints are inconsistent

1014 EINFIN Solution is unbounded

1015 EBADSYNC Structure tag sync code wrong

1016 ST_ERR Serious suds I/O error

SEE ALSO

intro(2), st_intro(3s)

BUGS

errno is not typically reset by standard UNIX routines and thus could have a spurious value. It is a good idea to set errno=0 before calling any routines for which you plan to use st_error to report the errors.

AUTHORS

Peter Ward and Bruce Julian, U.S. Geological Survey, Menlo Park, Ca. 94025.

st_get - get the next suds structure from stream

SYNOPSIS

```
#include <stdio.h>
#include <suds/suds.h>
int st_get(st_ptr,type,length,stream)
char **st_ptr;
int *type,*length;
FILE *stream; st_free(ptr,length)
char *ptr;
int length;
```

DESCRIPTION

st_get returns a pointer st_ptr to the next suds structure in the stream, the type of the structure, and the length in bytes of the structure. The return value of st_get is the total length of the structure plus the length of any data following the structure such as for structure type DESCRIPTRACE and MUXDATA.

 st_get uses malloc(3) to allocate space for the structure. When the structure is no longer needed, the space should be freed using st_free .

SEE ALSO

```
st_open(3S), st_put(3S), st_error(3S), st_unget(3S)
```

DIAGNOSTICS

The most common error is likely to be a Segmentation Violation caused by not passing the addresses of type and length. Errors are reported by st_error and a user supplied subroutine called die(errno) is called (See $st_error(3s)$). st_get returns EOF on end of file and type and length are all set equal to zero.

BUGS

EXAMPLE

```
#include <stdio.h>
char *ptr;
int type,length,in_num;
in_num=st_get(&ptr,&type,&length,stdin);
```

AUTHOR

st_init - initialize a suds structure

SYNOPSIS

#include <suds/suds.h>
st_init(type,pointer)
int type;
char *pointer;
st_create(type,pointer,datalength)
int type,datalength;
char **pointer;

DESCRIPTION

st_init initializes all fields of a suds structure to the default values defined in the file suds_descr.h This initialization is important since fields with no data should be initialized to one of the constants NODATA, NOTIME, NOCHAR, NOSTRG, or NOLIST defined in the file suds.h. st_create uses malloc to create space for a new structure and then initializes the structure. datalength is the length of data in bytes that follow the structure when appropriate. suds.h

AUTHOR

st_open - open a stream containing suds structures

SYNOPSIS

```
#include <stdio.h>
```

FILE *st_open(filename, type) char *filename, *type;

DESCRIPTION

st_open opens the file named by filename and associates a stream with it. If the open succeeds, st_open returns a pointer to be used to identify the stream in subsequent operations.

filename points to a character string that contains the name of the file to be opened.

type is a character string having one of the following values:

"r" open for reading
"w" truncate or create for writing

"a" append: open for writing at end of file, or create for writing

"r+" open for update (reading and writing)

"w+" truncate or create for update

"a+" append; open or create for update at end-of-file

When a file is opened for update, both input and output may be done on the resulting stream. However, output may not be directly followed by input without an intervening *fseek* or *rewind*, and input may not be directly followed by output without an intervening *st_seek*, *st_rewind*, or an input operation which encounters end-of-file.

st_open may be called with filename equal to "stdin", "stdout", or "stderr" to allow easy specification of stdio defaults for files. It is not necessary to specifically open stdio streams.

SEE ALSO

fopen(3s), st_close(3S), st_seek(3S),

DIAGNOSTICS

st_open, returns a NULL pointer on failure. Errors are reported by st_error and a user supplied subroutine called die(errno) is called (See st error(3s)).

BUGS

In order to support the same number of open files as the system does, st_open must allocate additional memory for data structures using malloc when each file is opened. This might confuse some programs which use their own memory allocators.

AUTHOR

```
NAME
        st_putc - put a suds structure on a stream
SYNOPSIS
        #include <stdio.h>
        #include <suds/suds.h>
        int st_put(st_ptr,type,length,stream)
        char *st_ptr;
        int type;
        int len;
        FILE *stream;
DESCRIPTION
        st_put writes the structure pointed to by st_ptr onto the named output stream
SEE ALSO
        st_open(3S), st_close(3S), st_get(3S)
DIAGNOSTICS
        Errors are reported by st_error and a user supplied subroutine called die(errno) is called (See
        st_error(3s)).
EXAMPLE
        #include <stdio.h>
        char *ptr;
        int type,length,out_num;
        out_num=st_put(ptr,type,length,stdout);
AUTHOR
```

st seek, st tell, st rewind, st_peek - reposition a stream of suds structures

SYNOPSIS

#include <stdio.h>

st_seek(stream, offset, direction)

FILE *stream;

int offset, direction;

int st_tell(stream)

FILE *stream;

st_rewind(stream)

FILE *stream;

DESCRIPTION

st_seek sets the position of the next input or output operation on the stream. The new position is just before the nth structure specified by offset counting the first structure in the stream as zero. The offset is relative to the beginning of the file if direction==0, relative to the present position in the file if direction==1, and relative to the end of the file if direction==2.

st_rewind(stream) is equivalent to st_seek(stream, 0,0).

st seek and st rewind undo any effects of st unget (3S).

After st_seek or st_rewind, the next operation on a file opened for update may be either input or output.

st_tell returns the offset of the current structure relative to the beginning of the file associated with the named stream.

st_peek returns the number of the next structure to be read by st_get.

SEE ALSO

fseek(3S), st_open(3S), st_unget(3S)

DIAGNOSTICS

st_seek returns -1 for improper seeks, otherwise zero. An improper seek can be, for example, an st_seek done on a file that has not been opened via st_open.

DIAGNOSTICS

Errors are reported by st_error and a user supplied subroutine called die(errno) is called (See $st_error(3s)$).

BUGS

AUTHOR

make_mstime, decode_mstime, list_mstime, get_mstime - suds time and date utilities

SYNOPSIS

```
#include <suds/suds.h>
ms_time make_mstime(year,month,day,hour,min,second)
int year,month,day,hour,min;
double second;
int decode_mstime(time,year,month,day,hour,min,second)
```

int decode_mstime(time,year,month,day,hour,min,second)
ms_time time;
int *year,*month,*day,*hour,*min;
double *second;
char *list_mstime(time,form)
ms time time;

ms_time get_mstime();

DESCRIPTION

int form:

All times and dates in suds are kept in terms of Greenwich Mean Time (GMT) either as ms_time, millisecond time, a double precision decimal number of seconds since 00:00:00 GMT Jan. 1,1970 (8 bytes of storage) or as st_time, stamp time, a long integer representation of the same value (4 bytes of storage) as defined by typedef in suds.h. These routines provide simple conversion to and from other forms. year is a four digit number such as 1988, month may be 1-12, day may be 1-31, hour may be 0-23, min may be 0-59, and second is a double precision number of seconds with resolution to microseconds or better.

make_mstime returns an ms_time variable. decode_mstime returns through pointers the components of the time variable. list_mstime returns a pointer to a null terminated character string in one of several formats specified by form. get_mstime returns the computer's clock as an ms_time variable.

OPTIONS

form may be an integer representing one of the following formats where yr=year (2 digits), mo=month (1-12), dy=day (1=31), hr=hour (0-23), mn=minute (0-59), and sc=second (0=59):

- 0 yrmodyhrmnsc.000
- 1 yrmodyhrmnsc
- 2 yr mo dy hr mn sc.000
- 3 yr mo dy hr mn sc
- 4 mo/dy/yr hr:mn sc.000 GMT
- 5 mo/dy/yr hr:mn sc GMT
- 6 Aug 10, 1988 hr:mn sc.000 GMT
- 7 Aug 10, 1988 hr:mn sc GMT

SEE ALSO

gettimeofday(2), ctime(3), time(3C)

DIAGNOSTICS

Errors are reported by st_error and the routines return a zero value or NULL pointer.

EXAMPLES

To use *st_time* simply cast the values appropriately: st_time stamp;

stamp=(long)get_mstime();
printf("%s\n",list_mstime((double)stamp,1);

AUTHORS

Bruce Julian and Peter L. Ward, U.S. Geological Survey, Menlo Park, Ca. 94025

st_unget - push a suds structure back into input stream

SYNOPSIS

#include <stdio.h>

st unget(st ptr, stream)

char *st_ptr;

FILE *stream;

DESCRIPTION

st_unget pushes the structure pointed to by st_ptr back onto an input stream. That structure will be returned by the next st_get call on that stream. st_unget leaves the file stream unchanged.

Only one structure may be put back on the stream.

An st_seek(3S) erases all memory of pushed back characters.

SEE ALSO

st_get(3S), st_seek(3S)

DIAGNOSTICS

Errors are reported by st_error. st_unget returns EOF if it can't push a character back and ST_ERR (defined in st_error.h) if stream is an illegal file descriptor.

BUGS

AUTHOR

Connection of the Analog-to-Digital Converter to the Computer and to the Software

There are four simple steps to connect the A/D converter to the computer:

- 1. Reconfigure the operating system so that it knows that the device is attached.
- 2. Create a symbolic name that can be referenced by users of the computer.
- 3. Physically attach the A/D converter to the SCSI bus.
- 4. Use the system software and special routines provided with this tape to control the sampler and read data from it.

You must be sure your computer is running SUN Operating System version 3.5. The interface does not work for Version 3.4 because major, bug ridden changes to the SCSI interface software were made for that release. The interface may work for Versions 3.2 and 4.0, but has not been tested for these versions.

The computer reads data from the A/D converter sequentially in a manner similar to reading data from a magnetic tape recorder. Thus the command-set used for the SCSI bus interface is that specified in ANSI Standard X3.131-1986 for Sequential-Access Devices. For this reason the A/D converter uses the operating system driver for SCSI based magnetic tape drives. In UNIX this driver is located in /usr/sys/OBJ/st.o. This routine also calls the low level SCSI driver package /usr/sys/OBJ/si.o. To install these routines in the kernal of your version of UNIX and point to the new device to be used, you need to add one line to the configuration file for your system located in /usr/sys/conf and rebuild the operating system. On Sun computers this process is explained in detail in Chapter 8 Configuring the System Kernal in the manual section Installing UNIX on the Sun Workstation. The steps are as follows.

Login as root. Edit the file in /usr/sys/conf that has been customized for your computer. If the system has not been customized and you are using a SUN 3/50 computer with one disk and one archive tape, you can use the file SEISMIC included on this software tape. If you do not use this file then add a line in your config file at least after the line

controller si0 at obio? csr 0x140000 priority 2

and preferable immediately after the line

ape st0 at si0 drive 32 flags 1

if it exists. The new line should read

tape st1 at si0 drive 40 flags 1

If a line using drive 40 on this SCSI controller already exists it must be deleted if no device is actually attached or you must change the bus address of the A/D converter. There may be eight controllers attached to each SCSI bus, numbered from 0 to 7. The highest priority is assigned to controller 0 which is usually the system disk. A single tape unit is usually put at level 4 and the computer's SCSI controller is at level 7. Pick a level appropriate for your hardware configuration. Set the DIP switch inside the A/D converter to that number and change the 40 in the above line to 8 times the number set in the DIP switch. Now write out the new configuration file and type:

/etc/config SEISMIC

but substitute the name of your configuration file for the word SEISMIC. This name will appear on the banner line during login telling which version of the operating system you are running. /etc/config creates a new directory in /usr/sys with this config file name. Change to this directory. For example type:

cd /usr/sys/SEISMIC

and then type

make

Make compiles and links a new kernal called **vmunix**. You must move this to the / directory after you save the old version. Type:

mv /vmunix /vmunix.old mv vmunix /vmunix You may only be able to keep two system kernals in / at one time because of the size of the disk partion used. Be sure to keep the old version there until you know the new version works. If the new version does not work you can then simply respond to the boot command with

bsd(0,0,0)vmunix.old

WARNING: If you did not save the old version in / and the new version does not work, you may need to reload all software and software distributions!

Now you must create two entries in the /dev directory that can be used by the software to access the A/D converter. Type:

cd /dev mknod nrst1 c 18 5 mknod rst1 c 18 1 chmod 0666 nrst1 rst1

Of course you may use st2 or st3 if two other tape drives already exist on the SCSI bus. In these cases add 1 or 2 to the last number, the minor device number. The minor device number should be the number following st in the name for rst and that number plus 4 for nrst1. Only four tape devices may be used with the st.o kernal software. The major device number 18 should be the same used for rst0.

Is -1 rst0

Type:

to check that the number is the same. You may use a different name for these files if you wish such as rsa0 and nrsa0 meaning SCSI analog-to-digital converter. We recommend keeping the st designation, however, because that is the driver software being used. The programs provided with the A/D converter assume the name /dev/rst1 and /dev/nrst1. The difference between these two names is that the rst1 device resets the A/D converter when it is opened or closed and the rst1 device does not do an automatic reset. If you use different names, you will need to change the names used in the software provided.

Now shutdown UNIX by typing:

/etc/halt

When the system halts turn off the power to the computer and all peripheral devices. Connect the SCSI bus cables between your computer and the A/D converter. The SCSI bus is a daisy chain with terminators at each end. The total length of the bus should not be longer than 6 meters (19.7 feet). Terminators are included typically within the computer and the system disk. The terminators have been left out of the A/D converter so that it can be located between the computer and the system disk or between and other two devices on the bus. Connect the SCSI bus cable from the computer to the SCSI IN connector of the A/D converter. Connect the new SCSI bus cable provided to the A/D converter SCSI OUT connector and to the connector formerly attached to the computer. Turn on the power to the peripherals and then to the computer. The computer should reboot automatically. During the boot process a line should appear showing the tape port for the address you specified, such as

st1 at si0 slave 40

The A/D converter should now be ready for use.

45

--

>>

structure for data file header for Lamont ah or ad hoc system

```
complex=2, etc as defined above */
peak equal 1 for a specific frequency calib cal[NOCALPTS]; /* calibration curve
                                                                                                                                                                                 /* sampling interval
/* maximum amplitude of record */
/* start time of record section */
/* minimum value of abscissa */
/* comment line */
/* log of data manipulations */
                                                                                                                                                                                                                                                                                              /* station info */
/* event info */
/* record info */
/* freebies */
                                                                                                                                                             data type float=1,
                                                                               dep; /* " depth time ot; /* " origin time ecomment[80]; /* comment line
                                                            /* event latitude
/* " longitude
                                                                                                                                                                                                                                                                                                station;
                                                                                                                                                                                                                                                                                                                       record;
                                                                                                                                                                                                                                                                                                            event info event;
record info record
                                                                                                                                                                                                                                                                                                                                    extra [NEXTRAS];
                                                                                                                                                                                                             abstime;
                                                                                                                                                                                                                                                                                                station info
                                                                                                                                                                                                                                  rcomment [80];
                                                                                                                                                                                                                                               log[LOGSIZE];
                                                                                                                                                 record info
                                                                                                                                                                                                  duexen!
                                                                                                                                                                                  delta;
                                                                                                                                                                                                                         min;
                                                                                                                                                                                                                                                                                     typedef struct (
                                                                          lon;
                                                                                                                                                                                                                                                                                                                                                } ahhed;
                                                                                                                                                                                                                                                                                                           struct
                                                                                                                                                            short
long
flost
flost
struct
                                                                        float
float
struct
                                                                                                                                                                                                                                                                                                  struct
                                                                                                                                                                                                                                                                                                                                  float
                                                                                                             char
                                                                                                                                                  struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ,,,,,,,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 " elevation
maximum gain at peak of calibration curve
normalization, factor to make calibration curve at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* lps.spn. etc. last char either z, n, or e /* wwssn,hdlp.rstn.sro,asro,dwwssn etc. /* station latitude /* ... longitude /* ... longitude /* ... elevation et peak of calibration curve /* maximum gain at peak of calibration curve /* normalization, factor to make calibration
           witten, 11 June 85 headers are stored in same file typically
                                                             /* Bccs Id */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     station code
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     *****
                                                           static char Abbader h[] = "9W% %G%"; #define AHHRADSIEE 1024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* year
/* month
/* day
/* hour
/* minute
/* second
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* pole
/* sero
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    station info
code [6];
chan[6];
stype [8];
slat;
slon;
elev;
                                   named ab. YRMODYHRMM
                                                                                             define TYPEMAX 6
                                                                                                                     #define LOGENT 10
#define NEXTRAS 21
#define NOCALPTS 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         pole;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                dey;
                                                                                                                                                                                  define ahcomplex
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float i;
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double i;
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output to ascil, loading or unloading the database, etc.
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                                                                             static char Suds_descrip_h[] = "8(#) suds_descr.h
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              describe any of the suds structures
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"component azimuth",
"component incidence"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STATIONCOMP, "annotated comment", STATIONCOMP, "recorder type",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "last station/comp",
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "elevation, meters"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "beginning struct",
                                                                                                                  linclude "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "instrument type",
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "knob 1 setting",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "repair reason",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "struct number",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "struct length",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "serial number",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "station name",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "machine type",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /*30*/STATIONCOMP, "rock class",
                                                                                                                                                                                                                                                                                                    define TYPICAL "0-9 a-zA-Z., define TIMES "0-9.NOTIME"
                                                                                                                                                                                                                                                    define DECIMAL "0-9, MCDATA"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "sync char",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "longitude",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "enclosure",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "component",
                                                                                                                                                                                                                                                                                                                                                                    authority[], feat_phase[];
                                                                                                                                                                                                                                                                 INTEGER "0-9 MODATA"
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    Mo STRUCT, "junk",
    STAT IDENT, "network",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "frequency"
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "latitude"
                                                                                                                                                                                                                                                                              "a-z A-z"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "model",
                                     #ifndef SUDS DESCRIP H #define SUDS DESCRIP H
                                                                                                                                             special formats */
                                                                                                       finclude <stdio.b>
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                                                                                                                                                                                                                                                                              MANGES
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OT.TRE "BA"	FOCHAR, "%c",	POCHAR, "%c",	•	OCHAR, "%c",	`.	OLIST, "TO.",	ODATA, "%f",	COLATA, "SE",	٠,		~	•	_	CODATA, "*d",	٠,		OCHAR, "Se",	CONTA, "*1d",	OSTRG, STIFM, S'	Ξ.	CHAP "AC"				CODATA, "%1d",	COATA, "RE".				CONTRG, STIFF, S					CALIFIC, CALIB,				CCEAR, "Se",	• > •	£	: i	OCHAR, "4c",		K '			* '		OLIST, "td",	: E	CONTA, "&f",	CONTA, "Af",	TODATA, "%f",
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         LG_INT size_struct[]={
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sizeof (STATIDENT),
                                                                                                                                                                                                                                                                                            /*190*/Triggers,
Triggers,
                                                                                                                                                                                                                                                                                                                 TRIGSETTING,
                                                                                                                                                                                                                                                                                                                                                                                                                   TRIGSETTING,
                                                                                                                                                                                                                                                                                                                                                                            TRIGSETTING,
                                                                                                                                                                                                                                                                                                                                                                                                TRIGSETTING,
                                                                                                                                                                                                                                                                                                                                                        TRIGSETTING,
                                                                                                                                                                                                                                                                                                                                                                  TRIGSETTING,
                                                                                                                                                                                                                                                                                                                                                                                      TRIGSETTING,
                                                                                                                                                                                                                                                                                                                           TRIGSETTING
                                                                                                                                                                                                                                                                                                                                     TRI GRETTING
                                                                                                                                                                                                                                                                                                                                               TRIGSETTING
                                                                                                                                                                                 SHOTGATHER,
                                                                                        /*170*/LAYERS
                                                                                                                                                                                          /*180*/CALIB,
CALIB,
COMPLEX,
                                                                                                                                                                                                                                TRIGGERS,
TRIGGERS,
TRIGGERS,
                                                                                                                                                                                                                                                              TRIGGERS,
TRIGGERS,
                                                 VEIMODEL,
VELMODEL,
          VELMODEL,
                    VELMODEL,
                             VEIMODEL,
                                        VELMODEL,
                                                                                                                                                                                                                                                                                   FRIGGERS
                                                                                                                               COMPLETY,
COMPLETY,
COMPLETY,
COMPLETY,
                                                                                                                                                                                                                        COMPLEX,
                                                                                                                     LAYERS,
                                                                                                                                                                      PROFILE
                                                          LAYERS,
                                                                     LAYERS,
                                                                               LAYERS.
                                                                                                 LAYERS,
                                                                                                            LAYERS,
                                                                                                                                                                                                                                                                                                                   50
```

\$9/03/29 13:36:21

```
sizeof(struct muxdata),
sizeof(struct descriptrace),
sizeof(struct calibration),
sizeof(struct feature),
sizeof(struct residua),
sizeof(struct event),
sizeof(struct event),
sizeof(struct error),
sizeof(struct error),
sizeof(struct focalmech),
sizeof(struct focalmech),
sizeof(struct relayers),
sizeof(struct layers),
sizeof(struct layers),
sizeof(struct comment),
sizeof(struct calib),
sizeof(struct triggers),
sizeof(struct triggers),
```

#endif SUDS_DESCRIP_H

```
* ST_ERROR.H

* Bruce R. Julian, USGS Menlo Park Calif., 15 Dec. 1983

* Medified Plakard, USGS Menlo Park Calif., April 8, 1988

*/
#ifndef SUDSERR.H
#define SUDSERR.H
#define ERADDAY
#define ERADYALUE
#define ERADYALUE
#define ERADYALUE
#define EROCOSYNG
#define EROCOSYNG
#define EROCOSYNG
#define ERODERP
#define ERODERP
#define ERODERP
#define ERADPENSE
#define ERADPENSE
#define ERADSYNC
#EREBASE + 10
#define ERADSYNC
#EREBASE + 11
#define ERADSYNC
#EREBASE + 12
#define ERADSYNC
#EREBASE + 13
#define ERADSYNC
#EREBASE + 14
#define ERADSYNC
#EREBASE + 16
#define ECANTERACET
#define ECANTER
```

57

```
89/03/29
11.37.69
```

```
typedef DOUBLE LONLAY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              form row;
form col;
*allowchar;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     nextfstype;
        component;
inst_type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* Structure types or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 tcodelist;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            *initval; *fformat;
                                                                                                                                                                                                                                                                                                                                                                     typedef struct codes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  frecord;
                                                                                                                                                                                                                                                                                                                                                                                                   I.G. INT num;
STRING *meaning;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ffield;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      define STAT IDENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              #define No STRUCT
                                     SH INT inst
STATIDENT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUDS FORM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   H
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                                                                                                                                                                                                                                                                                                                                                                                                                                                              CODES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               THI 21 TH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         define
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* Dec 14, 1901 00:00 00 GMT, near largest long */
                                                                                      Individual fields within all structures have unique names for compatability
                                                                                                                                            Expandability is accomplished by adding new structures and by adding new fields to the end of these structures. Such additions need to be coordinated among all users and should not be taken lightly.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ******
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ***
                             Some care has been taken to keep bytes aligned on 4 byte boundaries for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* station component identifier
/* network name
/* name of station where equipment is located
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* A character string, null byte terminated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           bit double precision number, IREE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* Standard variable types redefined for portability and clarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* A 32 bit floating point number, IEEE
                                                                                                                                                                                                                                                                                                                                                                                                                                              /* Define code for type of machine suds is being compiled on.
                                                                                                                                                                                                                                      PLMard, U.S. Geological Survey, Menlo Park, Ca. 94025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              See suds codes.h CODES mach type[] ruis DEFINE MUST BE CHANGED FOR MACHINES NOT A SUN 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* A 1 byte integer (0 to 255)
                                                                                                                                                                                                                                                                                                                                                                                                /* Sccs Id */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Define symbols for missing data. See suds descr.h
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* A single ascil character
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* A 32 bit signed integer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* A 16 bit signed integer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* An 8 bit field
                                                                                                                                                                                                                                                                                                                                                                                        static char Suds_h[] = "%#% %G%";
SUDS: Version 1.2 AUG 10,1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             3
                                                                                                                    with the database system.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |define NOTIME "-2147472000"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* Special variable types
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         define NODATA "-32767."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BITS8;
SH_INT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STRING;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LG INT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DOUBLE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRING network[4];
STRING st_name[5];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FLOAT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CHAR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MINI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        define MACHINE '3'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     define NOCHAR " "
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              define Molist "0"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     define MosTRG ""
                                                              portabilty.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             typedef struct {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    typedef struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          typedef float
typedef double
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   typedef struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     typedef struct
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           D COMPLEX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ä
                                                                                                                                                                                                                                                                                                 lifndef 8008 H
                                                                                                                                                                                                                                                                                                                               define guns H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FLOAT fr;
FLOAT fy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DOUBLE dr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPLEXX;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                typedef char
typedef char
typedef char
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            typedef long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VECTOR;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TEMBOR;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TLOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TLOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOAT
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*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              typedef struct sudsform (
IG_INT_fstype; /* Structure types or identifiers */
STRING *fname; /* Name used to identify structure item */
IG_INT_ftype; /* Type of variable in field
IG_INT_ftype; /* Length of variable in the field */
IG_INT_flangth; /* Offset of variable pointer from beginning of structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   This field is potentail machine dependent and ideally
                                                                                                                                                                                                                                                                                    /* latitude or longitude in degrees, M and E positive*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         mnessured in bytes, where first byte of structure-0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (Data Description Language Processor) of db wista
Asd long as structures are carefully defined to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            align 4 bytes boundaries, we can get away without writing such a complex program for most machines if value indexes a codes list, this is list */
                                                                                                           stamp GAT time in seconds before or after Jan 1, 1970, resolution is one second
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               should be determined by a program like the ddlp
  * *
                                                                                                                                                                                                                              1970, resolution finer than microseconds*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* SUDSFORM: Information on each suds structure used for input from ascil,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* If value indexes a codes list, this is list /* Value to initialize structure /* Value to initialize structure /* Printf type format to read + write field ; /* If structure, this is fistype /* database record for this field /* database field for this field /* tow of field in forms editor /* beginning column of field in forms editor /* allowed characters on input
                                                                                                                                                                                                  typedef Double ME_TIME; /* GMT time in seconds before or after Jan 1,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ditor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ******
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        output to ascil, loading or unloading the database, etc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ***
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* char 1 byte
/* short 2 bytes
/* long 4 bytes
/* float 4 bytes
/* struct stat ident 8 bytes
/* struct stat ident 8 bytes
/* struct stat ident 8 bytes
/* ma_time 8 bytes
/* na_time 8 bytes
/* lon_lat 8 bytes
/* struct callb 500 bytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              struct complex 16 bytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Integer defines for standard variable types
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* char 1 byte
/* char number 1 byte
/* component v,n,e /* instrument type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* string
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    identifiers
                                                                                                              typedef ig INT ST TDE; /*
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spare
number of sample sweeps. Typically not known
when header is written, but can be added later*/
                                                                                                   /* STATIONCOMP: generic station component information available before an event is detected and added to the waveforms when a detected event
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* conversion factor to millivolts: mv per counts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                d=double, c=complex, v=vector, t=tensor */
g=good, t=telemetry noise, c=calibration, etc*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     O means not defined or not appropriate
                                                                                                                                                                                                                                                                                                                                                                                          /* d=dam, n=nuclear power plant, v=underground
vault, b=buried, s=on surface, etc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       number of channels: if != then multiplexed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* data units: d=digital counts, v=millivolts,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 s=short(16 bit), r=12 bit data, 4 lab time,
l=long(32 bit), f=float,
                                                                                                                                                                                                                                                                               /* component angle of incidence from vertical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* smshort(16 bit), r=12 bit data, 4 lab time,
l=long(32 bit), f=float,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sensor type; /* sensor type: d-displacement, v=velocity,
              frequency, etc. /* date/time these values became effective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d-double, c-complex, wevector, tetensor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* minutes to add to GMT to get local time
/* number of channels: if !=! then multiple
/* samples per second
/* s=short(16 bit), r=12 bit data, 4 lsb ti
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   imigneous, memetamorphic, sesedimentary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* date/time these values became effective
                                                                                                                                             is stored. Primary station information used by researcher.
                                                                                                                                                                                                                                    /* component azimuth clockwise from north,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* +-value of data where clipping begins
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* DESCRIPTRACE: descriptive information about a seismic trace.
Mormally followed by waveform. Thus length is usually
sixeof(struct descriptrace) plus length of trace in bytes.
                                                                                                                                                                                                                                                                                                   0 is vertical, 90 is horizontal
/* latitude, north is plus
/* longitude, east is plus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        n=nanometers (/sec or /sec/sec)
                                                                                                                                                                                                                /* station component identification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* station component identification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* maximum gain of the amplifier
                                                                                                                                                                                                                                                                                                                                                                                                                                       /* annotated comment code /* type device data recorded on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* time of first data sample
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* code for type of rock
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              n=normal, r=reversed
                                                                                                                                                                                                                                                                                                                                                                    /* elevation in meters
                                                                                                                                                                                                                                                           0 for vertical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a-acceleration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sitecondition; /* p=permafrost, etc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* a2d channel number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* d=dead, g=good
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* MUXDATA: header for multiplexed data
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* network name
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  * *
                                    or That effective;
                                                                                                                                                                                                                                                                                                                                                                                                                                         annotation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                data_units;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STRING netname[4];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           clip value;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             con myolts;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       struct descriptrace {
STATIDENT dt_name;
                                                                                                                                                                                                                STATIDENT SC Dame;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     rockclass;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 data type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              begintime;
                                                                                                                                                                                                                                                                                                                                                                                                enclosure;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  st status;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      or Time effective;
                                                                                                                                                                                      struct stationcomp (
                                                                                                                                                                                                                                                                                                                                                                                                                                                               recorder;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            rocktype;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          polarity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ar gain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 :sdussunu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             dig rate;
                                                                                                                                                                                                                                                                                                                                                  long;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     typedata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    descript;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              channel;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (Dered)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    loctime;
                                                                                                                                                                                                                                                                                                                           st lat;
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                                                                                                                                                                                                                                                                                 incid;
                                                                                                                                                                                                                                      SH INT axin;
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                                                                                                                                                                                                                                                                                 BH INT
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                                                                                                                                                                                                                                                                                                                                                CONTLAY
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LOST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CHAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* EQUIPMENT: Equipment making up a station/component. Primarily used for maintenance but may be referenced by researcher. One or more structures exist for each piece of equipment making up a station/component.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* id for structure at heginning of this sequence*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* code for matchine writing binary file for use in identifying byte order and encoding. *//* structure identifier: numbers defined above *//* structure length in bytes for fast reading and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* The letter S. If not present, error exists. Use
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                to identify new versions of the structure */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      knob setting or series resistor value of Lpad*/
knob setting or shunt resistor value of Lpad*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sensor corner frequency, weo freq, transmitter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* TERMINATOR: Structure to end a sequence of related structures when
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          to unscramble damaged files or tapes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   next piece of equipment toward recorder
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* magic character for sync in structtag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         identifier of this piece of equipment next piece of equipment toward sensor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* STRUCTTAG to identify structures when archived together
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  model such as L4, HS10, etc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   loaded in a serial file or on a serial device
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 reason change was made
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                serial number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         * *
                                                                                                                                                                                                                                                                                                               ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STATIDEST previous;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               define TOTAL STRUCTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       serial[8];
model;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SH INT id struct;
IG INT len_struct;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   frednescy;
                                                                                                             define DESCRIPTRACE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              struct terminator {
                                                                define STATIONCOMP
                                                                                                                                                     define CALIBRATION
                                                                                                                                                                                                                                              define EV_DESCRIPT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      define TRIGSETTING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LG INT len data;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  struct structtag (
                    define TERRIMATOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                 define SHOTGATHER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SH INT spareA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    struct equipment (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STATIDENT next;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     define ST MAGIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STATIDENT this;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             reason;
define STRUCTIAG
                                            define EQUIPMENT
                                                                                                                                                                                                                                                                                                               define FOCALMECH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    knobl;
                                                                                                                                 define LOCTRACE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        knob2;
                                                                                                                                                                                                    define RESIDUAL
                                                                                                                                                                                                                                                                                                                                                          define VELMODEL
                                                                                       define MUXDATA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  define TRICCERS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CHAR machine;
                                                                                                                                                                              define FEATURE
                                                                                                                                                                                                                                                                                                                                                                                                    define COMMENT
                                                                                                                                                                                                                                                                                                                                                                                                                           define PROFILE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPLEX
                                                                                                                                                                                                                                                                     define ORIGIN
                                                                                                                                                                                                                                                                                                                                      define MOMENT
                                                                                                                                                                                                                                                                                                                                                                                define LAYERS
                                                                                                                                                                                                                          define EVENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       define CALIB
                                                                                                                                                                                                                                                                                           define ERROR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CHAR sync;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRING
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                                                                                                                                                                        weight_used;
delay;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        struct ov descript (
STRING equame [20];
                                                                                                                                                                                                                                                                                                                                                                            mintensity;
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preferred;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         state[16];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     localtime;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           authority;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      depcontrl;
                                                                               IG INT event num;
STATIDENT re name;
                                                                                                          set phase;
                                                                                                                                                                                                                                                                                                                              authority;
                                                                                                                                                                                                                                                                                                                                                                                                                                        tectonism;
                                                                                                                                                                                                                                    emergence;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      waterwave;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    mechanism;
                                                                                                                                                                                                                      distance;
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or long;
depth;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            program;
                                                                                                                                                                                                                                                                                                                                                                                           ev type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    orgtime;
                                                                                                                                                                                                       azimuth;
                                                                                                                                                                                                                                                                                                                                               number;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     spareB;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  medium;
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                                                                 struct residual (
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                                                                                                                                                                                                                                                                                                                struct event (
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* ratio ampl. of first peak or trough to noise */
/* i=interactive, a=automatic, r=rtp, or user code*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* amplitude quality given by analyst: 0-4, etc. n=ignor amplitude information */
                                                                                                                                                                                                                                                                                                   ナンシン
     * *
                                                                                               agency code who digitized record; 0=original */
                                                                                                                                                        minimum value of data (type s,1,f only) */
maximum value of data (type s,1,f only) */
average value of first 200 samples (type s,1,f
                                                                                 g-good, t-telemetry noise, c-calibration, etc*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      units amplitude measured in: d-digital counts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* factor to multiply standard callb by to make
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* 1 or gain multiplier if gain range in effect
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* time this calibration becomes effective
/* time this calibration is no longer effective
  /* time of first data sample
/* minutes to add to GMT to get local time
/* s=short(16 bit), r=12 bit data, 4 lab time,
l=long(32 bit), f=float,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* timing quality given by analyst: 0-4, etc.
                                                                                                                                                                                                                                                                                               /* station component identification
/* pointer to pathname in file system
/* pointer to name of tape or offline storage
/* bytes from begining of file to trace
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* phase time, x value where pick was made
/* peak-to-peak amplitude of phase
/* period of waveform measured
                                                                 d=double, c=complex, v=vector, t=tensor
                                                                                                                                                                                                                                                                                                                                                                                                     /* CALIBRATIOM: calibration information for a station component
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* FEATURE: Observed phase arrival time, amplitude, and period.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* station component identification /* maximum gain of calibration curve
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* station component identification
/* observed phase code
                                                                                                              processing done on this waveform
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     mem on develocorder, etc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* wave onset descriptor, i or e
                                                                                                                                                                                                       number of clipped datapoints
                                                                                                                              number of samples in trace
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           peak at given frequency=1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        struct calib cal[NOCALPTS]; /* calibration info
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* first motion: U,D,+,-
                                                                                                                                            samples per second
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* pole
/* sero
                                                                                                                                                                                                                                                     of trace
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sig noise;
data_source;
tim_qual;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gain range;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              amplitude;
period;
                                                                               descriptor;
                                                                                             digi_by;
processed;
                                                                                                                                                                                                                                                   /* LOCTRACE: location
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SHINT obs. phase;
                                                                                                                                                                                                                                                                              struct loctrace {
STATIDENT lt_name;
STRING *filelog;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STATIDENT Ca name;
ME TIME begintime;
SH INT localtime;
CHAR detatype:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            direction;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        begint;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     fanb das
                                                                                                                                                                                                                                                                                                                           *tapelog;
beginlog;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          struct calibration (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    empunits;
                                datatype;
                                                                                                                                                                                         avenoise;
                                                                                                                                                                                                                                                                                                                                                                                                                                    define NOCALPIS 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    pole;
                                                                                                                                                        mindata;
                                                                                                                                                                        maxdata;
                                                                                                                                                                                                       numclip;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Kero;
                                                                                                                            length;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PLOAT normaliz;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        andt:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              onset;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FLOAT maxgain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                struct feature (
                                                                                                                                            rate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 time;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  struct calibr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPLEXIX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPLEXIX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ST TIME
ST TIME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MS TIME
                                                                                                          SH INT
LG INT
FLOAT
                                                                                                                                                                                                                                                                                                                                            21 22 .:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SH INT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SH INT
                                                                                                                                                                                                     16 INT
                                                                                                                                                                                                                                                                                                                              STRING
                                                                                                                                                       TLOAT
                                                                                                                                                                        TOM
                                                                                                                                                                                      LOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CHAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CHAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CHAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CHA
```

```
/* organization processing the data
/* version of solution within organization
/* processing status: f=final, a=automatic, etc */
/* p-preferred location
/* name of processing program h=hypo71, l=hypolayer,
i=fsc, c=cantroid, etc.
/* depth control: f=fixed, etc.
*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            faulting, N=normal faulting, T=thrust */
/* seiche, tsunami, etc.
/* t=thrust, s=strike-slip, n=normal, e=axplosive*/
/* medium containing explosion or event */
/* magnitude or pounds TNT for explosions */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* state, province or other political subdivision*/
/* hours to add to GMT to get local time */
                                                                                                                                                                                                                                                                                        // traveltime residual or phase magnitude */
/* weight used in this solution */
/* delay time or station correction used */
/* asimuth event to station, 0 north
/* distance in hm event to station
/* angle of emergence from source, 0=down,180=up*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* organization processing the data */
/* unique event number assigned by organization */
/* number of felt reports */
/* maximum Modified Mercall Intensity */
/* e-earthquake, E-explosion, n-unclear,
i=losquake, b-b_type, n-met, r-regional,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* unique event number assigned by organization */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           major, destructive earthquakes. This structure is typically associated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* Popular name used to refer to this earthquake*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* EV DESCRIFT: descriptive information about an event typically used for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             observed u=uplift, s=subsidence, S=strikeslip
                                                                                                                                                                                  set phase: /* phase code set for this solution set tim qual;/* timing quality assigned for this solution:
/* RESIDUAL: Calculated residuals for arrival times, magnitudes, etc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        t-teleseism, c-calibration, n-noise
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* hypocentral convergence character
/* geographic region code assigned locally
/* crigin time
/* latitude, north is plus
/* longitude, east is plus
/* depth in kilometers, + down
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* ORIGIM: information about a specific solution for a given event
                                                                                                                                             /* station component identification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* country of earthquake
                                                                                                                  /* unique event number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* EVENT: general information about an event
```

wards:/usr/suds/include/suds.h

```
>>>>>>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ****
                                              ****
                                                                                                                                                                                                                                                    >>>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       struct triggers {
STATIDENT tr name; /* station component identification
EN INT sta; /* short term average
SN INT lta; /* short term average
SN INT lta; /* long term average
SN INT abs_sta; /* short term absolute average
SN INT trig_value; /* value of trigger level (eta)
SN INT num_triggers;/* number of times triggered during this event
NS INK trig_time; /* time of first trigger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                METRING networks and METRING network name
METRING networks; /* time these values in effect
SH_INT constl; /* trigger constant 1
SH_INT constl; /* trigger constant 2
SH_INT constl; /* trigger constant 3
SH_INT constl; /* trigger constant 3
SH_INT constl; /* trigger constant 4
SH_INT constl; /* trigger constant 4
SH_INT wav_inc; /* trigger sweep time in seconds
FLOAT sweep; /* trigger sweep time in seconds
FLOAT sperture; /* seconds for coincident station triggers
IG_INT sparel; /* spare
                                                                                                                          0=constant,
                                                                                                                                                                                                                                                 /* structure identifier comment refers to
/* item in structure comment refers to
/* number of bytes in comment
                                                                                                                                                                                                     /* COMMENT: Comment tag to be followed by the bytes of comment
                                                                                                                                          1=linear, 2=exponential, etc.
                                           /* thickness in kilometers
/* p velocity at top of layer
/* p velocity at base of layer
/* s velocity at top of layer
/* s velocity at base of layer
/* velocity function in layer: 0°
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* TRIGSETTING: Settings for earthquake trigger system
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* SHOTGATHER: Grouping of waveforms by source event
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* TRIGGERS: Earthquake detector trigger statistics
                                                                                                                                                                                                                                                                                                                                                           /* PROFILE: Grouping of shotgathers by profile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* What is your suggestion? */
                                                                                                                                                                                                                                                                                                                                                                                                                        /* What is your suggestion? */
/* LAYERS: Velocity layers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            struct trigsetting (
                                              thickness;
                                                                                           sveltop;
svelbase;
                                                                            pvelbase;
                                                                                                                          function;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  struct shotgather {
                                                               pveltop;
                                                                                                                                                                                                                                                                                  length;
                                                                                                                                                                                                                                                                                                 unused;
                                                                                                                                                       sparef;
                                                                                                                                                                                                                                                    refer;
                                                                                                                                                                                                                                                                  item;
                                                                                                                                                                                                                                                                                                                                                                                          struct profile (
                                                                                                                                                                                                                                   struct comment (
                               struct layers (
                                                                                                                                                                                                                                                                                                                                                                                                           junk1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   int junk2;
                                                                                                                                                        SH INT
                                                                                                                         SH INT
                                                                                                                                                                                                                                                   SH INT
SH INT
SH INT
SH INT
                                                              LOAT
                                                                            TONT
TONT
                                                                                                         TLOAT
                                                TLOAT
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                                                                                                                                                                                                                                                                                                                                                            *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      *****
 *******
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* peprofile A to B, amerea within corners A B
/* latitude of point A, north is plus
/* longitude of point A, east is plus
/* latitude of point B, north is plus
/* longitude of point B, east is plus
/* longitude of point B, east is plus
                                                                                                                                                                        magnitude type: coda,tau,xmag ml,mb,ms,mw
number of magnitude readings reported
                                                                                                     number of p phases reported number of p times used in the solution number of s phases reported number of s times used in the solution
                                              drustmodel[6];/* code for model used in this location
                                                                                         /* number of stations reporting phases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4=mayeforms, etc.
constraints; /* solution constrained: dedeviatoric,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* sum of: 1=polarities, 2=amplitudes,
                                                                             distance in km to nearest station
                                                                                                                                                                                                                                                                   time this solution was calculated
                                                                                                                                                                                                       number of magnitude readings used
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* MOMENT TENSOR (Might be used instead of focal mechanism)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 preferred plane a or b or blank
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sc_moment; /* scalar moment
norm_ten[6]; /* normalized moment tensor
                                                              /* azimuthal gap in degrees
                                                                                                                                                                                                                                    average magnitude weight
  /* horizontal error in km
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       elquoo elduob
                /* vertical error in km
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* rake of plane a /* strike of plane b /* dip of plane b /* rake of plane b
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    strike of plane a
                                                                                                                                                                                                                                                                                                                                                            covarr[10]; /* covariance matrix
                             /* rms of residuals
                                                                                                                                                                                                                                                    rms of magnitude
                                                                                                                                                                                                                     magnitude value
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      dip of plane a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             network name
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           netname[4]; /* network namodelname[6];/* model name
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* VELMODEL: Velocity model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          spareL;
modeltype;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        datatypes;
                                                                                                                                                                                                                                                 mag rms;
effective;
              err depth;
                                                                                                                                                                                                                  magnitude;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     spareD[2];
                                                                                                                     used p;
rep s;
used s;
mag type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              prefplane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              spareC[3];
 err horiz;
                                                                                           num stats;
                                                                             nearstat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    arake;
bstrike;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     astrike;
                                                                                                                                                                                       rep m;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     struct focalmech (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        longA;
latB;
                                                                                                            rep p;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   adip;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                pqib;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 brake;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            struct velmodel {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       longB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          lata;
                                                               (deb)
                                                                                                                                                                                                                                                                                                                                            struct error (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        struct moment(
                                                                                                                                                                                                                                                                                                                                                                                                                      /* FOCALMECH
                                                                                                                                                                                                                                                              ST TOCK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STRING
                                                                                                                                                     SH INT
SH INT
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FLOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRING
                                                                                                                        SH DAT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LOHLAT
                                             STRING
                                                              SH DIT
                                                                                           THU HS
                                                                                                         SH DAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LOHLAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LOSTLAT
                                                                                                                                                                                                                                  PLOAT
                                                                                                                                                                                                                                                                                                                                                            PLOAT
FLOAT
FLOAT
                                                                                                                                                                                                                                                 TLOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TLOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FLOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         BITS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TLOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FLOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TLOAT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CHAR
                                                                            LOAT
                                                                                                                                                                                                                                                                                                              /* ERROR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CHAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CHAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CHAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SHAP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CHAR
```

:

```
/* Misc. defines to protect sloppy programmers
*/
#include <stdio.b>
extern FILE *st_open(),*efopen();
extern LG INT extro, dis();
extern DGUML atof(),make matime();
extern DGUML atof(),make matime();
extern LG INT size struct[];
extern LG INT size struct[];
extern LG INT size struct[],beg_struct[],width field[];
extern LG INT size struct[],authority[],feat_phase[];equip_reason[],ann_com[],
rock_type[],stat_proc[],authority[],feat_phase[],struct_names[];
```

#endif subs H

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```
"smoked glass recorder",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "j302ml amp/wco usgs",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "sgen cov/qma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ",såen ∞a/dure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ".sbsn ooa/du
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "såen coa/dure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "speu cow/que
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "speu cov/qu
                 "temperature sensor"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          deophone",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         deoppone",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     deophone",
                                  "pressure sensor",
                                                                                                                                                                                                                                                                                     "paper recorder",
                                                                gravity sensor",
                                                                              'magnetic sensor"
                                                                                                                                                                                                                                                    "discriminator",
                                                                                                                                                                                                                                                                                                   "film recorder",
                                                                                                                                                                                                                                                                                                                                 "atod converter"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ODA/dim
"strain sensor",
                                                                                                                                                                                                                                                                                                                                                                              "time receiver"
                                                                                                                                                                                                                                                                                                                                                                                            "magnetic tape",
                                                                                            "radon sensor",
                                                                                                                                                                                                                                                                                                                                                                                                                           "optical disk",
                                                                                                                                                                                                                                                                     "discr. rack",
                                               'tilt sensor",
                                                                                                                                                                          "transmitter",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CODES equip_model[]={
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CODES rock_type[]=(
0, "none given",
1, "soil",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "no comment",
                                                                                                                                                                                                                                      "solar cell",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         none given",
                                                                                                                                                           "date bujumne"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ', "not given",
                                                                                                           "amplifier",
                                                                                                                                                                                                                                                                                                                                              "computer",
                                                                                                                                                                                        "receiver",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CODES mach_type[] == {
                                                                                                                        amp/wco",
                                                                                                                                                                                                         "antenna",
                                                                                                                                                                                                                         "battery",
                                                                                                                                            "filter",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CODES ann_com[]={
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "sun 4",
                                                                                                                                                                                                                                                                                                                                                                 "clock",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 " 3402h3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "j4021
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            rdr.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   " 1402h
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "he10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            " 3502a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              iba.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     *ev17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1,502
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1402
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1,3501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   102,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 104,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   103,
                                                                                                                                                                                                                                                                                     311,
                                                                                                           300
                                                                                                                          301,
                                                                                                                                                          303,
                                                                                                                                                                        304,
                                                                                                                                                                                                                                                     309,
                                                                                                                                                                                                                                                                     310,
                                                                                                                                                                                                                                                                                                   312,
                                                                                                                                                                                                                                                                                                                   313,
                                                                                                                                                                                                                      307,
            EACH CODELIST WUST BE TERMINATED BY A. "O, "to designate the end of list When adding new code arrays add new names to extern at end of suds.h and put names in suds descr.h. You must then recompile suds io.c PlWard, U.S. Geological Survey, Menlo Park, Ca 94025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* instrument types: use a number less than 100 except in equipment structures
                                                                                                                                         static char Suds_codes_h[] = "8(#) suds_codes.h 1.2 11/17/88"; /* 8ccs Id */
codes: structure relating numeric codes to strings EACH CODELIST NUST BE TERMINATED BY A "0, 0," to
                                                                                                                                                                        #include "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "acceleration sensor",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "sp nofa U of alaska",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "displacement sensor"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "velocity sensor",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    complex number",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "lp hglp lamont",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CODES inst_type[]={
    0, "not specified",
                                                                                                                                                                                                                                                       "structure tag",
                                                                                                                                                                                                                                      "station ident",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "calib/points",
                                                                                                                                                                                                                                                                                                                                 "descriptrace",
                                                                                                                                                                                                                                                                                               "stationcomp",
                                                                                                                                                                                                                                                                                                                                                                                                                       "ev descript",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "hglp lamont",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "trigsetting",
                                                                                                                                                                                                        CODES struct_names[]={
                                                                                                                                                                                                                                                                                                                                                               "calibration",
                                                                                                                                                                                                                                                                    "terminator",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "shotgather",
                                                                                           #ifndef subs cobes H #define subs cobes H
                                                                                                                                                                                                                         "no struct",
                                                                                                                                                                                                                                                                                     "equipment",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "moment",
"velmodel",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "sp dwesn",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "lp dwesn",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "focelmech",
                                                                                                                                                                                                                                                                                                                                                                                          "residual",
                                                                                                                                                                                                                                                                                                                                                 "loctrace",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "ap wween",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Ip wasan",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "sben de"
                                                                                                                                                                                                                                                                                                                "muxdata",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "triggers"
                                                                                                                                                                                                                                                                                                                                                                                                                                       "origin",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "sp asro",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "lp agro",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "sp rstn",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   profile",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "ap aro",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "lp ratn"
                                                                                                                                                                                                                                                                                                                                                                               "feature"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "lp sro",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "layers",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "comment"
                                                                                                                                                                                                                                                                                                                                                                                                             event",
                                                                                                                                                                                                                                                                                                                                                                                                                                                           error",
                                                                                                                                                                                                                                                                                                                                                                                                            ដដ
```

```
/* amplitude is the duration of the window
/* for cods mag, time when signal is about twice noise*/
                                       *
            "finis", /* for cods mag, time when si
"x maximum amplitude",
"p first arrival",/* could be p, pn, pg, etc.
                                                                                                                                                                                                                                                                                                                                   'pospkp",
"pospkp",
"s first s wave",
                                                                                                                                                    pdiffracted",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CODES authority[]={
                                                                                                                                                                  pop",
poppkp",
                                                                                                                                                                                                                                             pkppkp",
pkppks",
pkpsks",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "scapkp",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "skssks"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   skp",
skkp",
skkkp",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sks",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "skkks"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         , gob
                                                                                                     dddd
                                                                                                                                                                                            pcs",
                                                                                                                                                                                                                                                                                               poks",
pkkp",
pkks",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "SSCS"
                                                                                       ',ddd
                                                                                                                                                                                                                                                                                                                                                                                                                             .....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             " spds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    .....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   . 8888 ..
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .1q3",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 , scs.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "1g",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "lr2",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Jr4",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "1q2",
                                                                                                                                                                                                                    , ddd
                                                                                                                                                                                                                                  pkp",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "1r3"
                                                                                                                                                                                                                                                                                                                                                                                                                ...
                                                                                                                58,58
                                                                                                                                                                                ช่
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "filtered and do offset removed", "filtered and corrected for instr. resp.", "filtered, do offset removed and corrected for instr. resp.",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "do offset removed and corrected for instr. resp.",
             solar sum amp usgs",
transmitter monitron",
receiver monitron",
                                                                                          motorola",
                                                                           transmitter motorola"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "corrected for instr. resp.",
                                                   transmitter ritron",
                                                                 ritron",
                                                                                                                                                                                                                                  solar panel solarex"
                                                                                                       scala",
                                                                                                                  scala",
                                                                                                                              scala",
                                                                                                                                           scala",
                                                                                                                                                        scala",
                                                                                                                                                                    scala",
                                                                                                                                                                                  scala",
                                                                                                                                                                                                          scala",
                                                                                                                                                                                            scala",
                                                                                                                                                                                                                    arco",
                                                                                                                                                                                                                                                                                                                                                                                                                                                             "unit replacement",
"reinstall after repair",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* logical sum of these fields */
CODES stat_proc[]={
                                                                                                                                                                                                                                                                                                                                   "battery change needed",
                                                                                                                                                                                                                                                                                                        "initial installation",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "configuration change",
   "span dama
                                                                                                                                                                                                                                                                                                                                                                                                           "seismically dead",
"signal not xeroed",
"signal too high",
"signal too weak",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "de offset removed",
                                                                                                                                                                                                                                                                                                                       "routine site visit"
                                                                                                                                                                                                                      solar panel
                                                                                                                                                                                                                                                                                                                                                                                                 "electronic noise",
                                                                                                                                                      "cl-150hr antenna
                                                                                                                                                                     antenna
                                                                                                                                                                                             antenna
                                                                                                    "ca5-150h antenna
                                                                                                                                antenna
                                                                                                                                         "cl-150hc antenna
                                                                                                                                                                                  antenna
                                                                                                                                                                                                          antenna
                                                                                                               "ca5-150v antenna
                                                                receiver
                                                                                        receiver
                                                                                                                                                                                                                                                                                                                                                                                    "seismic noise",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        reco_type[]={
    "not specified",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CODES rock_class[]={
0, "not specified",
                                                                                                                                                                                                                                                                                  equip_resson[]={
   "none given",
                                                                                                                                                                                                                                                                                                                                               "wandalism",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CODES feat_phase[]={
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "not given",
                                                                                                                                                                                                                                                                                                                                                                        "landslide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "filtered",
                                                                                                                                                                                                                                                                                                                                                             "flooding",
                                                                                                                                                                             .ca5-450
                                                                                                                             "Ca7-460
                                                                                                                                                                  "cl-150v
                                                                                                                                                                                                        "pr-450u
                                                .dt200
                                                                                    "ht200
                                                                         "ht200
                                                                                                                                                                                                                                .432h
 981
                                     "r45£
                                                                                                                                                                                                                   "1481
                                                                                                    600,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CODES
                                                                                                                                                                                                                                                                                                                                                                                                                       59
```

```
0, "not given",
101, "calnet usgs menlo park, ca",
102, "alask net usgs menlo park, ca",
103, "katmai net usgs menlo park, ca",
104, "scalnet usgs pasadens, ca",
120, "shumagin net lamont palisades,ny",
0, 0,
```

#endif subs cones H

```
89/03/29
10:48:51
```

```
LIBOBJ = asc2field.o descr_trace.o find_code.o st_error.o st_init.o st_time.o \
suds_io.o
                                                                                                                                                                                                                                                SRC = suds io.c st_time.c st_init.c st_error.c find_code.c descr_trace.c \ asc2field.o
                                                                                                INC = $(INCDIR)/suds descr.h $(INCDIR)/suds_codes.h $(INCDIR)/suds.h \
$(INCDIR)/st_err.h
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        descrittace.o find code.o st_init.o
st_time.o sude_io.o
sude_descr.h sude_codes.h stedit.o asc2field.o
st_time.o sude_io.o st_error.o
sude_io.o
SCCSID = "8(#)Makefile 1.2 11/18/88"
CFLAGS = -g -f68881
INCDIR = /usr/suds/include
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               enscriptW $ (SRC) Makefile
                                                                                                                                                                                                                                                                                                                                                                                                                                                 cp libsuds.a /usr/lib
ranlib /usr/lib/libsuds.a
                                                                                                                                                                                                                                                                                                                          libsuds.a: $(LIBOBJ)
ar rc libsuds.a $(LIBOBJ)
ranlib libsuds.a
                                                                                                                                                                                                                                                                                                                                                                                                                             install:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           list:
```

: \$ (INCDIR) /suds.h : \$ (INCDIR) /suds.h : \$ (INCDIR) /st_exts.h : \$ (INCDIR) /st_extor.h : \$ (INCDIR) /stds_descr.h : \$ (INCDIR) /suds_codes.h

```
case STR: if(stromp(string,"NOSTRG")==0) field=NOSTRG;
stropy(ptr,field);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              st_error(die, 0, "unrecognized type %d", type);
                                                                                                                                                                                                                                                                                                                                          if(stromp(string,"NOCHAR")==0) field=NOCHAR;
sscanf(field,"%c",(CHAR *)(ptr));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (ST_TDG *) (ptr)) =atof(field);
f(stromp(field, WOTDE") ==0) field=SOTDE;
(NG_TDG *) (ptr)) =atof(field);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if(stromp(field, "NOTIME") == 0) field=NOTIME;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    * ((LOWIAT *) (ptr)) = atof (field);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      *((SH_INT *) (ptr)) = atol (fleld)
*((IG_INT *) (ptr)) = atol (fleld)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 *((FLOAT *) (ptr.) = tof(field);
*((DOUBLE *) (ptr.) = tof(field)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  * (MIMI *) (ptr)) matoi (field);
  default: strcpy(temp,"ERROR");
    break;
                                                                                                                                                             ssc2field(string,ptr,type)
                                                                                                                                                                                                                                                                                                                                                                                         break:
                                                                                                                                                                               char *ptr, *string;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case MST: if
                                                                                                                                                                                                                                                                                                                    switch (type) {
                                                                                         return (temp);
                                                                                                                                                                                                                                                                                              field=string;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Case LLT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DBI:
                                                                                                                                                                                                                                                 char *field;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              default:
                                                                                                                                                                                                        int type;
convert a structure field to an ascii string and vies-versa PIMard, U.S. Geological Survey, Menlo Park, Ca 94025 5/18/88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if (*lg=atol (NOTIME)) sprintf(temp, "NOTIME");
else sprintf(temp, "%s", list_mstime(*db, 7));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if(*db=matof(NOTDE))sprintf(temp,"NOTDE");
else sprintf(temp,"%lf",*db);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if(*db=matof(NOTDE))sprintf(temp, "NOTDE");
else sprintf(temp, "%s", list_matime(*db, 6));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if (*lg=matof (NOTIME)) sprintf (temp, "NOTIME");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lf(*sh=matoi(Nobara)) sprintf(temp, "Nobara");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if(*ft=matoi(MODAIA))sprintf(temp,"MODAIA");
else sprintf(tamp,"%f",*ft); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if("db==atoi(NODATA)) sprintf(temp, "NODATA");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (*1g==ato1 (NODAIA)) sprintf(temp, "NODAIA");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ch=ptr; sprintf(temp,"%d",(int)*ch); break;
st=ptr; sprintf(temp,"%s",st); break;
sh=(short *)(ptr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             chmptr; sprintf(temp, "%c", *ch); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   slse sprintf(tamp,"%ld",*lg); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        else sprintf(tamp,"%lf", *db); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               else sprintf(temp, "%d", *sh); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                else sprintf(temp, "%ld", *lg);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               db=(double *) (ptr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               db=(double *) (ptr);
                                                                                                                                    #include "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ft=(float *) (ptr);
                                                                 static char Sccsid[] = "$W$\t$G$";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1G=(long *) (ptr);
if(verbose) {
                                                                                                                                                                                                                                               char *field2asc(ptr,type,verbose)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        lg=(long *) (ptr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1f (verbose) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           *db= *1g;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     else (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   break;
                                                                                                                                                                                 axtern double atof();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             char temp[MAXSTR];
                                                                                                                                                                                                                                                                                              int type, verbose;
                                                                                                                                                                                                      axtern int atoi();
                                                                                     define MAXSTR 36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Case MST:
                                                                                                                                                                                                                                                                                                                                                                                                            *10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        switch (type)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CASS CHR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     case BTS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CASS MIN:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              case STR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Case SHT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Case LMG:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Case FLT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               case DBL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Case STT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Case CAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Case CPX:
                                                                                                                                                                                                                                                                                                                                          ģ
                                                                                                                                                                                                                                                                                                                                                                                       *sb;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Case LLT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Case STI:
                                                                                                                                                                                                                                                                                                                                                                                                                                FLOAT *ft;
                                                                                                                                                                                                                                                                         char *ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     DOUBLE *db
                                                                                                                                                                                                                                                                                                                                                                                     SH INT
                                                                                                                                                                                                                                                                                                                                                               STRING
                                                                                                                                                                                                                                                                                                                                          CEAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       62
```

break;

break; break

break; break; break; break;

```
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```

```
if(sc->clip value!=0 &&
  (sh[i]>sc->clip value || sh[i]<sc->clip value))dt->numclip++;
if(i<ftoismin) ave+=sh[i];</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(sc->clip_value!=0 ff
(lg[i]>sc->clip_value || lg[i]<sc->clip_value))dt->numclip++;
if(i<NoISELEN) ave+=lg[i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (ft[i]>sc->clip_value || ft[i]<sc->clip_value))dt->numclip++;
                           structure for short, long, and float type traces. Structure must include other values. trace follows descriptrace structure unless argument trace! =0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       case 'f': ft=(float *) (trace==0? (char *) (dt+1):trace);
  for(i=0,dt->mindata=ft[0],dt->maxdata=ft[0];i<dt->length;i++)
  if(ft[i]<min) dt->mindata=ft[i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   for (i=0, dt->mindata=sh[0], dt->maxdata=sh[0];i<dt->length;i++)
                                                                                                                                                                                                                                                                  *
descritrace: put mindata, maxdata, avenoise, numclip in descriptrace
                                                                                                                                                                                                                                                                  /* number of samples to get average noise over
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dt->avenoisemave/(dt->length<NOISELEN?dt->length;NOISELEN);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    switch(sc->data_type) {
  case 's': sh=(short *)(trace==0? (char *)(dt+1):trace);
                                                                                                                  PLMard U.S.Geological Survey, Menlo Park, Ca 94025 5/4/88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if(sh[i]<min) dt->mindata=sh[i];
if(sh[i]>max) dt->maxdata=sh[i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        dt ->maxdata=lg[i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1f(ft[i]>max) dt->maxdata=ft[i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if (i < MOISELEN) sve+=ft[i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (sc->clip_value!=0 as
                                                                                                                                                                           static char Sccsid[] = "$W$\t$G$";
#include "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (1g[i]>max)
                                                                                                                                                                                                                                                                                                                           int descr_trace(sc,dt,trace)
struct stationcomp *sc;
struct descriptrace *dt;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   default: return(1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 float *ft,min,max;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            long *lg, clipnum;
                                                                                                                                                                                                                                                                  #define MOISELER 200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dt ->numclipe0;
                                                                                                                                                                                                                                                                                                                                                                                                                       char *trace;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   register 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  double ave;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          return (0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              short *sh;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ave=0.0;
```

```
89/03/29
```

```
/* Find numeric or secil codes in codelists stored in suds_codes.h

*/
static chr Scandil = "Way't tot";
#include "/urry rode/include/suds.h"
#include scandil = "Way't tot";

char find code (tr.,list)

for (include static)

for (include s
```

```
89/03/29
10:50:00
```

```
if (fcm) (*fcm) (errmum);
                                                                                                                                                                                                     va end (ap) ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if(stromp(st_errout,"stderr")!=0) {
  if((eout=fopen(st_errout,"w"))==NULL) {
    fprintf(stderr,"st_error: unable to open error out file %s\n",st_errout);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 st_nerr = { sizeof errlist/sizeof errlist[0] };
* Initialize list of error messages
* Bruce R. Julian, USGS Menlo Park Calif., 15 Dec 1983
* Revision 1.1 86/05/16 16:45:46 julian
* Initial revision
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Structure tag sync code wrong", "Serious suds I/O error",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Constraints are inconsistent",
                                                                                                                                                         #include "/usr/suds/include/st_error.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            fcm=(int (*)())va_arg(ap,int *);
errnum=va_arg(ap,int);
fnt=va_arg(ap,char *);
                                                                                                                                                                                                                                                                                                                                                                                                                               "Structure sizes mismatch",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              extern int errno, sys_nerr, nerr;
extern char *sys_errlist[];
                                                                                                                                     static char Sccsid[] = "$W$\t$G$";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Focal depth too great",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Solution is unbounded",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "Can not bracket root",
                                                                                                                                                                                                                                                                                                                                                            "Convergence failure",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       st_errbase = ERRBASE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Singular matrix",
                                                                                                                                                                                                                                                                                                                                                                                                   "No such station",
                                                                                                                                                                                                                                                                                                                                        "Not enough data",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      char *st errout="stderr";
FILE *sout;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "No such phase",
                                                                                                                                                                                                                                                                    "Illegal month",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              else coutmetderr;
                                                                                                                                                                                                                                                                                            "Illegal year",
                                                                                                                                                                                                                                                                                                                  "Illegal value"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sout metderr;
                                                                                                                                                                                                       *errlist[] = {
                                                                                                                                                                                                                                                  "Illegal day",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 #include <stdio.h>
() #include <varargs.h>
                                                                                                                                                                                                                                                                                                                                                                                 "Underflow".
                                                                                        * Mod PINard 4/7/88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            thar *progname=NULL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           st_error(va_alist)
va_dcl
                                                                                                                                                                                                                           "Error 0",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             int (*fcm) ();
char *fmt;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    initout=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if (initout) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ra_start (ap) ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    initout=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int errnum;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          va list ap;
                                                                                                                                                                                                     char
```

```
fprintf(eout, "\nERROR");
if(progname) fprintf(eout," in %s",progname);
fprintf(eout,":\n");
   doprnt(fact, ap, out);
   fprintf(eout,"\n");
   if(errno>0 &s errno<sys_nerr) fprintf(eout," %s\n",sys_errlist[errno]);
   if(errnomi=errno &s errnom >=ERREASE &s errnom <= st_nerr+ERREASE)
   if(errnomi=errno &s errnom);
   errnom();
   if(fcn)(*fcn)(errnom);
   va_end(ap);</pre>
```

```
create (type, ptr, datalength)
                                                                                                                                                                                                                                                                                                                                                                                                                                                      struct stationcomp sc;
                                                                                                                                    extern char *malloc();
                                                                                                                                                                                                                                                                                                                                                                               die (n) int n; {exit (n);)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILE *st, *st_open();
                                                                                                                                                                                                                                                                                   st_init (type, *ptr);
                                                                                                char **ptr;
                                                                                                                                                                                                                                                   return;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #endif DEBUG
                                                                                                                                                                                                                                                                                                                                           #ifdef DEBUG
                                                                                                                                                                                                                                                                                                                                                                                                                    main()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ptrlocmptr;
for(imbeq_struct[type]:stform[i].fstype==type;i++) {
  if(stform[i].nextfstype|=0) {
    st_init(stform[i].nextfstype,ptrloc+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *((ST_ING *)ptr) =atoi(stform[i].initval);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        * ((MS_TIME *)ptr) =atof(stform[i].initval);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 *((double *)ptr) = atof(stform[i].initval);
/* initialize a structure based on table in suds descr.h
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         * ((float *)ptr) matof(stform[i].initval);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *((short *)ptr) matoi(stform[i].initval);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     *((long *)ptr) =atoi (stform[i].initval);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         else initvalue(1,ptrloc+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            stropy (ptr, stform[i].initval);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          case MIN: *ptr=atoi (stform[i].initval);
                                                                                                                                                                                                                                                                                                                                                                                                                 switch(stform[i].ftype) {
    case CHR: *ptr=stform[i].initval[0];
                                                                         include "/usr/suds/include/suds.h"
                                       static char SccsId[] = "$W%\t%G%";
                                                                                                            extern struct sudsform stform[];
extern int beg_struct[];
extern double stof();
extern int stoi();
                                                                                                                                                                                                                                                                                                                                                                                                                                                          break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           break;
                                                         finclude <stdio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              st_init (type, ptr)
                                                                                                                                                                                                      initvalue (i, ptr)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 case CPX;
case STI;
default;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             char *ptrloc;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Case STR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Case SHT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       case ING:
                                                                                                                                                                                                                                                                                                                                      double *db;
ST TIME *et;
MS TIME *ms;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Case BTS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Case FLT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                II.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    case DBL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Case STT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Case MST:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Case CAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         register 1;
                                                                                                                                                                                                                                                                                                    long *lg;
float *ft;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      char *ptr;
                                                                                                                                                                                                                                               char *ptr;
                                                                                                                                                                                                                                                                                 short *sh;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 int type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .
                                                                                                                                                                                                                              int 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      66
```

```
st_error(0,0, "Unable to malloc pointer in st_create of length %d",
size_struct[type]+datalength);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          st_init(STATIONCOME, &sc);
st=st_open("stdout", "w");
st_put(&sc, STATIONCOME, sizeof(struct stationcomp), st);
*ptr=malloc(size_struct[type]+datalength);
if(*ptr==NULL) {
```

**

```
/* The same, with bound on cycle number */
#define LCYCLE(n, nd, 1) { t=qfloor(d-1,nd); if (t>1) t=1; y+=t*n; d==t*nd; }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ret=qfloor((long)(4*365+1)*(yr+4712), 4) + ecm[0][mo-1] + day +
  (cal==GREGORIAN ? -qfloor(yr, 100) + qfloor(yr, 400) + 2 : 0);
return(ret);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* JD -31777 = 31 Dec 4801 B.C. */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* JD -31739 = 31 Dec 4801 B.C.
/* Four-century cycle
/* 100-year cycle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* Find position within cycles that are nd days long */
#define CYCLE(n, nd) { t=qfloor(d-1,nd); y+=t*n; d==t*nd; }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* Four-year cycle
/* Yearly cycle
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* Compute calendar date from Julian Day Number */
                                                                                                                                                  /* Compute Julian Day number from calendar date */
                                                                                                                                                                                                                                                                                                                                                            /* Move Jan. & Feb. to end of previous year */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* Julian day number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* Year, month, day
/* Calendar type
                                                                                                                                                                                                           /* Year, month, day
/* Calendar type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                mnday((int)d, isleap(y, cal), pm, pd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LCYCLE (100, 36524, 3)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if (cal == GREGORIAN) {
                                       for (i=1; d>et[i]; i++)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        date (n, py, pm, pd, cal)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CXCLE (400, 146097)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             'pd, 'pd, 'pd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           d = n + 31739;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  else d = n + 31777;
     int *et = eom[lp];
                                                                              *pm = 1;
*pd = d - et[1-1];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LCYCLE (1, 365, 3)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MS_TIME get_metime()
                                                                                                                                                                                            jdn(yr, mo, day, cal)
int yr, mo, day;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if (y <= 0) --y;
                                                                                                                                                                                                                                                                                                                                                                             if (mo <= 2) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CYCLE (4, 1461)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        extern int errno;
                                                                                                                                                                                                                                                                                                                                                                                                                    mo += 12;
                                                                                                                                                                                                                                                                                                         if (yr < 0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  long d, t;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Y = -4799;
                                                                                                                                                                                                                                Cal;
                                                                                                                                                                                                                                                                     long ret;
                                                                                                                                                                                                                                                                                                                            YE++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int y;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              lond
                                                                                                                                                                                                                                int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                int
                                                                                                                                                                         long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       *
                                                                                                                                                                                                                                                 **
                Bruce Julian and PlWard, U. S. Geological Survey, Menlo Park, Ca. 94025
                                                                                                                                                                                                                                               /* Modern calendar
/* Old-style calendar
                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* floor(x/y), where x, y>0 are integers, using integer arithmetic */ #define qfloor(x, y) (x>0 ? (x)/y : -((y-1-(x))/y))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              **
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 * *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ***
                                                                                                                                                                                         /* 1 January 1970
st_time: time and date utility routines for suds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 = 1 && (yr%100 != 0 || yr%400 == 0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* Calculate month, day from day of year */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* Year
/* Calendar type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* Day of year
/* Leap year?
/* Month, day
                                                                                        include "/usr/suds/include/st_error.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* Month, day
/* Leap year?
                                                                          finclude "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                          (60*MINUTE)
(24*HOUR)
                                                                                                                                                                                                                                                                                                                                       (60*SECOND)
                                                      static char Sccsid[] = "%W%\t%G%";
                                                                                                                                                                                     2440588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    return som[lp][mo-1] + day;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* Recognize lesp years */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* Compute day of year */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if (cal - GREGORIAN)
                                                                                                              include <sys/time.h>
                                                                                                                                                                                                                                                                                                /* Time intervals */
Mdefine SECOND
Hdefine MINUTE
                                                                                                                                                                                                                           *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mnday (d, lp, pm, pd)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          yr++;
1 = (yr%4 == 0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         yrday (mo, day, lp)
                                                                                                                                                  include <stdio.h>
                                                                                                                                                                                                                         /* Calendar codes
#define GREGORIAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ř
                                                                                                                                 include <math.h>
                                                                                                                                                                                                                                                                                                                                                                                                                  typedef int bool;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              int mo, day;
bool lp;
                                                                                                                                                                                       define BASEJDM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        isleap(yr, cal)
                                                                                                                                                                                                                                                             define JULIAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1f (yr < 0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                bool lp;
int *pm,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           int yr;
int cal;
                                                                                                                                                                                                                                                                                                                                                          define HOUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               return 1;
                                                                                                                                                                                                                                                                                                                                                                             define DAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           static int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                bool 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Piov
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      boo1
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89/03/29
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double tim, tim1, sec;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     break;
                                                                                                                                                                                                                                      break;
                                                                                                                                                                                                                                                                                                             break;
                                                                                                                                                                                                                                                                                                                                                                                    break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           tim-get_mstime();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      return (outstr);
             switch (form) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #ifdef DEBUG
main()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             #endif DEBUG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             char *mon[]={"", "Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jul", "Aug", "Sep", "Oct",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (exr) return(0.0);
return((double) DAY*(jdn(year,month,day,GREGORIAN)-BASEJDN) +
HOUR*hour + MINUTE*min + SECOND*second);
                                                                                                                                                                      return( (MS_TIME) tp.tw_sec+((MS_TIME) tp.tw_usec) /1000000.0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (month==0) mnday (day,isleap(year, GREGORIAN), &month, &day);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (month<1 || month>12) {
    st_error(0,EBADMONTH,"Wonth is %d",month); err=1;
                                                                    if (gettimeofday(etp,etzp) == -1) {
    st_error(0,erro,"Unable to read system clock");
    return(0.0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             t decode_mstime(time,year,month,day,hour,min,second)
MS_TIME_time;
int *year,*month,*day,*hour,*min;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  st_error(0, EBADYEAR, "Year is %d", year); err=1;
                                                                                                                                                                                                                                             MS_TIME make_matime(year,month,day,bour,min,second)
int year, month, day, bour, min;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (day<1 || day>et [month] -et [month-1]) {
    st_error(0,EBADDAY,"Day is %d",day); err=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       date(d+BASEJDN,year,month,day,GREGORIAN);
                                                                                                                                                                                                                                                                                                                                                                   *et = eom[isleap(year, GREGORIAN)];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if (form<0 || form > MAXFORM) form=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  *second = time - (*min) *MINUTE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          int year, month, day, hour, min;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             char *list_mstime(time, form)
MS_TIME time;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "Nov", "Dec"};
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   time -= (*hour) *HOUR;
                          struct time zone tzp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   = floor(time/DAY);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           *min = time/MINUTE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           *hour = time/HOUR;
struct timeval tp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    double *second;
                                                                                                                                                                                                                                                                                                double second;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  time -= d*DAY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 #define MAXFORM 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     double second;
                                                                                                                                                                                                                                                                                                                                                                                                                                            1f (year==0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              char outstr[34];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            return (1);
                                                                                                                                                                                                                                                                                                                                        int err;
int *et
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int form;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     long d;
                                                                                                                                                                                                                                                                                                                                                                                                                      .0=II
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        68
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case 2: sprintf(outstr, "%02d %02d %02d% 02d %06.3f",year-1900,month,day,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      case 4: sprintf(outstr,"%02d/%02d/%02d %02d:%02d %06.3f",month,day,year-1900,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 6: sprintf(outstr, "%s %d, %d %02d:%02d %06.3f GMT", mon[month], day, year,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               case 3: sprintf(outstr, "%02d %02d %02d% 02d %02d %02d", year-1900, month, day,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            case 5: sprintf(outstr, "%02d/%02d/%02d %02d:%02d %02d", month, day, year-1900,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         case 7: sprintf(outstr, "%s %d, %d %02d: %02d %02d GMT", mon[month], day, year,
                                                                                            case 0: sprintf(outstr, "%02d%02d%02d%02d%06.3f", year-1900, month, day,
if (decode_metime(time, &year, &month, &day, &hour, &min, &second)==0) return(0);
                                                                                                                                                                                                                                       case 1: sprintf(outstr, "%02d%02d%02d%02d%02d%02d",year-1900,month,day,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               printf ("remade time is %f which differs by %f\n", timl, timl-tim);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      timl=make mstime(year,0,day,bour,min,sec);
printf("remade time is %f which differs by %f\n",timl,timl-tim);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       decode mstime(tim, &year, smonth, &day, &hour, &min, &sec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         for (1=0; i<9; i++) printf ("%s\n", list_mstime(tim, i));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 timl=make_metime(year,month,day,bour,min,sec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  day=yrday (month, day, isleap (year, GREGORIAN));
                                                                                                                                                                                                                                                                                     hour, min, (int) second);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      hour, min, (int) second);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   hour, min, (int) second);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               hour, min, (int) second);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   printf ("day of year is %d\n", day);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   printf("system time = %f\n",tim);
                                                                                                                                                   hour, min, second);
                                                                                                                                                                                                                                                                                                                                                                                                                               hour, min, second);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            hour, min, second);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         hour, min, second);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         int 1, year, month, day, hour, min;
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avail[fd].next.sync);

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67:05:01
82.00.08
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if (avail [fd] .next.machine! =MACHINE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* internal code for EOF kept in next.id struct */
/* internal code for initialization of stdin */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* structtag for data read */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* structtag for data to be read */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* last data put back on stream */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       number of structures read or written*/
                                 These routines are meant to be used like fopen, fread, fwrite, fflush, folose, fseek, ftell, and rewind except that basic error handling is done for you.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* streamtags structure: one instance is created for each open file, even those not opened by this software package
                                                                                                                                                                                                                                                                                                                                                                                 Error handling uses st error. Errors that should cause termination call die,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              this option, calls to st error in this file are followed by return (ST ERR) .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            To get a warning only, but continue, make die not call exit. To allow for
                                                                                                                                                     WARNING: Do not mix these routines with the standard I/O routines for the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* st_first: read first structtag in a stream. Should be not called by user.
                                                                                                                                                                                          same files at the same time. While these routines use the standard I/o
                                                                                                                                                                                                                               library, you may mess up these routines by interspersing the standard
                                                                                                                                                                                                                                                                 I/O calls. First close with st close and then open the same file with fopen or close with falose and then open with st open.
                                                                                                                                                                                                                                                                                                                                                                                                            a user supplied program that might simply call exit but might also
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PLWard, U S Geological Survey, Menlo Park, Ca. 4/8/88
                                                                                                                                                                                                                                                                                                                                                                                                                                                     reset terminal characteristics, clear buffers, etc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              #include "/usr/suds/include/st_error.h"
#include "/usr/suds/include/suds_codes.h"
#include "/usr/suds/include/suds_descr.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          die(n) int n; {exit(n);}
BASIC SUDS INPUT AND CUTPUT ROUTINES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               tinclude "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   static char SccsId[] = "%W%\t%G%";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            char *malloc(), *realloc();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          struct structtag this;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                struct structtag next;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              #define ST_NOTAG (-843)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 extern int errno, die();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   <sys/types.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     #include <sys/stat.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              #include <string.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              struct streamtags (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        #include <stdio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   int num struct;
int st_mode;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              char *filename;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 char *st_ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                define ST EOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     int s_fdsize=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                *avail;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   linclude
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st_error(0,0,"st_get: machine type %c is different from current type %c",
avail[fd].next.machine,MACHINE);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if((input=fopen(filename,type))==#fULL) {
    st_error(die,errno,"cannot fopen file %s with type=%s",filename,type);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         else st_error(dis,errno,"cannot fopen stderr with type=%s",type); return(NOLL);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      else st error (die, errno, "cannot fopen stdout with type=%s", type);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 else st_error(die,errno, "cannot fopen stdin with type=%s",type);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 error(die, errno, "st_get: malloc of streamtags for stdio");
                                                                                                                                                                                                                                                                                                                                                                                                                                                       avail=(struct streamtags *)malloc(3*sizeof(struct streamtags));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* st_open: open a suds file for reading or writing structures
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if(type[0]=='w' || type[0]=='a') return(stderr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(type[0]=="w' || type[0]=="a') return(stdout);
                                                                                                                                                                   /* st_initit: open stdio. Should not be called by user.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      avail[i].next.id_struct=1>0?0:ST_NOTAG;
                                                                                                                                                                                                                                char *st_names[]={"stdin","stdout","stderr"};
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if(strcmp(filename, "stderr") ==0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(strcmp(filename, "stdout") ==0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if(type[0] == 'r') return(stdin);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* efopen: fopen with error handling
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if(stromp(filename, "stdin")==0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               aveil[i].this.id struct=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     avail[i].st_mode=i>072:1;
                                                                                                                                                                                                                                                                                                                                                                                                                        if(s fdsize>=3) return(0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      aveil[i].num struct=0:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           avail[i].st ptr=NULL;
avail[i].filename=st
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILE *efopen(filename, type)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               char *filename, *type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   for (1=0; 1<3; 1++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if (avail-mNULL) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             return (NULL);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           return (NULL);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  return (MULL);
                                                                          return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               return (input);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILE *input;
                                                                                                                                                                                                                                                                                                  int st_initit ()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          s fdstze=3;
                                                                                                                                                                                                                                                                                                                                                                 int 1, fd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          mrrno=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              int fd;
```

ret=freed((char *)&avail[fd].next,l,sizeof(struct structtag),stream);

st_error(die,errno,"st_get: read structtag returns %d",ret);

if(ret==0 && errno==0) return(0);

if(ret!=sizeof(struct structtag))

int st first (stream, fd

FILE *stream;

int ret; int fd;

st_error(die, EBADSYNC, "st_get: initial structtag.sync=8d",

if (aveil[fd].next.sync!=ST_MGIC)

return (ST_ERR);

```
st_error(0,0,"st_unget: file %s not open for reading", avail[fd].filename);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* st tell: find the number of the structure that is about to be read counting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               st_error(0, errno, "st_unget: can only unget one structure for file %s",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   st_error(0,errno,"st_unget: cannot unget at beginning of file %s",
avail[fd].filename);
                                                                                                                                                                                                                                                                                                                                                         if(avail[fd].st_model=2) {
st_error(0,0,"st_flush: file %s not open for writing",fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         st_error(0,errno, "st_flush: fflush of file %s returns %d",
                                                                                                                                                                                                                                                    if(fd<0 || fd>=e_fdsize) {
st_exror(0,0,"st_flush: illegal file descriptor",fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if(fd<0 || fd>=s_fdsixe) {
    st_error(0,0,"st_unget: illegal file descriptor",fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* pointer to structure
/* input stream from fopen()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* st_unget: put one structure back on the stream
                                " st_flush; flush the structure stream
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  the first structure as 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            avail[fd].filename, ret);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (avail [fd] .st ptr!=NULL) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (avail[fd].num_struct==0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if ((ret=fflush(stream)) !=0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          avail[fd].filename);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if(s_fdsize<3)st_initit();
fd=fileno(stream);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if (avail[fd].st_mode!=1) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       st_unget (st_ptr, stream)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         avail[fd].st_ptr=st_ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  svail[fd].num struct-=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     fd=fileno(stream);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    return (ST ERR);
                                                                                                                                                                                                                                                                                                            return (ST ERR);
                                                                                                                                                                                                                         fd=fileno(stream);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           long st tell(stream)
                                                                                   st_flush (stream)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              return (LOF);
                                                                                                                                                                                                                                                                                                                                                                                                                    return (LOF);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   return (EOF);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        return (EOF);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILE *stream;
                                                                                                              FILE *stream;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILE *stream;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    char *st ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         return (ret);
                                                                                                                                                                       int ret, fd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                return (0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 int fd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int fd;
                                                                                                                                                                                                                                                                                                     avail=(struct streamtags *)realloc(avail, (fd+1)*sizeof(struct streamtags));
                                                                                                                                                                                                                                               /* increase allocation of avail */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if((ret=fclose(stream))!=0) st_error(0,errno,"fclose returns %d",ret);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      default: st_error(die, 0, "st_open: unrecognized file type %s", type);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       case 'r': avail[fd].st_mode=1; st_first(input,fd); break;
                                                                                                                                                                                                                                                                                                                                                      st_error(die,errno,"st_get: realloc of streamtags");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if(fd<0 || fd>=e fdsixe) {
st_error(0,0,"st_tell: illegal file descriptor",fd);
                                                                                                                                                                                           if((input=efopen(filename,type))==NULL) return(NULL);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                case 'a': avail[fd].st mode=2; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* efclose: close with error handling
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   avail[fd].st_mode=0;
return(NULL);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        avail[fd].filename=filename;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* st_close: close a suds file
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           avail[fd].this.id_struct=0;
avail[fd].next.id_struct=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           avail[fd].this.id_struct=0;
avail[fd].next.id_struct=0;
                                                                                                                                                                if(s fdsize<3)st initit();
FILE *st_open(filename, type)
char *filename, *type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         return (efclose (stream));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    avail[fd].num struct=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    avail[fd].num struct=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  avail[fd].filename"";
avail[fd].st_mode=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          avail[fd].st ptr=NULL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            avail[fd].st ptr-sull;
                                                                                                                                                                                                                                                                                                                                                                                      return (NULL);
                                                                                                                                                                                                                                          if (fd>=s fdsize) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        fd=fileno(stream);
                                                                                                                                                                                                                                                                                                                           if (avail-WULL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          return (ST ERR);
                                                                                                                                                                                                                    fd=fileno (input);
                                                                                                                                                                                                                                                                                                                                                                                                                                          fdsize=fd+1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     st_close (stream)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 switch (type[0])
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  int efclose (stream)
                                                                                                                                                                                                                                                                            free (avail);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     return (input);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILE *stream;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILE *stream;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   return (ret);
                                                                                                            FILE *input;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       int ret, fd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    int ret;
                                                                                   int fd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          int
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* *

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89/03/29
10:50:49
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st error(0,0,"st seek: you can not seek backwards on %s", avail[fd].filename);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if(avail[fd].st_mode!=1) {
    st_error(0,0,"st_tell: file %s is not open for reading",avail[fd].filename);
    return(ST_ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        the structtag entry is modified so that on the next call, the EOF is returned
                                                                                                                                     for (numwant=0; (inp=st_get (sptr, styp, slen, stream)) !=EOF; numwant++)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          It then reads the structure and the next structing to be sure the structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ends properly. This latter structtag is kept in the array structure avail, with one element for each open stream. When an EOF is encountered,
                                                                                                                                                                                                                                                                                                                                          default: st_error(die,0,"st_seek: ptrname must be 0, 1, or 2, not %d",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* st_get: get the next structteg and structure from opened stream. Returns
through arguments the pointers to the structure type and the structure.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           This routine reads the structtag for a file to identify the structure.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This routine uses malloc (3) to allocate space for each new structure.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(avail[fd].next.id_struct==8T NOTAG) st_first(stdin,0);
if(avail[fd].st_ptr!=NOTA) return((int)avail[fd].this.id_struct);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* st_peek: what is the id number of the next structure to be read
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if(fd<0 || fd>=e_fdsize) {
st_error(0,0,"st_tell: illegel file descriptor",fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The user must use st_free(3) to deallocate the space.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if (numwant< avail[fd].num struct) st rewind(stream);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if > 0 length of the structure
if ===0 end of file
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               return (0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if(numwant<avail[fd].num struct 66 fd<3) {
                                                                                                                                                                                                                                            -offset;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   return ((int) avail[fd].next.id struct);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              while (numwant>st_tell (stream)) {
  inp=st_get (&ptr, &typ, &len, stream);
      avail [fd] .filename);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if (numwant == avail[fd].num_struct)
                                                                                                                                                                                                                                                                             numwant-numwant-offset
                                                                                                                                                                         st free (ptr, inp);
                                                                                                                                                                                                                                         if(offset<0)offset=
                                       return (ST_ERR);
                                                                                                    rewind (stream);
                                                                                                                                                                                                        st rewind (stream)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if < 0 error
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if (s fdsize<3) st initit ();
                                                                                                                                                                                                                                                                                                                                                                                                             return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                 ptrname);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 st_free (ptr, inp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                fd=fileno(stream);
                                                                                                                                                                                                                                                                                                            break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Return value is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           int st peek (stream)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      to the caller.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILE *stream;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 return (0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               int fd;
                                                                                                                                                                                                                                                                                                                                                                                                       /* st_rewind: return to the beginning of the file. Can not be used on stdin, stdout,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* st_seek: position to read the nth structure in a file counting the first as 0.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             st_error(0,0,"st_rewind: you can not rewind %s", avail[fd].filename);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   st_error(0,0,"st_seek: you can not seek from end of %s",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          st_error(0,0,"st_rewind: file %s is not open", avail[fd].filename);
                                                                                                                                  if(avail[fd].st_mode==0) {
   st_error(0,0,"st_tell: file %s is not open", avail[fd].filename);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if(s_fdsize<3) st_initit();
if(avail[fd].next.id_struct==ST_NOTAG) st_first(stdin,0);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(fd<0 || fd>=e_fdsize) {
   st_error(0,0,"st_tell: illegal file descriptor",fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if(fd<0 || fd>=s fdsise) {
st_error(0,0,"st_tell: illegal file descriptor",fd);
if(fd<0 || fd>=s_fdsixe) {
   st_error(0,0,"st_tell: illegal file descriptor",fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      case 1: numwant=offset+st_tell(stream); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Can not be used on pipes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     case 0: numwant=offset; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  st_seek (stream, offset, ptrname)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  int fd, numwant, typ, len, inp, 1;
                                                                                                                                                                                                                                                                 return(avail[fd].num_struct);
                                                                                                                                                                                                                                                                                                                                                                                                                                              stderr, or pipes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              avail[fd].this.id_struct=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               avail[fd].next.id_struct=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (avail [fd] .st_mode==0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             avail[fd].num struct=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               avail[fd].st ptr=NULL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 2: 1f(fd<3) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rewind (stream, OL, 0);
st_first (stream, fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fd=fileno(stream);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       return (ST ERR);
                                                                                                                                                                                                     return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            return (ST ERR);
                                                                     return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           fd=fileno(stream);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       switch (ptrname) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           int st rewind (stream)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILE *stresm;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILE *streem;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 long offset
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      int ptrname;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1f(fd<3) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       char *ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                return (0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int fd;
```

```
/* read next structtag */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     st_error(0,0,"st_get: machine type %c is different from current type %c",
avail[fd].next.machine,MACHINE);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         st_error(die,EBADSYNC,"st_get: structtag.sync=%d",avail[fd].next.sync);
                                                                                                                                                                                                                         default : st_error(0,0,"Unknown data type %c in structure type %d",
                                                                                                                                                                                                                                                                                                                                                                                                                ret=fread((char *)&avail[fd].next,1,sixeof(struct structtag),stream);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          st_error(0,0,"st_put: file %s is not open for writing. Mode=%d",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      st_error(die,errno, "st_get: read structtag returns %d",ret);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if(ret==0 && errno==0) avail[fd].next.id struct=ST EOF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if(fd<0 || fd>=s fdsise) {
st_error(0,0,"st_put: illegal file descriptor", fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* structure length
/* output stream from fopen()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* pointer to structure
/* structure id
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         avail[fd].filename, avail[fd].st_mode);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     temp.len struct=size struct[st_typ];
temp.len data=st len=size struct[st_typ];
ret2=sizeof(struct structtag);
                                                                                                                                                                                                                                                                                                                   mx->numsamps-avail[fd].this.len_data/i;
                                                                                                                                                                                                                                                          mx->typedata, MUXDATA);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* st_put: write out structtag and structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 typ, st len, stream)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (avail [fd] .next .machine ! =MACHINE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        *st_len-avail[fd].this.len_struct;
                                                                                                                                                                                                                                                                                                                                                                                                                                            if (retimaizeof (struct structtag))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if (avail[fd].next.sync!=ST MAGIC)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      *st_typ=avail[fd].this.id_struct;
                                                                                                                                                                                    Case 't': i=12; break;
                                                                                                                                                        case 'd': i=8; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (avail[fd].st_mode(=2) {
     case 's': 1=2; break;
                                                                case 'f': 1=4; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if (s fdsixe<3) st initit ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                avail[fd].num_struct+=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              struct structtag temp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    temp.id struct st typ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  temp.machine=MACHINE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        return (ST_ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        fd=fileno (stream);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      temp. sync=ST MAGIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         st put (st ptr, st
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  int retl, ret2, fd;
                                                                                               CASO 'V':
                                                                                                                              CASO 'C'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            return (numin);
                                 Case '1'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          int st typ;
int st len;
FILE *stream;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             *at ptratemp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                char *st ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if(avail[fd].this.id struct===eUXDATA & savail[fd].this.len_data==0) {
  if(fstat(fd,fstt)== -1) st_error(0,0,"Cannot get length of input file %d",fd);
  avail[fd].this.len_data=stt.st_sixe_ftell(stream)-avail[fd].this.len_struct;
                                    ****
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* If resding MUXDATA structure and len data not set (=0), assume data goes to end of this file, and add that length to the structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 st_error(die,errno, "st_get: malloc fails for struct %d with length %d",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        st_error(die,errno, "st_get: reading struct id=%d returns %d expect %d",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* read struct */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if(avail[fd].st_ptr!=NULL) { /* read structtag put back by st_unget */
    *st_typ=avail[fd].this.id_struct;
    *st_len=avail[fd].this.len_struct;
                               /* pointer to structure returned. Space malloc'd
/* structure id returned
/* structure length
/* imput stream from fopen()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* malloc space for new struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (avail[fd].st_mode!=1) {
   st_error(0,0,"st_get: file %s is not open for reading. Mode=%d",
   avail[fd].filename,avail[fd].st_mode);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            return(avail[fd].this.len_struct+avail[fd].this.len_data);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      numget == vail[fd].this.len_struct + avail[fd].this.len_data;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (avail [fd].next.id_struct==ST_NOTAG) st_first (stdin, 0);
if (avail [fd].next.id_struct==ST_ROT) return (ROT);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if(fd<0 || fd>=s fdsixe) {
    st_error(0,0,"st_get: illegal file descriptor",fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              avail[fd].this.machine=avail[fd].next.machine;
avail[fd].this.id_struct=avail[fd].next.id_struct;
avail[fd].this.len_struct=avail[fd].next.len_struct;
avail[fd].this.len_data=avail[fd].next.len_data;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       avail[fd].this.id_struct,numin,numget);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               svail[fd].this.sync=avail[fd].next.sync;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                avail[fd].this.id_struct,numget);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (avail[fd].this.id_struct==#UXDATA)
int st_get(st_ptr, st_typ, st_len, stream)
char **st_ptr; /* pointer to st
int *st_typ; /* structure id
int *st_len; /* structure le
FILE *stream; /* input stream
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             numin=fread(temp,1,numget,stream);
if(numin!=numget) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       mx=(struct muxdata *)tempp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'st ptratvail[fd].st ptr;
                                                                                                                                                                                                                                                                                                                                                                                                          (s fdsize<3) st initit ();
                                                                                                                                                                                            numbet;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        switch(mx->typedata) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                avail[fd].st ptr=NUL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        temp=malloc(numget);
                                                                                                                                                                                          int ret, i, fd, numin,
                                                                                                                                                                                                                      char *temp, *tempp;
struct stat stt;
                                                                                                                                                                                                                                                                                         struct muxdata *mx
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                         fd=fileno(stream);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         return (ST ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if (temp==NULL) (
                                                                                                                                                                                                                                                                                                                                                  *st_typ=0;
```

```
89/03/29
10:50:49
```

```
if((retl=fwrite(&temp,1,ret2,stream))!=ret2)
st_error(0,erroo,"st_put: tag: wrote only %d out of %d",ret1,ret2);
if(ret2=fwrite(st_ptr,1,st_len,stream))!=st_len)
st_error(0,erroo,"st_put: data: wrote only %d out of %d",ret2,temp.len_data);
svail[fd].num_struct+=1;
return(retl+ret2);
}
/* st_free: free a block of memory malloc'd in st_get
While this routine simply calls free, it is important to use it to
allow for future code that might optimize the malloc and realloc calls
for massive but predictable utilization.
st_free(ptr,length)
char %ptr;
int length;
{
    return(free(ptr));
}
```

```
89/03/29
10:35:18
```

```
ah2st.o asc2st.o st2asc.o stdescribe.o stedit.o : /usr/suds/include/suds.h
st2asc.o : /usr/suds/include/st_error.h
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  stedit: stedit.o
$(CC) $(CFLAGS) -o stedit stedit.o -lsuds -lcurses -ltermcap
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              stdescribe: stdescribe.o $ (CC) $ (CC) $ (CC) $ (CC) $ (CC) $ (CFLAGS) -o stdescribe stdescribe.o -lauds
                                                                                                                  SRC = stedit, c stdescribe, c st2asc, c asc2st, c ah2st, c
                                                                                                                                                                                                                                                                          ascist: ascist.o
$(CC) $(GFIAGS) -o ascist ascist.o -lauds
                                                                                                                                                                                                                                                                                                                                                      stlasc: stlasc.o
$(CC) $(CTLAGS) -o stlasc stlasc.o -lsuds
                                                                                                                                                                                                        ah2st: ah2st.o
$(CC) $(CFIAGS) -o ah2st ah2st.o -lsuds
                                                                                                                                                                                                                                                                                                                                                                                                                    st2ah: st2ah.o
$(CC) $(CFLAGS) -o st2ah st2ah.o -lsuds
                                                                                                                                                                 all: ah2st asc2st st2asc stdescribe stedit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             enscriptW $ (SRC) $ (INC) Makefile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              cp ablet /usr/suds/bin
cp asclet /usr/suds/bin
cp stlasc /usr/suds/bin
cp stdescribe /usr/suds/bin
cp stedit /usr/suds/bin
SCCSID = "@(#)Makefile 1.2 3/22/89"
CFLAGS = -g -f68881
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sccs edit $ (SRC)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           install:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         •dit:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          list:
```

```
strncpy(sc.sc_name.st_name, ah.station.code,5); sc.sc_name.st_name[4]='\0';
temp[0]=ah.station.chan[0]; temp[1]=ah.station.chan[1]; /* pickup sp or lp */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sc.sc_name.inst_type=(short)find_code(temp,inst_type);
ret=strlen(ah.station.chan);
                                                                                                                                                                                                                                                                                                       outf=st_open(outfile,"w");
while((ret=freed(fsh,1,AHHEADSIZE,inf))==AHHEADSIZE) {
ah2st (infile, outfile, network, makeint, clipval, factor)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(ret>=1) switch (ah.station.chan[ret-1]) {
                                                                                                                                                                                                                                                                                                                                                                                   strncpy (sc.sc_name.network,network,4);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                case 4: dattype='t'; size=12; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                default: dattype='f'; size=4; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sc.sc_name.component='e';
sc.axim=90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   case 'M': sc.sc_name.component"'; sc.szim=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       case 1: dattype='f'; size=4; break;
case 2: dattype='C'; size=8; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               case 6: dattype='d'; size=8; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 'V': sc.sc_name.component='V';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 3: dattype='v'; size=8; break;
                                                                                                                                                                                                                                            *inf, *outf, *efopen(), *st_open();
                                                                                                                                                                                                                                                                                                                                                                                                 sc.sc name.network[3] = '\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                            streat (temp, ah. station. stype);
                 char *infile, *outfile, *network;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sc.st long-ah.station.slon;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sc. st lat = sh. station. slat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sizemsise*ah.record.ndata;
                                                                                                                                                                                                                                                                                                                                       st init (STATIONCOMP, &sc);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sc.incid=90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sc.incid=90;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sc.elevenh. station.elev;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        switch (ah.record.type) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sc.incid=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sc.azime0;
                                                                                                                                                                                                                                                                                                                                                                  if(network[0]!='\0') {
                                                                                                                                                                                                                                                                                                                                                     sc. clip walue-clipval;
                                                                                                                                                                                                                                                                                           inf= efopen(infile, "r");
                                                                                                    struct stationcomp sc;
struct descriptrace *dt;
                                                                                                                                                                                                 temp[20], dattype;
                                                                                                                                                                                    ret, size, siz, yr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 break;
                                                                                                                                    calibration ca;
                                              float clipval, factor;
                                                                                                                                                                                                                                                             com[MAXCOM];
                                                                                                                                                       origin or;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CARO ' .' :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Case 'n':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Case ' Z' :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CASO ' E' :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAS. 'W':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CASS 'E'
                                                                                                                                                                     ta t;
                                                                                                                                                                                                                  fout;
                                 int makeint:
                                                                           redister 1;
                                                                                        the bedde
                                                                                                                                                                     struct
                                                                                                                                        struct
                                                                                                                                                       struct
                                                                                                                                                                                                                 short
                                                                                                                                                                                                                                float
                                                                                                                                                                                                 char
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                * *
                                                                                                                                                                                                                                                                                                                                                                  *****
                                                                                                                                                                                                                                                                                                                                                                                                                                                        *
                                                                                                                                                                                                                                                                                                                                                                                                                           /* " longitude
/* " elevation
/* maximum gain at peak of calibration curve
/* normalization, factor to make calibration curve at
                                                                                                                                                                                                                                                                                                                                                                 /* station code
/* lpz,spn, etc. last char either z, n, or e
/* wwssn,hdlp,rstn,sro,asro,dwwssn etc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       peak equal 1 for a specific frequency
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                >>>>>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* station info */
/* event info */
/* record info */
/* freebles */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* minimum value of abscissa /* comment line
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* comment line
/* log of data manipulations
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cal[NOCALPIS]; /* calibration curve
 1.2 11/17/88";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          " origin time
comment line
                                                                                                                                                                                                                                                                                                                                                                                                             /* station latitude
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               longitude
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  event latitude
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               depth
                                                                                                                                                                                                                              >>>>>
                                                                                                                                                                                                                            /* year
/* month
/* day
/* hour
/* minute
/* second
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        station;
 static char SccsId[] = "@(#)ah2st.c
#include "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    record;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       event;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dep; /*
time ot; /*
ecomment[80]; /* c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            extern double make matime();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 extra [WEXTRAS];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     station info
event info
record info
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  time abstime;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rcomment [80];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            log[LOGSIZE];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                extern int errno, die();
                                                                                                        define AHHEADSIZE 1024
                                                                                                                                                                                                                                                                                                                                                                                               stype [8];
                                                                                                                                                                                                                                                                                                                                                                  code [6];
chan [6];
                                                                                                                                                                                                                                                                                                                                                     station info
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      record info
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  event info
                                                                                                                                                    define LOGSIZE 202
                                                                                                                                                                  #define NEXTRAS 21 #define NOCALPTS 30
                                                            finclude <string.h>
                                                                                         define MAXCOM 300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Calib
                                                                                                                                                                                                                                                                                                                                                                                                                slat;
                                                                                                                                                                                                                                                                                                                                                                                                                              #lon;
                                                                                                                                                                                                                                                                                                                                                                                                                                             elev;
                                              finclude <stdio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 delta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   duszem
                               finclude <time, h>
                                                                                                                                                                                                                                                           day;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ndata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 min;
                                                                                                                      define TYPEMIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               lon;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          typedef struct {
                                                                                                                                                                                                                                               8
                                                                                                                                     define TYPEDAX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ahhed;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                truct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                struct
flost
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tions 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       struct
                                                                                                                                                                                                                                                          short
short
float
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   long
float
float
                                                                                                                                                                                                                                                                                                                                                                                                                float
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                                                                                                                                                                                                                                             short
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               float
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          char
                                                                                                                                                                                                                                                                                                                                                                    char
                                                                                                                                                                                                                                                                                                                                                                                  char
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               char
                                                                                                                                                                                                                                                                                                                                                                                                  char
                                                                                                                                                                                                                 struct
                                                                                                                                                                                                                                                                                                                                                     struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       struct
                                                                                                                                                                                                                                                                                                                      ::
```

dt=(struct descriptrace *)malloc(size+sizeof(struct descriptrace));

```
case 'c': if(argv[i][2]!='\0') clipval= atof(&argv[i][2]);
else clipval=atof(argv[++i]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          default: st_error(0,0,"Unrecognized argument %s", argv[i]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if(numfil==0) ah2st("stdin",ofile,network,makeint,clipval,factor);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if(argv[i][2]!='\0') factor= atof(&argv[i][2]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         case 'n': if(argv[i][2]!='\0') network= &argv[i][2];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 'o': if(argv[i][2]!='\0') ofile= &argv[i][2];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ab2st (argv[i], ofile, network, makeint, clipval, factor);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               else factor=atof(argw[++i]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   else networkmargv[++1];
                                                                                                                                                                                                                                                                                                                                                                                                                                return(sizeof(struct comment)+cm->length);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  else ofilemargy[++i];
                                make_comment (str, refer, item, comment)
                                                                                                                                                                                                                                                                                                                                                                                            strncat (cm+1, comment, cm->length);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                case 's': makeint=1;
                                                                                                                                                                                                                                                                                                                             cm->length=strlen(comment);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  switch(argv[i][1]) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    preak;
                                                                                                                                                                                                                              cm=(struct comment *)str;
                                                                                                                                                                                                                                                                                                                                                              cm->unused=atoi (NODATA);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if(argv[i][0]-'-') {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            extern char *progname;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           char *network, *ofile;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          float clipwal, factor;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               die(n) int n; (exit(n);)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for (i=1; i<argc; i++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int numfil, makeint;
                                                                                                                                                             struct comment *cm;
                                                                                                  char *str, *comment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        prognamemargy[0];
                                                                                                                                                                                                                                                                  CH->refer=refer;
                                                           int refer, item;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ofile="stdout";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 numfil+;
                                                                                                                                                                                                                                                                                                   Cm->itemmitem;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      clipval=0.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           char **argv;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             main (argc, argv)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             register 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       network"";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      factor=1.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        makeint=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  else {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         num£11=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              int arde;
                                   pt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      st_init(CALIBRATION, &ca);
for(l=0;i<sizeof(STATIDENT);i++) ca.ca_name.network[i]=sc.sc_name.network[i];</pre>
                                                                                      for(i=0;i<sizeof(STATIDENT);i++) dt->dt_name.network[i]=sc.sc_name.network[i];
if(dt==NULL)st_error(die,errno,"Unable to malloc struct descriptrace");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if(ah.event.lat!=0.0 && ah.event.lon!=0.0 && ah.event.dep!=0.0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   st put(dt,DESCRIPTRACE, size+sizeof(struct descriptrace),outf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ah.event.ot.hr, ah.event.ot.mm, (double) ah.event.ot.sec); st_put (sor,ORIGIM, sizeof (struct origin), outf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            or.orgtime=make mstime (yr, ah.event.ot.mo, ah.event.ot.day,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              siz=make comment (com, DESCRIPTRACE, 0, ah.record.rcomment);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      st_put(ssc, STATIONCOMP, sizeof(struct stationcomp), outf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      siz=make comment (com, ORIGIN, 0, ah. event.ecomment);
                                                                                                                                                                                                                        ah.record.abstime.day.ah.record.abstime.hr,
ah.record.abstime.mn, (double) ah.record.abstime.sec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 siz=make_comment(com,DESCRIPTRACE,0,ah.record.log);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          st_put (&ca, CALIBRATION, sizeof (struct calib), outf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ca.cal[i].pole.cimah.station.cal[i].pole.ci;
ca.cal[i].xero.crmah.station.cal[i].xero.cr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ca. cal[i].pole. cr=ah. station. cal[i].pole. cr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ca.cal[1].zero.ci=ah.station.cal[1].zero.ci;
                                                                                                                                                                                        dt->begintime=make mstime(yr, sh.record.abstime.mo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for (i=0; i<dt->length; i++) out [i]=in[i]*factor;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if(ah.station.DS!=0.0 as ah.station.A0!=0.0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (strlen(sh.event.ecomment)>0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          st_put (com, COMMENT, siz, outf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if(strlen(ah.record.rcomment)>0)
                                                                                                                                                                                                                                                                                                                                                  fread(dt+1,1,size,inf);
if(makeint && dt->datatype=='f')
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  st put (com, COMMENT, siz, outf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  st put (com, COMMENT, siz, outf);
                                                                                                                                                                                                                                                                                                                        dt->rate= 1.0/ah.record, delta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(strlen(ah.record.log)>0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ca.normaliz=ah.station.A0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ca.maxgain=ah.station.DS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         for(i=0;i<NOCALPTS;i++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  or.or_long=ah.event.lon;
                                                                                                                                                                                                                                                                                          dt->length=ah.record.ndata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        not used
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  or.or lat-ah.event.lat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sc.data type=dt->datatype;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                or.depth=ah.event.dep;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     descr trace (gsc, dt, dt+1);
                       et init (DESCRIPTRACE, dt);
                                                                                                                            yr-ah.record.abstime.yr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (yr<1900) yr+=1900;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    st init (ORIGIN, Gor);
                                                                                                                                                                                                                                                                                                                                                                                                                    in=(float *) (dt+1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      size=2*dt->length;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 yr-ah. event. ot. yr;
                                                              dt->datatype=dattype;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         dt->datatype='s';
                                                                                                                                                          if (yr<1900) yr+=1900;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          out=(short *)in;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ah.record.rmin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      free (dt);
```

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asc2field(field,ptr+stform[i].offset,stform[i].ftype);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    while ((field=next_field(inf, &end))!=NULL) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DATATYPE, type);
                                                                                                             asc2st (infile, outf, afile, sepstr, verbose)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if (type<0 || type>roral structs)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ptrm(char *)malloc(slen+dlen);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        getfields (ptr, type, slen, inf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           for (1=0; 1<datlen; 1++) (
                                                                                                                                        char *infile, *cfile, *sepstr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    switch (DATATYPE) (
                                                                                                                                                                                                                                                                                                                                                                                                                                            extern int beg struct[];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        inf=efopen (infile, "r");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Cass ' c':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Case ' V' :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Case 't':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         typematoi (fleid);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CASO 'C':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CASO 'V':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    case 't':
                                                                                                                                                                                                                                                                                                                                                                                              *field;
                                                                                                                                                                                                                                                                                                                                                  datlen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (babble)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (dlen)
                                                                                                                                                                                                                                                                             type;
                                                                                                                                                                                                                                                                                                                                                                           dt:
                                                                                                                                                               Int verbose;
                                                                                                                                                                                                                                   register 1;
FILE *inf;
                                                                                                                                                                                                                                                                                                      slen;
                                                                                                                                                                                                                                                                                                                               dlen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              float *ft;
double *db;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    * sh;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         *1g;
                                                                                                                                                                                                                                                                                                                                                                                                                       •nd;
                                                                                                                                                                                      FILE *outf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   pud=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    port
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           long
                                                                                                                                                                                                                                                                                                                                                                                                char
                                                                                                                                                                                                                                                                                                                                                                           Char
                                                                                                                                                                                                                                                                                                                                                                                                                       þ
                                                                                                                                                                                                                                                                               H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       getfields (ptr+stform[i].offsst, stform[i].nextfstype, slen-stform[i].offsst,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  fprintE(stderr,"Input (at %5d bytes): '%s'\n", stform[i].offset,field);
if(end) st error(die,0,"improper end to structure %d",type);
if(stromp(field,"MODATA")==0) field=WODATA;
if(stromp(field,"MOLIST")==0) field=WOLIST;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for(i=beq_struct[type];stform[i].fstype==type && stform[i].offset <slen;i++) {</pre>
                                                                                                             /* character representing datatype is offset
22 bytes from beginning of MUXDATA and
                                                                                                                                                                                                                                                                             *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              *
                                                                                      /* maximum length of input line */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         case '\"':if(lsstr) { fgetc(stream); goto out; } isstr=l; break;
case '\'':if(lschr) { fgetc(stream); goto out; } ischr=l; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* buffer for actiive field in instr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case ROF: if(j!=0) goto out; *end=1; return(NULL);
                                                                                                                                                                                                                                                                               /* index of character on input line
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        case ' : if(j=0) break;
case ',: if(ischr) { fgetc(stream); goto out;}
if(lastr) { buf[j++]=c; break;}
                     PLWard, U.S. Geological Survey, Menlo Park, Ca 94025
                                                                 1.2 11/17/88";
                                                                                                                                                             DESCRIPTRACE
/* asc2st: convert an ascil file to suds format
                                                                   static char SccsId[] = "@(#) asc2st.c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            field=next_field (inf, cend);
                                                                                                                                                                                  #include "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(stform[i].nextfstype!=0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      switch (omfgetc(stream)) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          int getfields (ptr, type, slen, inf)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         pnf[]++]=c;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        goto out;
                                                                                                                                                                                                                                                                                                                                                char *next field (stream, end)
                                                                                                                                                                                                     extern int stform len;
extern SUDS FORM stform[];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               case '\n': break;
                                                                                        #define MAXIN 256
#define DATATYPE ptr[22]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Case //t/:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              *field;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              char buf[MAXIM];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (babble)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    int isstr, ischr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        isstr=ischr=j=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     default:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int type, slen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         • pud
                                                                                                                                                                                                                                                                                                                                                                   FILE *stream;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               buf[j]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        return (buf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           register 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                            register j;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cher *ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   while (1) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILE *inf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       9150
                                                                                                                                                                                                                                                                                                                                                                                              int *end;
                                                                                                                                                                                                                                                                                                    int babble;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         char c;
                                                                                                                                                                                                                                                                               int ind=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    cher
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          out
```

```
case 'f': datlen=dlen/4; ft=(float *) (ptr+slen); break;
case 'd': datlen=dlen/8; db=(double *) (ptr+slen); break;
default: st_error(die,0,"unknown data type %c after structure type %d",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(ptr==MULL) st_error(die,0,"Unable to malloc for structure %d length=%d",
type, slen+dlen);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    fprintf(stderr, "Struct %d length=%d data length=%d\n", type, slen, dlen);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if(type!=MUXDATA && type!=DESCRIPTRACE)
st_error(die,0,"data should not follow structure type %d",type);
switch(DATATYPE) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       case 'f': *(ft++)=(float)atof(next field(inf, fend)); break;
case 'd': *(db++)=(double)atof(next_field(inf, fend)); break;
/* input stream
/* type of structure being read in
/* langth of structure being read in
/* length of data following this structure, bytes*/
/* length of data following this structure, bytes*/
/* pointer to structure
*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     case 's': *(sh++)=(short)atoi(next_field(inf,send)); break;
case 'l': *(lQ++)=(long)atoi(next_field(inf,send)); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       case 's': datlen=dlen/2; sh=(short *) (ptr+slen); break;
case 'l': datlen=dlen/4; lg=(long *) (ptr+slen); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           st_error(die,0,"illegal structure type %d",type);
slen=atoi(next_field(inf, fend));
dlen=atoi(next_field(inf, fend));
```

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89/03/29
10:36:36
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default: st_error(0,0,"Unrecognized argument %s", argv[i]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             case 's': if(argv[i][2]!='\0') sepstr= fargv[i][2];
else sepstr=argv[++i];
                                                                                                                                                                                                                                                                                                                                                          asc2st(argv[1],outf,cfile,sepstr,verbose);
numfil++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           outf=st open(ofile,"w");
asc2st("stdin",outf,cfile,sepstr,verbose);
st_put (ptr, type, slen+dlen, outf);
free (ptr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  outfmst_open(ofile,"w");
outcl=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     case 'v': verbose=1;
break;*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 'V': babble=1;
                                                                                                                                                                                                                                   int verbose, numfil, outcl;
char *sepstr, *ofile, *cfile;
FILE *outf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        break; */
                                                              extern char *progname;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if (out cl) {
                                                                                                                                                                                                                                                                                      progname=argv[0];
numfil=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if (numfil==0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                st_close (outf);
                                                                                                                                                                                           char **argv;
                                                                                                                                                                     main(argc,argv)
int argc;
                                                                                                                                                                                                                       register 1;
                                                                                                                                                                                                                                                                                                                                                     sepstra" ";
                                                                                                                                                                                                                                                                                                              verbose=0;
                                                                                                                            exit (in);
                                                                                                                                                                                                                                                                                                                                        outcl=1;
                                                                                                      int in;
                                                                                         die (in)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *
                                                                                                                                                                                                                                                                                                                                                                       71
```

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case CALIBRATIOM: st_error(0,0,"Calibration structure not translated.");
    while ((tr_len=st_get(&st_ptr, &st_type, &st_len, infile)) !=EOF) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   lam.event.ot.day=day;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            lam.event.ot.secwsec;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      lam.record.rmin=0.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               lam.event.ot.yr=yer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         lam.event.ot.mo-mon;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          lam.event.ot.hr=our;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    lam.event.ot.mn=min;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  lam.station.DS=0.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    chast ptrist len;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ch=ch+leng;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Emin, 6sec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Emin, Esec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      break;
                                                                                                                                                                                                                                                                                                                       break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Case ORIGIN:
                              switch (st type)
                                                        Assumes input file name begins with st. and then writes output file to ah. Writes data out as FLOAR, inputs as long, short, float, etc.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      st_error(0,0,"Illegal file %s: File name must begin with st.\n");
st2ah: convert data in st (SUDS) format to ah (Lamont) format */
                         Event information, if present, must preced traces
Assumes input file name begins with st. and then
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* zero unused parts of ah structure */
                                                                                                                                                                                                                                                                                      linclude "/usr/suds/include/abheader.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if(strncmp(argv[i], "st.", 3) !=0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           lam.station.cal[i].pole.r=0.0;
lam.station.cal[i].pole.i=0.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           lam.station.cel[i].zero.r=0.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int i, st_type, st_len, tr_len, leng;
char *ch, *st_ptr,outname[50];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       lam.station.cal[i].zero.1=0.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        outname[0]='a';
outname[1]='h';
infile=st_open(argv[i],"r");
outfile=fopen(outname,"w");
                                                                                                                                                                                                                                                                                                             #include "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      lam.event.ecomment[0]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        stropy (outname, argv [1]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            struct descriptrace *dstr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 for (i=0; i<NOCALPIS; i++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  struct station comp *stcp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Int yer, mon, day, our, min;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              lam.event.ot.sec=0.0;
                                                                                                                                                                                                                                                                                                                                                                                           die(n) int n; {exit(n);}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       lam. station. A0=0.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for (i=1; i<argc; i++)
                                                                                                                                                                                                                                                                                                                                                                                                                   extern char *progname;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   struct origin *org;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     lam.event.ot.day=0;
                                                                                                                                                                                                             FILE *infile, *outfile;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             lam. event. ot .hr=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    lam.event.ot.yr=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           lam.event.ot.mo=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       lam.event.ot.mn=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        lam.event.lat=0.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          programemergy[0];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                lam. event.lon=0.;
                                                                                                                                                                                                                                                              #include <rpc/rpc.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          lam.event.dep=0.;
                                                                                                                                                                                   finclude <stdio,b>
                                                                                                     PLWard 3/22/89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         float ftrace;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      char **argv;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    main (argc, argv)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        double sec;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           short *sh;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               float *fl;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       int *in;
                                                                                                                                                                                                                                                                                                                                          abbed lam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              180 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          79
```

decode_mstime(dstr->begintime, &yer, &mon, &day, &our, decode mstime (dstr->begintime, &yer, &mon, &day, &our, list_code(stcp->sc_name.inst_type,inst_type)); case 's': sh=(short *) (ch); ftrace= *sh; case '1': in= (long *) (ch); ftrace= *in; case 'f': fl=(float *) (ch); ftrace= *fl; stropy (lam. station. code, stop->sc name. st name); lam.record.maxamp=dstr->maxdata-dstr->avenoise; lam. station. chan [0] = stcp->sc_name.component; case 'r': sh=(short *) (ch); leng=2; for (i=0, leng=0;i<lam.record.ndata;i++) (ftrace= *sh/16.0; break; case DESCRIPTRACE:dstr=(struct descriptrace *)st_ptr; ftrace=(ftrace-dstr->avenoise); fwrite(&lam, 1, AHHEADSIZE, outfile); case STATIONCOMP: stcp=(struct stationcomp *) st ptr; lam.record.delta=1./(dstr->rate); fwrite (fftrace, 4, 1, outfile); lam.station.slat=stcp->st_lat; lam.station.slon=stcp->st_long; if(stcp->sc name.inst_type==0)
lam.station.stype[0]='\0'; leng=2; break; leng=4; break; lam.record.ndata=dstr->length; leng=4; break; lam.record.rcomment[0]='\0'; org=(struct origin *)st_ptr; lam.station.elev=stcp->elev; switch(detr->datatype) { lam.event.lon=org->or_long; lam.record.abstime.secwsec; lam.record.abstime.day=day; lam.event.lat=org->or lat; lam.record.abstime.yr=yer; lam.record.abstime.mommon; lam.record.abstime.hr=our; lam.record.abstime.mn=min; dstr->datatype); lam.event.dep=org->depth; stropy (lam. station. stype, lam.record.log[0]='\0'; lam.record.type=ahrioar,

```
)
st_close(infile);
fclose(outfile);
st_free(st_ptr);
```

break;

*

```
indent, structhead, struct names[type].meaning);
for (i=0,indent[0]='\0';i<=level;i++) sprintf(indent,"%s%s",indent,indenti);</pre>
                                                                                                                                                                                                                    for (i=0, indent[0]='\0';i<level;i++) sprintf(indent, "%s%s",indent,indenti);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     for(i=beq_struct[type];stform[i].fstype==type &s stform[i].offset<len;i++) {</pre>
                                                                                                                                                                                                                                                                              fprintf(outf,"%s%s%s%s (length=%d+%d=%d bytes)\n",indent,header,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if(verbose) sprintf(outline,"%s%-20s:\t",indent,stform[i].fname);
                                                                                                                                                                                                                                                                                                                structhead, struct_names[type].meaning,len,imp-len,imp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lf(*ft==atoi(NODATA))sprintf(temp, "NODATA");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sh=(short *) (ptr+stform[i].offset);
if(*sh=matoi(MODATA)) sprintf(temp, "NODATA");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lf(*lg==atoi(MCDATA)) sprintf(temp, "NCDATA");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sprintf(temp,stform[i].fformat, (int)*ch);
sprintf(outline,"%sfs",outline,temp);
if(stform[i].codelist!=0) code= *ch;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         alse sprintf(temp, stform[i].fformat, *sh);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                alse sprintf(temp, stform[i].fformat, *lg);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           alse sprintf(temp, stform[i].fformat, *ft);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     printf(outline, "%s\"%s\"", outline, temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            header, type, sepstr, len, sepstr, inp-len, sepstr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sprintf(temp, stform[i].fformat,*ch);
sprintf(outline, "%s'%s'", outline, temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              printf(outline, "%s%s", outline, temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sprintf(outline, "%s%s", outline, temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            printf(outline, "%s%s", outline, temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case DBL: db=(double *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if(stform[i].codelist!=0) code= *ch;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(stform[i].codelist!=0) code= *sh;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lf(stform[i].codelist!=0) code= *lg;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ft=(float *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sprintf(temp, stform[i].fformat, ch);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                lg=(long *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        case CHR: chmptr+stform[i].offset;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            case MIM: ch=ptr+stform[i].offset;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ch=ptr+stform[i].offset;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sprintf(outline, "%s%d%s%d%s%d%s",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               fprintf(outf,"%s\n",outline);
sprintf(outline,"%s",indenti);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(strlen(outline)>=linelength) {
                                                                                                                                                                                                                                                                                                                                                                          else fprintf(outf,"%s%s%a\n",
                                                                                                fprintf(outf, "%s\n",outline);
                                                                  if (strlen (outline) >= linelength)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       switch(stform[i].ftype) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           break;
                                                                                                                                 outline[0]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1f(level-0) {
                                                                                                                                                                                                                                                     if(level==0) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Case LLT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CASS STR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Case LMG:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CASO FLT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          case BTS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Case SHT:
                                                                                                                                                                                         if (werbose) {
                                      ptrapointer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           liststruct (type, pointer, len, inp, level, out f, outline, sepstr, verbose, nolist, indenti, beader)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             liststruct (type, ptr, len, inp, 0, outf, outline, sepetr, verbose, nolist, indenti, header);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Skipped unrecognized structure type %d of length %d\n",type,len);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            st2ssc(infile,outfile,cfile,sepstr,verbose,nolist,indenti,header)
char *infile,*outfile,*cfile,*sepstr,*indenti,*header;
stlasc: convert suds structures to ascil
PLWard, US Geological Survey, Menlo Park, Calif 4/29/88
                                                                                           = "8(#) st2asc.c 1.2 11/17/88";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        char *pointer, *sepstr, *outline, *indenti, *header;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               while ((inpwst_get(sptr, stype, slen, inf))!=ROF) {
  if(type<0 || type>TOTAL STRUCTS) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 *inf, *outf, *conf, *st_open(), *efopen();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         int type, len, inp, level, verbose, nolist;
                                                                                                                                                                                                                                                                                                                                                                                                  "/usr/suds/include/st error.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | type>roral structs)
                                                                                                                                                                                                                                                                                                             STRUCTURE: ";
                                                                                                                                                                                                                                                                                                                                                                    include "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sep, code, leng, dtype;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           indent [MAXOUTLINE];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  char *list code();
descriptrace *dt;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  inf= st_open(infile, "r");
outf=efopen(outfile, "w");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           char outline[MAXOUTLINE];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       temp[MAXOUTLINE];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   type, len, inp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *ch, *ctime();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              at_free (ptr,imp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            fprintf(outf,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               struct muxdata *mx;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           int verbose, nolist;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                extern double atof();
                                                                                           static char SccsId[]
                                                                                                                                                                                                               int linelength=72;
char indentinit[]="
char headeri[]=";
                                                                                                                                                                                                                                                                                                          char structhead[]="
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             register i, j;
short *sh, shh;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 extern int atoi ();
                                                                                                                      #define MAXOUTLINE
                                                                                                                                                                                                                                                                                                                                                                                                                                 finclude <stdio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         continue;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 *ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             *ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          *1g;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILE *outf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  double *db;
                                                                                                                                                                                   /* DEFAULTS */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      exit (in);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int in;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        extern
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         float
                                                                                                                                                                                                                                                                                                                                                                                                  Include
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   char
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 char
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           char
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          char
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               char
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     int
```

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else if (type==DESCRIPTRACE && verbose) fprintf (outf, "&sWaveform Data:\n", indenti);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  default : st_error(die,0,"Unknown datatype in struct descriptrace of %c",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              case 'f': sprintf(outline, "$s$13.6a%s", outline, ft[1], sepstr); break; case 'd': sprintf(outline, "$s$13.61e%s", outline, db[1], sepstr); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                's': sprintf(outline,"%s%d%s",outline,sh[i],sepstr); break;
'l': sprintf(outline,"%s%6ld%s",outline,lg[i],sepstr); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* string separating fields
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          outline, shh, sh[i] & Oxf, sepstr); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           *)(ch); leng=leng*2; break;
*)(ch); leng=leng*3; break;
       fprintf(outf,"%sNaveform Data:\n",indenti);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sprintf(outline, "%s%6d:%z%s",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             case 'd': db=(double *) (ch); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            *) (ch); break;
*) (ch); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     fprintf(outf, "%s\n", outline);
sprintf(outline, "%s", indenti);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if(strlen(outline)>=linelength) {
                                      sprintf(outline, "%s", indenti);
                                                                                                                dt=(struct descriptrace *)ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                      *) (ch);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 dt->datatype);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        case 'r': shh=sh[i]>>4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fprintf(outf, "%s\n", outline);
                                                                                                                                                                                                                                                 mx=(struct muxdata *)ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     extern char *progname;
char *sepetr, *indenti, *header;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              g=( long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    case 'f': ft=(float
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ft=(float
                                                                                                                                                                                                                                                                                                                                                                                                                                    case 's': sh=(short
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int verbose, numfil, nolist;
                                                                                     if (type==DESCRIPTRACE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ft=(float
                                                                                                                                                                       dtype=dt->datatype;
                                                                                                                                                                                                                                                                                                        dtype=mx->typedata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               for (i=0;i<leng;i++) {
                                                                                                                                                                                                                                                                             :scmesmu<-xm-Duel
                                                                                                                                            leng=dt->length;
                                                                                                                                                                                                                         if(type==MUXDATA) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       switch (dtype) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  outline[0]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                char *ofile, *cfile;
                                                                                                                                                                                                                                                                                                                                                                               switch(dtype) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 indenti=indentinit;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ;
*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         بز
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Case '1':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CAS. ' V' :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CASS /t/:
                                                                                                                                                                                                                                                                                                                                                                                                            Case ' r':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CAS. 'C':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              header=headeri;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if(level==0) {
                                                                                                                                                                                                                                                                                                                                                       ch=ptr+len;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CASS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Case
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Case
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       main (argc, argv)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         char **argv;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             register 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   int arde:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      numfil=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             liststruct (stform[i].nextfstype,ptr,len,inp,level+1,outf,outline,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if(*db=matcf(NOTDE))sprintf(temp, "NOTDE");
else sprintf(temp, "%s", list matime(*db, 6));
sprintf(outline, "%s%s", outline, temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(*db==atof(WOIDE)) sprintf(temp,"WOIDE");
else sprintf(temp, atform[i].fformat,*db);
                                                                                                                                                                                                                                                                                                                    if(*lg==atof(NOTIME))sprintf(temp, "NOTIME");
                                                                                                                                                                                     if (*lg==atoi (NOTIME) ) sprintf (temp, "NOTIME");
                                                                                                                                                                                                             else sprintf(temp, "%s",list_mstime(*db,7));
sprintf(outline, "%s%s",outline,temp);
                                                                                                                                                                                                                                                                                                                                       else sprintf(temp, stform[i].fformat, *lg);
if(*db=matoi(NODATA)) sprintf(temp, "NODATA");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sepstr, verbose, nolist, indenti, header);
                            alse sprintf(temp,stform[i].fformat,*db);
                                                                                                                                                                                                                                                                                                                                                                   sprintf(outline, "%s%s",outline, temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sprintf(outline, "%s%s", outline, temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if((type==DESCRIPTRACE || type===MUXDATA) && nolist==0) {
                                                    sprintf(outline, "%s%s", outline, temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                  db=(double *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (sep) sprintf (outline, "%s%s", outline, sepstr);
                                                                                                      lg=(long *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        fprintf(outf, "%s\n", outline);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            list_code(code,stform[i].codelist));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if(stform[i].nextfstype!=0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if(verbose && code>=0) {
    sprintf(outline, "%s\t{%s}",outline,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (strlen(outline)>=linelength) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             fprintf(outf, "%s\n", outline);
sprintf(outline, "%s", indenti);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if(verbose && outline[0]!='\0') {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     outline[0]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sprintf(outline, "%s", indenti);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      fprintf(outf,"%s\n",outline);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if(outline[0]!='\0') {
   fprintf(outf,"%s\n",outline);
                                                                                                                                   if (verbose) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (verbose) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if (verbose)
                                                                                                                                                        *dp= *1g;
                                                                              break;
                                                                                                                                                                                                                                                                                            -180
                                                                                                                                                                                                                                                                                                                                                                                                                          break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 outline[0]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        else if (verbose) {
                                                                                                      Case STT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Case MST:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                default:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Case CAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Case STI:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Case CPX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -180
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if (numfilw=0) st2ssc("stdin", ofile, cfile, sepstr, verbose, nolist, indenti, header);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        stimec(argv[i], ofile, cfile, sepstr, verbose, nolist, indenti, beader);
numfil++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case '1': if (axgv[i][2]!='\0') linelength= atol(saxgv[i][2]);
else linelength=atol(argv[++i]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          default: st_error(0,0,"Unrecognized argument %s",argv[i]);
                                                                                                                                                                                                                                                    sepstr=" ";
programs=argv[0];
programs=argv[0];
for(i=1;i<argu;i++){
   if(argv[i][0]=='-') {
      switch(argv[i][1]) {
      case 'c': if(argv[i][2]!='\0') cfile= fargv[i][2];
      case 'c': if(argv[i][2]!='\0') cf
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         case '1': if (argv[1][2]!='\0') indenti= sargv[1][2];
else indenti=argv[++1];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              case 'h': if(argv[i][2]!='\0') header= £argv[i][2];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    case 's': if(argv[i][2]!='\0') sepstr= sargv[i][2];
else sepstr=argv[++i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      case 'o': if(argv[i][2]!='\0') ofile= fargv[i][2];
else ofile=argv[++i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Case 'v': verbose=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      case 'n': nolist=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      break;
verbose=0;
nolist=0;
cfile="";
ofile="stdout";
```

```
89/03/29
10:37:40
```

```
st_close (outfile);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    list_code(typ.struct_names),len,inp-len);
if(stform[beg_struct[typ]].nextfstype==STAT_IDENT) {
    sl=(STATIDENT *)ptr;
    fprintf(outfile," %s.%s.%c.%d",si->network,si->st_name,si->component,
                                                                                                                                                                                                                                                                                                                                                                                                                                            default: st_error(0,0,"Unrecognized argument %s", argv[1]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     case 'o': if(argv[1][2]!='\0') ofile= &argv[1][2];
else ofile=argv[++1];
                                             1.2 11/17/88";
/* stdescribe: list structures in a stream
                                             static char Sccsid[] = "@(#) stdescribe.c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       outfile=st_open(ofile, "w");
                                                                                                                                                                                                                                                                                                                                                                                                      infile=st_open(infil,"r");
fprintf(outfile,"File %s:\n",infil);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                stdescribe (argv[i], outfile);
                                                              finclude "/usr/suds/includs/suds.h"
finclude <stdio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                for (1=1; 1<arge; 1++) {
   if (argv[i][0]=='-') {
     switch (argv[i][1]) {</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                bresk;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            fprintf(outfile, "\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          si->inst_type);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  char *network, *ofile;
extern char *progname;
                                                                                                                             die(n) int n; (exit(n);)
extern char *list_code();
                                                                                                                                                                                   stdescribe (infil, outfile)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       st_free (ptr, inp);
                                                                                                                                                                                                                                                                        int typ, len, inp, num;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           progname=argv[0];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           st_close (infile);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             int numfil, out;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ofile="stdout";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1f(out) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          out=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       num£11++;
                                                                                                                                                                                                                                                                                                 char *ptr;
STATIDENT *e1;
                                                                                                                                                                                                                                FILE *outfile;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILE *outfile;
                                                                                                                                                                                                                                                                                                                                       FILE *infile;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    char **argv;
                                                                                                                                                                                                             char *infil;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            main (arge, argv)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            register 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -180 (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               int argo;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            numfil-0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      out=1;
```

```
f(numfile=0) {
  outfile=st_open(ofile,"w");
  stdescribe("stdin",outfile);
}
```

* *

* ;

```
if(initsor() ==ERR) {
    fprintf(stderr,"Insufficient core to allocate a window.\n");
                                                  /* if true refresh screen next
/* if true error written, remove
                                                                                                    char AUPtoLO(c) char c; { return(isupper(c)?c-'A'+'a':c); }
    current cursor column
                  /* current cursor row
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 inform(fmt, a, b, c, d, e, f, g, h, i)
                                                                                                                                                                                                                                                                                                                                                                            mvcur (0, COLS-1, LINES-1, 0);
stdscr-> curx
stdscr-> cury
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (ch!=0) printw (fat, ch);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (ch!=0) printw (fat, ch);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  int a, b, c, d, e, f, g, b, i;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MOVE (ERR X, ERR X);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           move (ERR Y, ERR X);
erractive=1;
                                                   int refr = 1;
int erractive = 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               char *fat, *ch;
                                                                                                                                                                                                         exit (ERR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           char *fat, ch;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  erractive=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              clrtoeol();
move(ro, co);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MOVe (ro, co);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             errmess (fat, ch)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            errform (fat, ch)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   alrtoeol();
                                                                                                                                       ped curses() {
                                                                                                                                                                                                                                                                                                                                         curses() {
                                                                                                                                                                                                                                                                                                                                                                                                                          no crmode ();
                                                                                                                                                                                                                                                                                                                                                                                                                                         nl ();
endwin ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 int co, ro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   refresh();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   char *fat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               refresh();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 int co,ro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           int co, ro;
   define NCOL
                                                                                                                                                                                                                                                                         craode ();
                                                                                                                                                                                                                                         noecho();
                   define MROW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CO-HCOL;
                                                                                                                                                                                                                                                                                                                                                                                                            noraw();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMMODI;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ro-MROW;
                                                                                                                                                                                                                                                                                                                                                                                           cho();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ro-HROM
                                                                                                                                                                                                                                                                                       non1 ();
                                                                                                                                                                                                                                                          raw();
                This program is a quick hack of another program I wrote to show how
an stedit might function. It should be integrated with the Lamont waveform
editor and thought out much more carefully.

FIWard, U.S.Geological Survey, Menlo Park, Ca 94025 5/19/88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 *
                                                                                                                                                                                                                                                                                        *****
                                                                                                                                                                                                                                                                                        maximum length of any link string maximum length of any single input field
                                                                                                                                                                                                                                                                                                                                                                                                                                          dimension of largest string in database
                                                                                                                                                                                                                                                                                                                                                                                                                           /* char to show a space for input
                                                                                                                                                                                                                                                                                                                                         first column of error messages
                                                                                                                                                                                                                                                                                                                                                                            first column of instructions
                                                                                                                                                                                                                                                                                                                                                                                                          first column of command line
                                                                                                      1.2 11/17/88";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* primary active indecies form addressing screen
                                                                                                                                                                                                                                                                                                                           row of error messages
                                                                                                                                                                                                                                                                                                                                                                                           row of command line
                                                                                                                                                                                                                                                                                                                                                           row of instructions
                                                                                                   static char SccsId[] = "@(#) stedit.c
#include <stdio.h>
   /*stedit: display and edit suds files
                                                                                                                                                                       include "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               extern int beg struct[];
extern int width field[];
extern char *list_code();
extern char *list_matime();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  extern double atof();
                                                                                                                                                                                                                                                                                                         define MAXFIELD 100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            110
                                                                                                                                       <curses.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                       define BIGGEST 30
                                                                                                                                                                                                      define MAXCOL 80
                                                                                                                                                                                                                                                                                          define MAXLINK 20
                                                                                                                                                     finclude <ctype.b>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   extern int atoi ()
                                                                                                                                                                                                                                                                                                                                                     #define IMST X #define CMD X #define CMD X #define MD X #define SPACE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           define CMTRLC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            define CMTRLD
                                                                                                                                                                                                                                                                                                                          define ERR X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            define BREAK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           define RICUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             define UPCUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       define 888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            define DMCUR
                                                                                                                                                                                                                                                                                                                                                                                                                                                           define NONE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           #define BELL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           define TAB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           define RET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            define ESC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            define DEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FILE *cons;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              define F3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                define F6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 define F7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                define F8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               define F9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                define R1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 define R2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                define R3
                                                                                                                                                                                                                                                        /* form.h
                                                                                                                                       include
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             define
```

```
"\007Unexpected escape code to", c);
                                                                                                                                                                                                   errform("\007Unexpected escape code %o",c);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       errform("\007Unexpected control code %o",c);
                                                                                                                     /* UPCUR */
/* DMCUR */
/* RTCUR */
                                                                                                                                                                                /* I.FCUR */
case 31: return (F8);
                  case 32: return (F9);
                                                                              goto getit;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          getfield(index,ptr,type,basearow)
int index; /* index into stform[] table
                                     default: errform(
                                                                                                                       Case 'A': return (UPCUR);
                                                                                                                                     case 'B': return (DNCUR);
case 'C': return (RTCUR);
case 'D': return (LFCUR);
                                                                                                                                                                                                                           goto getit;
                                                                                                                                                                                                                                                                                                                                                                                       if (!pshow) inform ("", 0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         case DNCUR: *cnum=cmax; goto out; case RICUR: if(*cnum<cmax-1) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MOVE (NROW, --MCOL);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MOVE (NROW, ++MCOL);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          case UPCUR: *cnum= -2; goto out;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               int *field, minf, maxf, *cnum, cmax;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            outcher (c, field, minf, maxf, cnum, cmax)
                                                                                                                                                                                                                                                                                                                                                                     pshow=pshow?0:1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *cnum=cnax;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      *cnum= -2;
                                                                                                                                                                                                                                                                                                                                                return (BSP);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if (*cnum>0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      goto out;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        goto out;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            goto out;
                                                                                                                                                                                                                                                                                                                                                                                                              goto getit;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            goto getit;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          goto out;
                                                                                                                                                                                                   default:
                                                                                                                                                                                                                                                                                                                              return (c);
                                                                                                                                                                                                                                                                                                                                                                                                                                die (100);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   goto out;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    addch (c);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               else (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 else (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     repeat: switch (c) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if (refr) refresh();
                                                                                                                                                                                                                                                                                                                                                                                                                              Case CNTRIC:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Case LFCUR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Case BREAK:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CASS NONE:
                                                                                                                                                                                                                                                                                   Case LFD:
                                                                                                                                                                                                                                                                                                                              case TAB:
                                                                                                                                                                                                                                                                                                                                                case DEL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    default:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         default:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          register 1;
                                                                                                                                                                                                                                                                                                         Case RET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (*日日)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                char c;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              int y;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             out:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     switch(c=0177 & getch()) {
    case '2': c=0177 & getch(); d=0177 & getch();
    if((c!='2' & c c!='3')||(d<'0' & d>'9')) {
        arrform("\0070nexpected escape sequence to", c);
    }
}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      errform("\007Unexpected escape sequence ");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* treat control characters */
                                                                                                                                                                                                                                                                                                                                                                                                          */
*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if(*allow == '!') conv= *(+allow) >= 'a' ? 'A'-'a':'a'-'A';
if(*allow == '-' && *(+allow-2)<c && c< *allow)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  c=0177 & getch();
if(c!='0' && c!='[') {
    errform("\007Unexpected escape sequence %o",c);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* if char allowed return
                                                                                                                                                                                                                                                                                                                                                                                                                              if error message,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if((0177 & getch())!='z') {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   switch ((c-'0')*10+d-'0')
                                                                                                                                                                                                                                                                                                                                                                                                            /* read character
/* if error messag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        errmess ("Only characters allowed are %s", allowed);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      case 8: return(R1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9: return(R2);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             case 10: return (R3);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                case 25: return(F2);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    case 26: return(F3);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        case 27: return(F4);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                case 29: return(F6);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 30: return(F7);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 28: return(F5)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              goto getit;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          goto getit;
                                                                          if(a!=0)printw(fmt, a, b, c, d, e, f, g, h, 1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if (*allow == c) return (c+conv);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            200
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if(*(++allow) != '-') conv=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 allowmallowed;
for(conv=0; *allow != NONE;) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(*allow == '\\') allow++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   goto getit;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     return (c+conv);
                                                                                                                                                                                                                                                                                                                        register char c, d, conv;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if(c>=' ' && c<='~') {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fputc (BELL, stderr);
                                                                                                                                                                                                                                          /* get from keyboard */
                                                         move (ERR Y, ERR X);
                                                                                                                                                                                                                                                                  getcode (allowed)
                                                                                                                                                                                                                                                                                                                                                                                                      c=0177 & getch();
                                                                                                                                                                                                                                                                                                                                                                                                                                                   •rrform("", 0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       erractive=0;
                                                                                                                                                                                                                                                                                                                                                                                                                              if(erractive) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            goto getit;
                                                                                                                                                                                                                                                                                 char *allowed;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Case ESC:
                                                                                                                     MOVe (ro, co);
                                                                                                                                                                                                                                                                                                                                                char *allow;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   switch(c) (
                                                                                                clrtoeol();
                                                                                                                                         refresh();
                                                                                                                                                                                                     int pshow=0;
                  CO-MCOL;
                                     ro=NROW
```

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89/03/29
10:38:14
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"row-%2d col=%2d curfield-%2d/%2d/%2d old-%2d index-%2d/%2d base=%d\n",
NROW,NCOL,minfield,curfield,maxfield,oldcurf,charnum,charmax,hase);
                                                                                                                                                                                                                                                                                                                                                         c=editstform(ptr, stform[curfield].nextfstype, len, stform[curfield].offset,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  outchar (LFCUR, &curfield, minfield, maxfield, &charnum, charmax);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   out char (SPACE, Sourfield, minfield, maxfield, Scharnum, charmax);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        outchar (LFCUR, &curfield, minfield, maxfield, &charnum, charmax);
                                                                                                                                                                                                                                                                                                                                                                                                                     /* read new character */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 outchar (c, &curfield, minfield, maxfield, &charnum, charmax);
                                                                                                     move (st form[curfield].form_row+baserow, st form[curfield].form_col);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  outcher (SPACE, &curfield, minfield, maxfield, &charnum, charmax);
                                             charmax=width_field[stform[curfield].ftype];
if (stform[curfield].ftype==STR) charmax=stform[curfield].flength;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             * # 22: */
* # 21: */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  else outchar (c, &curfield, minfield, maxfield, &charnum, charmax);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .: :: E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ****
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               c=AUPtolo (stdscr->_y[NROW][NCOL-1]);
                                                                                                                                                                                                                                                                                                                                                                                                                   alse c=getcode (stform[curfield].allowchar);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                while (charnum<charmax) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(stform[curfield].codelist!=0) {
                                                                                                                                                                                                                                                                                                                                          if(stform[curfield].nextfstype!=0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                        ' | c > '~') switch(c) {
                                                                                                                                                                                                                                                                                                                                                                                stform[curfield].form_row);
                                                                                                                                                                                                                                                                                                     if (charnum>=charmax) goto end;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         goto begin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      goto begin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 goto begin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 return(c);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   while (charnum<charmax)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             goto end;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                goto end;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                refr=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            refr=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C-RET;
                                                                                       oldcurf=curfield;
                                                                                                                                                                                   fprintf (cons,
                                                                                                                                                                                                                                           fflush (cons);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if(charnum>0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   case DMCUR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case LFCUR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Case RICUR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Case UPCUR:
                                                                                                                              refresh();
                                                                                                                                                                                                                                                                  refresh();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        case MULL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Case BSP:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case TAB:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              case RET:
                                                                                                                                                                 if (pshow) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Case F7:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         goto begin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            refr=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       for (maxfield-minfield; stform[maxfield].fstype==type; maxfield++);
        * *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        temp[i] ==tdscr-> y[stform[index].form_row+baserow][]++];
if(temp[i] ==SPACE)temp[i]=SPA;
                                                                                                                                                                      if (st form[index].ftype==STR)len=st form[index].flength;
                                                                                                                                                                                                                                                                                                          if(strncmp(temp,"NOTIME",6)==0) {
  if(type==effs) * ((MS_TIME *)(ptr)) = atof(NOTIME);
  else     *((ST_TIME *)(ptr)) = atof(NOTIME);
 /* type of ptr
/* for recursive structures
                                                                                                                                                     len=width_field[stform[index].ftype];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if(curfield>maxfield) {
   if(base== -1)curfield=minfield;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(curfield<minfield) {
   if(base== -1) curfield=maxfield;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               editstform(ptr, type, len, base, baserow)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(charnum>charmax) curfield++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    curfield=beg_struct[type];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        else if(charnum<0) curfield--;</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int type, len, base, baserow;
                                                                                                                                                                                             ]=stform[index].form col;
                                                                                                                                                                                                                                                                                                                                                                                                       asc2field(temp,ptr,type);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         minfield=curfield;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (curfield! =oldcurf)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   else return(c);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           else return(c);
                                                                                                                                                                                                               for(i=0;i<1en;i++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (type! moldtype) {
                                                                           char temp[MAXOUT];
                                                                                                                                                                                                                                                                                     temp[len-1]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   char in[MAXFIEID];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 oldtype=type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            register int c;
                                                                                             register 1, 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              maxfield--;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int minfield;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int maxfield;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             curfield;
int type;
int baserow;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                charman;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   oldtype;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  charnum;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             double timd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       charmar=0;
oldcurf= -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               oldtype= -1;
                                      char *ptr;
                                                                                                                                                                                                                                                                                                                                                                       return;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             long timl;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       charnum-0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      char *ptr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Int code;
                                                                                                                  int len;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  int 1, 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   char d;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                int
```

```
if(stform[i].nextfstype==0) {
loadstform[ptr,stform[i].nextfstype,len,stform[i].form_row);
                                                                                                                                                                                                                                                          for(i=beg_struct[type];stform[i].fstype===type && stform[i].offset<len;i++)</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (*db==atol (NODATA) ) sprintf(temp, "NODATA");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(*ig=matof(NOTIME))sprintf(temp, "NOTIME");
else sprintf(temp,stform[i].fformat,*lg);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (*db=matof (NOTIME) ) sprintf (temp, "NOTIME");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (*sh=matoi(NODATA)) sprintf(temp, "NODATA");
else sprintf(temp, stform[i].fformat, *sh);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(*lg=matoi(MODATA))sprintf(temp, "MODATA");
else sprintf(temp,stform[i].fformat,*lg);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if(*ft==atoi(NODATA))sprintf(temp, "NODATA");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1f (*db==atoi (NODATA) ) sprintf (temp, "NODATA");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              alse sprintf(temp, stform[i].fformat, *db);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 else sprintf(temp, stform[i].fformat, *db);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    else sprintf(temp, stform[i].fformat, *ft);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  else sprintf(temp, stform[i].fformat, *db);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sprintf(temp, stform[i].fformat, (int) *ch);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              numf=stform[i].flength; break;
db=(double *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          db=(double *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          db=(double *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(stform[i].codelist!=0) code= *ch;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if(stform[i].codelistim0) codem *sh;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if(stform[i].codelist!=0) code= *lg;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if(stform[i].codelist!=0) code= *ch;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ft=(float *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sh=(short *) (ptr+stform[1].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                              sprintf(temp, stform[i].fformat, *ch)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sprintf(temp, stform[1].fformat, ch);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         lg=(long *)(ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        lg=(long *) (ptr+stform[i].offset);
                                                                                                                                                                                                                                                                                                                                                                            if(etform[i].ftype==STR)num=stform[i].flength;
switch(stform[i].ftype) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                numf=stform[i].flength; bresk;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           numf=stform[1].flength; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    numf=stform[i].flength; bresk;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                case MIN: ch=ptr+stform[1].offset;
                                                                                                                                                                                                                                                                                                                                                                                                                                  case CHR: ch=ptr+stform[1].offset;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ch=ptr+stform[i].offset;
                                                                                                                                                                                                                                                                                                                                               field[stform[i].ftype];
                              int num, numf, sep, code, col, after; char temp[MAXOUT];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Case STT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Case MST:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Case STR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Case SHT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Case LMG:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Case DBL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Case LLT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Case BTS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Case FLT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Case CAL:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CASS CPX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Case STI:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            default:
     register 1, j;
                                                                                                                                                                                                                                                                                                                                                    num-ridth
                                                                                                                                                                                                                                                                                                                        code= -1;
                                                                                                                                                long *lg;
float *ft;
                                                                                                                                                                                                    double *db
                                                                                                                    short *sh;
                                                                                       char *ch;
                                                                                                                                                                                                                                                                                            sepal;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           move (stform[i].form_row+base, stform[i].form_col-strlen(stform[i].fname)-1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            num=width_field[stform[1].ftype];
if (stform[1].ftype==STR) num=stform[i].flength;
if (stform[i].ftype>=SHT && stform[i].ftype<=DBI) numf=stform[i].flength;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for(l=beg_struct[type];stform[i].fstype==type && stform[i].offset<len;i++) {
   if(stform[i].nextfstype!=0) {
    initstform[pt,stform[i].nextfstype,len,stform[i].form_row);
}</pre>
                                                                                                                                                                                                                                                  if(stform[curfield].ftype==STT) {
    getfield(curfield, Etiml, STT, baserow);
    if(timl!=atoi(NOTIME))printw(" {%s}", list_metime((double)timl, 7));
                            printw(" {%s}",list_code(code,stform[curfield].codelist));
clrtoeol();
                                                                                                                                                                  if(timd!matof(NOTDG))printw(" {%s}",list_mstime(timd,6));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        move (stform[i].form_row+base,stform[i].form_col);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if(col>(MAXCOL-num) && k<numf-1) base++;
getfield(curfield, &code, LNG, baserow);
                                                                                                                                              getfield(curfield, ttimd, MST, baserow);
                                                                                                               if (stform[curfield].ftype==MST) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        printw ("%s", stform[i]. fname);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            col=stform[i].form_col;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           for (j=0; j<num; j++)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 for (k=0; k<numf; k++)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              loadstform (ptr, type, len, base)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     initstform (ptr, type, len, base)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         printw("_");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              else charnum=charmax+1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             int num, numf, k, col;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          #include <sys/file.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                int type, len, base;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       int type, len, base;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    standout ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  standend();
                                                                                                                                                                                                    clrtoeol();
                                                                                                                                                                                                                                                                                                                                               clrtoeol();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           finclude <egtty.b>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        goto begin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            refresh();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       numf=1;
                                                                                                                                                                                                                                                                                                                                                                                                     charnum++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      register i, j;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       goto begin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             char *ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                  refr=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    char *ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        else f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             refr=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               94
```

```
89/03/29
10:38:14
```

```
if(type== -1)st_error(die,0,"rename of %s to %s failed",outfile,infilen);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if (type== -1) st_error(die,0, "rename of %s to %s failed", outfile, infile);
                                                                                                                                                                                                                                              move (stform[beg_struct[type]].form_row, stform[beg_struct[type]].form_col);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        fprintf(stderr, "Do you want to save these changes? (Answer y or n) ");
                       printw ("Edit structure %d of type %d (%s) of length %d bytes",
                                                                                                                                     F2=abort without change");
                                                stnum, type, list_code (type, struct_names), len);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (infilen!=MULL && stromp ("stdin", infilen) !=0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               while (instr[0]!='y' && instr[0]!='n') {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(instr[0]=='y' || instr[0]=='Y') {
                                                                                                                                                                                                                                                                                                              ret-editatform(ptr, type, len, -1, 0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       else if(stromp("stdin",infile)!=0) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        type=rename (outfile, infilen);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                st close (st outf);
type=rename (outfile, infile);
                                                                                                                                                                                                                                                                                                                                                                   savestform (ptr, type, len, 0, 0);
                                                                                                                                                                                                                                                                                                                                                                                             st put (ptr, type, len, st outf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fscanf (stdin, "%s", instr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             fscanf (stdin, "%s", instr);
                                                                                                                                                                                                                         loadstform(ptr, type, len, 0);
                                                                                                                                                                                                initstform (ptr, type, len, 0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if (ret==r2) unlink (outfile);
                                                                                                                                     printw("F7=next structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               st_close (st_outf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             else unlink (outfile);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   else unlink (out file);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if(instr[0]="Y') {
                                                                                                                                                                                                                                                                                                                                       if(retem#2) break;
MOVE (CMD Y, CMD X);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              extern char *progname;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         st close (st inf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ot alose (st inf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      instr[0]=SPA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     char instr[5];
                                                                                                                                                                   standend();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  end_curses ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and curses ();
                                                                                                                                                                                                                                                                                    refresh ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      main (argc, argv)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            char **argv;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  register 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        refresh();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                int argo;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         int type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 exit (in);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    int in;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           die (in)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      for(i=beq_struct[type];stform[i].fstype==type && stform[i].offset<len;i++) {
  if(stform[i].nextfstype==0) {</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  refresh(); /* needed to get sun-cmd window in proper sync */
for(stnum=0; (inp=st_get(spt., ttype, tlen, st_inf)) !=EOF; stnum++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       getfield(i,ptr+base+stform[i].offset,stform[i].ftype,baserow);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      savestform (ptr, stform[i].nextfstype, len, stform[i].offset+base.
                                                                                                                                                                                                                                                                       printw(" (%s)",list_code(code,stform[i].codelist));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            st_inf=st_open(infile,"r");
if(stromp("stdin",infile) ==0) st_outf=st_open("stdout","w");
                                                                                                                                                                                                                                                                                                                                                                                                               printw(" (%s)", list matime (*db,6);
if (stform[i].ftype==STT &s strncmp(temp,"NOTIME",6)!=0)
printw(" (%s)", list matime((double)(*lg),7));
                                                                                                                                                                                                                                                                                                                                                                                     if(stform[i].ftype==MST && strncmp(temp, "NOTIME", 6) i=0)
                                                                                                                                                                                        move (stform[1].form_row+base, stform[1].form_col);
                                                                                                        if(temp[j]==NONE) after=1;
if(after || temp[j]==SPACE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       stform[i].form row+baserow);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    savestform(ptr, type, len, base, baserow)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            outfile=mktemp(template);
st_outf=st_open(outfile,"w");
                                                                            for (after=j=0; j<num; j++) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  char template[]="stedit.XXXXXXX;
FILE *st_inf, *st_outf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           int inp, type, len, stnum, ret;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          int type, len, base, baserow;
                                                                                                                                                                                                                 printw ("%s", temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              extern char *mktemp();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               clearok (stdscr, TRUE);
                                              temp[num]=NONE;
                                                                                                                                                                                                                                                                                                   clrtoeol();
                                                                                                                                                                                                                                                1f(code>=0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    char *infilen=NULL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   infilen-infile;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             char instr[5];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        bed curses ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     char *infile;
                 1f(sep) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                char *outfile;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  register 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         stedit (infile)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        clear ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                refresh();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                char *ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       char *ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ·ls• (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             clear()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -150
```

```
int numfil,outcl;
cons=fopen("/dev/console","w");
progname=argv[0];
numfil=0;
outcl=1;
for(!=1;i.argc;i++){
   if(argv[i][0]=="-') {
        switch(argv[i][1]) {
            dafault: st_arror(0,0,"Unrecognized argument %s",argv[i]);
        }
        stedit(argv[i]);
        numfil++;
        }
        if(numfil==0) {
        stedit("stdin");
        }
}
```

```
Change pathname to your pathname
Put these lines in /etc/rc.local
just before the line
(echo -n 'starting rpc and net services:')
```

>/dev/console (echo -n 'starting online eq detector:')
if [-f /usr/katmai/online.rum]; then
 /usr/katmai/online.rum & (echo -n ' online.rum')
 (echo '.')

ij

>/dev/console >/dev/console >/dev/console

```
eqdetector.o getsweep.o cache.o out.o args.o diag.o dynflag.o eqdetector.o getsweep.o cache.o out.o args.o diag.o dynflag.o lpaopen.o rtp.o
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        out.o : header.h
args.o cache.o diag.o dynflag.o eqdetector.o getsweep.o out.o : eqdetector.h
lpaopen.o : key.h
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           enscript2 Testnet.c rtp.s out.c eqdetector.c lpaopen.c getsweep.c \ dynflag.c diag.c cache.c args.c eqdetector.h lpa.h key.h \ header.h Makefile
                                                                                                                                                                                                                                                                                               cc $ (CFLAGS) -o eqdetector $ (OBJ) ../atod/CDDatod.o -lsuds -lm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         @echo ""
@echo "****** You must be superuser to do this. ********
@echo ""
# Make eqdetector, real-time earthquake detector
                                                                                                                                                                                                                                                                                                                                                     $(044) Makefile
cc $(GFLAGS) -i -o eqdetector $(044)
                                                                                                                                         # use DLPA line for a DEC PDP11/44 or 11/34
CFIAGS = -q -f68881
#CFIAGS = -0 -DLPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               chown root addatector
chmod 4755 addatector
op addatactor /etc/eqdatector
                                                                                                                                                                                                                                                                 eqdetector: $ (OBJ) Makefile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 install:
                                                                                                                                                                                                                                                                                                                                                          on44:
                                                                                                                                                                                                                                                                                                                                                                                                                                                11st:
                                                           08.54
04.4
```

```
st_error(die,0,"Incorrect number of file names. Station file is %s", argv[i]);
subnet_file=argv[i+1];
subnet_file=argv[i];
                                                                                                                                                                                                                                                                                                                                                     default : fprintf(stderr,"online: command '%c' not legal\n", *arg);
                                                                                                                                                                                                                                                                                  break;
                                                                                                                                                                                                                                                                                               break;
                                                                                   break;
break;
break;
break;
break;
                                                                                                                                                                                                               break;
                                                                                                                                                                                                                                          break;
                                                                                                                                                                                                                                                                                                            break;
                                                                                                                                                         break;
                                                                                                                                                                                    break;
                                                                                                                                                                                                  break;
                                                                                                                                                                                                                             break;
                                                                                                                                                                                                                                                        break;
                                                                                                                                                                                                                                                                      break;
                                                                                                                                                                      break;
                                                                                                                                                                                                                                        prt_st_abs_av = prt_diag = 1;
prt_st_av = prt_diag = 1;
prt_trig = 1;
                                                                                                               1;
                                                                                                                                                                                                                                                                                              prt_vbse = prt_trig = 1;
exit_early = 1;
                                                                                                                                                                                                                                                                                                                          case '2': prt_strg = prt_diag = 1;
                                                                                                                                                                                                                                                                                                                                                                  prt_args(); exit(1);
                                                                                                             etas = prt diag
                                                                   prt_st_av = 1;
prt_st_abs_av = 1;
prt_cach = 1;
            prt_etss = 1;
prt_strg = 1;
prt_trig = 1;
prt_vbss = 1;
                                                                                                                          fake trig= 1;
case 'D': prt diag = 1;
                                                                                                                                                                                 prt_mall = 1;
prt_out = 1;
                                                                                                                                                                                                               prt parm = 1;
                                                                                                                                          no head
                                                                                                                                                                                                                             fake ok
                                                                                                                                                      prt a2d
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "s sweep len secs",
"u num a2d bufs",
"w weighted ave consts",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     static char *doc_file[] = {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "e eta consta (3)",
"g diff sam bef compu",
"l len aperture secs",
"n num chen from a2d",
"g quick short cuts",
"r rate in hx",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     static char *doc_parm[] = {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            'd decimation factor",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "x xchg tape events",
"y enable dyn flags",
"x buf sixe in words"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "p pseudo a2d fila",
"t tape out",
"0 tape unit 0",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "- alone: defaults",
                                                                                                                                                                                                                                                                                                                                                                                                                          1f (1+2 | margc)
                                                                                                                                                                                                                                                        . 87
                                                                                                                                          , H,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "c cache",
"f disk file out",
                                                                                                                                                                                                 ò
                                                                                                                                                                                                                           ò
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                'b before secs".
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "a after secs",
                                                                                                                                                                                                                                           CAR
                                                                                                                                                                                                                                                         CABO
                                                                                                                                                                                                                                                                      CASO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "i input net"
                                                                                                                                                                                                               CABO
                                                                                                                                                                                                                              CAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "PARAMETERS",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "FILES",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .:
0
                                                                                                                                        argv[++i < argc ? i : st_error(die,0,"not enough args") ]
atoi(AARG)
atof(AARG)</pre>
args.c -- process command line arguments for online.c */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            case '0': tape_file = "/dev/nrst0"; break;
case 'l': tape_file = "/dev/nrst0";
fprintf(stderr,"only one tape drive\n");
                                                                                                                                                                                                                                                                                                                                                      break;
break;
break;
                                                                                                                                                                                                                                                                                                                                                                                                                          break;
break;
break;
break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                break;
break;
break;
break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                break;
break;
break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   break;
break;
break;
break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      break;
                                                                                                                                                                                                                                                                                                      case '0': tape_file = "/dev/nrmtl";
case '1': tape_file = "/dev/nrmt3";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 'p': pseudo_a2d= AARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 case 'c': cach_file = AARG;
case 'f': disk_file = AARG;
case 'o': log_file = AARG;
case 't': tape_file = AARG;
                                                                                                                                                                                                                                                                                                                                                                                              = IARG;
                                                                                                                                                                                                                                                                                                                                                                                                                          - IARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   - FARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  = IARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            - IARG;
                                                                                                                                                                                                                                                                                                                                                                                 = IARG;
                                                                                                                                                                                                                                                                                                                                                                                                            = IARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          = FARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        = IARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     - IARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   = IMRG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              = IARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        = IARG;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                = IARG
                                                                                                                                                                                                                                                                 if(argc < 3) (prt_args(); exit(0);}
for(i=1; i<argc; i++) {
   if(argv[i][0]=-'-') {</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 'A': prt_cach = 1;
prt_a2d = 1;
prt_out = 1;
                                                                                                                                                                                              proc_args(argo, argv) char **argv; {
   register i, int j, n;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            zchg tape
dyn flag
                                                                                                                                                                                                                                                                                                                                                                                                                         threshold
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    apert ure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               shortcut
                                                                                                                                                                                                                                                                                                                                                                                                                                                       conttape
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       exit (1);
                                                                                                                                                                                                                                                                                                                                                     case 'a': after
case 'b': before
case 'd': decim
case 'e': constl
                                                                                                                                                                                                                                                                                                                                                                                                                                       diffsam
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Wav inc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     const3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   const 4
                                                                                                                                                                                                                                                                                                                                                                                                            const 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          eweep
nbuf
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       bufar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  nchan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             rate
                          Finclude "eqdetector.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Cass 'H':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CRES 'Y':
                                                                                                                                                                                                                                                                                                                                                                                                                                       Case 'q':
case 'j':
case 'l':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CASS 'X':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Case 'n':
                                                                   include <stdio.b>
                                                                                                            extern int die();
                                                                                                                                                                                                                                       float atof();
                                                                                                                                       MARG
IARG
FARG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Iffidef LPA
                                                     lifndef LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #ifdef 12A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 endif LPA
                                                                                                                                       define
                                                                                                                                                                   define
                                                                                                                                                      define
                                                                                bendif
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   #endif
```

```
#define get(s) ( *s ? *s++ : "" )
                                                                                           "F etas",
"F one fake trig",
"N no header write",
"N print malloc",
"O diag output file name",
"P parame",
"Q quit; fake trig",
"R st abs av, it abs av",
"T trigger",
"T trigger",
"T verbose trigger",
"X exit after startup",
"E station trigger",
"S station trigger",
"I tape unit 1",
"J write cont tape file",
                      o );
static char *doc_diag[] = {
   "DIAGNOSTICS",
                                                         "A all",
"C cache",
"D misc diagnatos",
```

```
if(prt_mall) fprintf(stderr, "cache: malloc(%u) = %u\n\n", cbufszb, cbuf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        return(cbuf + n*bufszw);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         connum-5120/bufszw;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (!trig)newfile();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    int fdconttape;
int connum,blocksz;
                                                                                                                                                                                                                                                                                                                                                                 short *getcach(n) {
  if(cach_file) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      return (cbuf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    int initconttape()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              trig=nbuftrig;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (cach file) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           f=from; t=to;
                                                              if (prt cach) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   trig on () (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      st_error(0,0,"********** In-core cache is too large. **********\n");
st_error(0,0,"Weed to re-adjust parameters or use disk-file cache.\n\n");
prt_mall = prt_cach = 1; } /* call st_error() after more diags */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* number of valid buffers (usu == siza) */
* bool and number of future bufs to write */
* initial value for trig is nbuf to write */
* buffer size in bytes (same size as lps) */
* buffer size in words (same size as lps) */
* to core buffer size in bytes (of cbuf) */
* cache file descr for get if not in core */
* pointer to in-core cache buffer space */
* pointer to in-core cache buffer space */
* diagnostic switch for cache routines */
* diagnostic switch for malloc printout */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              = bufsz; /* xfer to global variable */
= bufszw * sizeof(short); /* buf size on bytes from words */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* on trig output nbuftrig bufs */
                                                                                                                                                                                                                                                                                                                                                                                     called from Iparead with pointer to most recently filled buffer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if( [p_fd = open(cach file, 1)) < 0 ){
   if([p_fd = creat(cach file, 0664)) < 0 )
   st_error(die,0,"Unable to create cache file %s", cach_file);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if((q_fd = open(cach_file, 0)) < 0 )
st_exror(die,0,"Unable to open cache file %s", cach_file);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(cbufszb != cachszb)perr("online/cache: not enough core"); }
                                                                                                                                                                     time before trigger to save data in buffer loads
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /***** malloc error ******/
                                                                                                                                                                                           time after trigger to continue writing in bufs
                                                                                                                                                                                                                       buffer size in words (same as lps buffer size)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               static char *cach_file=NUIL; /* null = in core cache, else file name
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cach_init(file_name, nbufbef, nbufaft, bufsz) char *file_name; {
cache.c -- cache routines for online seismic detection system
                                                       There are three external routines to be called from online.c:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* index of next cache buffer to use
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               malloc(%u) \n", cbufszb);
                                                                                                                                       file name: file name of disk cache or 0 for core cache nbufbef: time before tringer to save data in buffer ]
                                                                                                                                                                                                                                                                                                       this function is called each time the system triggers.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* cache size in bufs
/* cache size in bytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* size of cache in buffers
                                                                                                              cach_init(file_name, nbufbef, nbufaft, bufsz)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     nbuftrig = nbufbef + nbufaft;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           size = nbufbef;
cachszb = nbufbef * bufszb;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        conttap[]="/dev/nrst0";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cach file= file name;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          cbufszb = cachszb;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       cbufszb = bufszb;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        finclude "eqdetector.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                       #include <sys/file.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      static short *conbuf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      nbuftrig;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    extern int prt_mall;
                                                                                                                                                                                                                                                                                                                                                              put cach (lpabuf)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P_fd;
:t_*cbuf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           prt cach
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    current;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    cbufszb;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  static long cachezb;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               bufszb;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           bufszw;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  valid;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (cach file) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                g_fd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Size;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             trig;
                                                                                                                                                                                                nbufaft:
                                                                                                                                                                                                                          bufer:
                                                                                                                                                                                                                                                                                 trig on ()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    static short
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           static int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gatatio int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             static int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         404
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  static int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           th
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           static int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    static int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                static int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              extern int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            bufszb
```

```
if (prt_cach) fprintf (stderr, "\ncache:triq on: %s trigger\n",trig?"old":"new");
fprintf(etderr,"cache nbufs nbytes bufsrw bufsrb nbuftrig cbufsrb\n");
fprintf(etderr,"%5s %5d %60 %6d %8d %7d\n\n", cach file?"disk":"core",
size, cachsrb, bufsrw, bufsrb, nbuftrig, cbufsrb); }
                                                                                                                                                                                                          st_error(0,0, "error in init_cach: attempt to malloc(%u) \n", cbufszb);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* called from a2dread */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    static trig off() {
  if(prt_cach) st_error(0,0,"\ncache:trig_off: trigger just went off\n");
endfile();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* now index of oldest buffer */
/* oldest walld when walldwmsize */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     st error (die, 0, "Unable to write full buffer to cache file");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if(lweek(q_fd, (long)n * (long)bufszb, 0) < 0 )
st_arror(dia,0,"Unabla to lseek in cache file");
if(reed(q_fd, cbuf, bufszb) != bufszb )</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                st error (die, 0, "Unable to read cache file");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   else copyw (lpabuf, cbuf+current*bufszw, bufszw);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           static copyw(from,to,nwords) short *from, *to; {
short *f, *t;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if (current+1 >= size) lseek (p fd, OL, 0); )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (write (p_fd, lpabuf, bufszb) != bufszb)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            blocksz=connum*bufszw*sizeof(short);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           while (nwords-- > 0) *t++ = *f++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(++current >= size)current=0;
if(valid < size)valid+;</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       wrtfile ( getcach (current) );
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if (conttape) writecont (lpabuf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            putcach(lpabuf) short *lpabuf; {
                                                                                                                                                                     1f(cbuf == 0 || cbufszb == 0)
                                                                                                                                                                                                                                                                                             if (conttape) init conttape ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(!trig)trig_off(); }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(trid as valid-size) {
```

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89/03/29
10:37:40
```

```
fprintf(stderr, "\n");
fprintf(stderr, "\n");
                                                                                                                                                                                                                                                                                                                                                   fprintf(stderr,"\n\nsubnet vec:");
for(i=0; i<lensub; i++)fprintf(stderr," %d",subnet[i]); fprintf(stderr,"\n\n");</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      . $54");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      " &5d");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         " $54");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "$5d");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            " 45d");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           " $54");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       stanames[st num],"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             at num,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               abs stas[st num],
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         stas[st num],
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ltas[st num],
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               abs ltas[st_num],
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  etas[st num],
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sta trigger[st num],
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   perr(message) char *message; {
   st_error(0,0,0,"online: error on statement \"%s\"\n",message);
                                                                                                                                                                                                                                                                                                                                                                                                                                                              #define PRI(mes, var, fmt) {fprintf(stderr, "%s:", mes); for (1=j; 1<k; 1++) { st_nnn = looksta[1]; \fprintf(stderr, fmt, var); }
                                  for(i=j; i<k; i++)fprintf(stderr,"%dd ",i);
for(i=j; i<k; i++)fprintf(stderr,"%ds ",etsname[i]);</pre>
                                                                                                                                                                                                              fprintf(stderr,"\nsubnet %d: %3d ", nsub++, thresh);
                                                                                                                                                                              (thresh = subnet[lensub++]) != -1) {
                                                                                                                                                                                                                                                                                fprintf(stderr, " &s", staname[st_num]); }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fprintf(stderr, "\n"); }
                                                                                                                                                                                                                                             while ( (st_num = subnet[lensub++]) != -1 )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if(pxt_st_abs av || force)PRT("staa",
if(pxt_st_abs av || force)PRT("itaa",
if(pxt_stas || force)PRT("sta",
if(pxt_strg || force)PRT("trg",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(prt_st_av || force)PRT("lta",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT ("num",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(prt_st_av || force)PRT("sta"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT ("nam",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 for(j=0; j<nlook; j+=NLINE-1){
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 k = MINN(j+NLINE-1, nlook);
      k = MINN(j+NLINE, nsta);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    fprintf(stderr, "\n"); }
                                                                                                           fprintf(stderr, "\n"); }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* fprintf(stderr,"\n");*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Int 1, j, k, st_num;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            wrt diags (force)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            exit (1);
                                                                                                                                                                              while(
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "nsta decim constl/constl thresh constl/constd way inc bufar nbuf nchan sec/buf\n")
fprintf(stderr, "%4d %5d %6d/%-6d %6d %6d %6d %5d %4d %5d %7g\n\n",
nstations, decim, constl, constl, threshold, constl, constl, constl, constl, constl, constl, constl, way_inc, bufar,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                nb before, nb after, nb beforethb after, (nsw sperture*sweep) /spb, sweep/spb); fprintf(stderr, "ssecs %8g %8g %8g %8g %8g\n\n", nb_before*spb, nb_after*spb,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           for(i=j; i<k; i++)fprintf(stderr,"%4d ", i ); fprintf(stderr,"\n");
for(i=j; i<k; i++)fprintf(stderr,"%4d ",looksta[i]); fprintf(stderr,"\n");
for(i=j; i<k; i++)fprintf(stderr,"%4s ", stansmes[ looksta[i] ]);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BWeep rate\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                fprintf(stderr,"data from pseudo a2d file %s, not a2d\n", pseudo_a2d);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      fprintf(stderr, "Triggering computation will be done on these stations: \n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (cach file) fprintf(stderr, "cache is on disk file %s\n", cach file);
else fprintf(stderr, "cache is in core\n");
if (tape file) fprintf(stderr, "output to tape: %s\n", tape file);
if (disk_file) fprintf(stderr, "output to disk: %s<date+time>\n", disk_file);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if(diffeam ) fprintf(stderr, "samples differenced before computation\n");
if(dyn_flag ) fprintf(stderr, "dynsmic flags enabled\n");
if(pseudo a2d) fprintf(stderr, "data from pseudo a2d file %s, not a2d\n",
pseudo a2d);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     fprintf(stderr, "Eqdetector: network %s: begin at local time: %s",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            snet(staname, subnet, nsta) char staname[][MSZ]; int *subnet; {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ns before, ns after, ns write, ns sperture, ns sweep, 1); fprintf(stderr, bufs 48d 48d 48d 48.3g 48.3g/n",
                                                                                                                                                                                                                                                                                                                                                                               double spb = bufsz/(double) (nchan*rate); /* secs per buf */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               write aperture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           before, after, before-tafter, aperture, sweep, rate);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (nb before-thb after) *spb, nsw aperture*sweep, sweep);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        fprintf(stderr," before after write apv
fprintf(stderr,"psecs 48g 48g 48g 48g 1/40\n",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fprintf(stderr, "samps %8D %8D %8D %8D %8D %5d\n",
   diagnostic printouts for online.c */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int 1, j, k, nsub=0, lensub=0, thresh, st_num;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      wrt_snet (stanames, subnet, nstations);
                                                                                                                                                                           (x < y ? x : y)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           for (j=0; j<nlook; j+=NLINE) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 - MINN (j+NLINE, nlook);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      fprintf(stderr, "\n\n"); )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 for (j=0; j<nsts; j+=NLINE) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (|prt_parm && |prt_diag)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           network, ctime (&now));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      fprintf(stderr, "\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     fprintf(stderr, "\n");
                                                                     ||include "eqdetector.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    nbuf, nchan, spb);
                                                                                                                                                                                                                                                                                                                   long now, time();
                                                                                                                                                                           define MINN(x, y)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            fprintf(stderr,
                                                                                                                                                                                                                                                                                                                                                   char *ctime();
                                                                                                                                                                                                                                                                                                                                                                                                                     now = time (0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if (pseudo
diag.c ---
                                                                                                                                                                                                                                                                                Int 1, 3, k;
                                                                                                                                           define MLINE
                                                                                                                                                                                                                                             wrt parame () {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9
```

```
for (i=2; i<argu; i++)
if (dynflag (argv[i])) fprintf(stderr,"Got dynflag: %s\n", argv[i]);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                             --
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* file must exist and be new or newer */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               puttime(name, f);
/* fprintf(stderr,"dynflag(%s) t=%D f=%D\n", name, t, f); */
                                                                                                                                                                                                                                                                                                                                                                                                                        /* rtns last filtime or 0 lst time /* rtns mod time or 0 if nonexistant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      fprintf(stderr, "Usage: dynflag sleeptime names\n");
long filtime (name) char *name;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 main(argo, argv) char **argv;
                                                                                                                                                                                                                                                                                                                     dynflag (name) char *name; {
                                                                                                                                                                                                                                      return (statb.st mtime);
                                                                                                    fd = open(name, 0);
if(fd < 0) return(0)</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                             t = gettime(name);
f = filtime(name);
                                                                                                                                                                                    fstat (fd, &statb);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     - atof (argw[1]);
                                                    struct stat statb;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            return ( £ > t);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sleep(s); )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (argc < 3) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   exit(1); )
                                                                                                                                                                                                              close (fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        while (1) {
                                                                                                                                                                                                                                                                                                                                                                        long t, f;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           #ifdef DEBUG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              int s, 1;
                                                                                                                                                                                                                                                                                                                                             int fd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | endif
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               st_error(0,0,"\n(simulated) LPA read failure: please restart online program");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       static save st av, save st abs av, save etas, save strg, save diag, notfirstime;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* if not init set then dyn */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* remember initial state of flags */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if(1 == MAXDICT) { fprintf(stderr,"stat dictionary overflow\n"); exit(1); }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if ( dynflag("all") ) prt_st_av = prt_st_abs_av = prt_stas = prt_strg = 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  long gettime(name) char *name; { return ( stattime[lookup(name)] ); }
puttime(name, t) char *name; long t; { stattime[lookup(name)] = t; }
                                                                                                                            The flag is signaled either by creation or touching of a file.
                                                Subroutine dynflag (name of flag) for controlling the calling program dynamically through use of a designated named file.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if(!save st av) prt st av = dynflag("st av"); /* if not
if(!save st abs av) prt st abs av = dynflag("st abs av");
if(!save etas) prt_etas = dynflag("etas");
if(!save_strg) prt_strg = dynflag("strg");
                                                                                                                                                                                      Beijing, China
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      for (i=0; i deaxDICT & statdict[i][0]; i++)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if( eq(name, statdict[i]) ) return(i);
                                                                                                                                                                                      September 1, 1986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if( dynflag("trigger") )fake trig = 1;
if( dynflag("harikari") )
dynflag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            save_st_av = prt_st_av;
save_st_abs_av;
save_sta = prt_etas;
save_sta = prt_etas;
save_strg = prt_strg;
notfirstime = 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            char statdict[MAXDICT][MAXLEN];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       strcpy(statdict[i], name);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       save diag = prt diag;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      long stattime[MAXDICT];
                                                                                                                                                                                                                                                            include "eqdetector.h"
                                                                                                                                                                                                                                                                                      #include <sys/types.h>
#include <sys/stat.h>
                                                                                                                                                                                 James W. Herriot
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if (!notfirstime) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if ( leave diag ) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    stattime[1] = 0;
                                                                                                                                                                                                                                                                                                                                                                     MAXDICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              lookup(name) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       return (1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ck_flags() (
                                                                                                                                                                                                                                                                                                                                                                 define
                                                                                                                                                                                                                                                                                                                                                                                                                          define
                                                                                                                                                                                                                                                                                                                                                                                                define
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98
```

wards:/usr/suds/src/cmd/eqdetect/eqdetector.c

10.39:11

```
= ns before
                                                                                                                                                                                                                                                               (aperture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            close (fileno (stdin));
                                                                                                                                                                                                                                                                                                                                                                             nsw sperture = sperture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         dup(fileno(tempfile));
dup(fileno(tempfile));
                                                                                                                                                                                                                                                                                      deems)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         progname=argv[0];
/* umask(PERMISSIOMS);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        proc_args (argo, argv);
                                                                                                                                                                          bufsz
                                                                                                                                                                                                             before
                                                                                                                                                                                                                             = after
      100 ;
1 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            chdir (DETECTDIR);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            fclose (tempfile);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    set defaults();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        fclose (stderr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      fclose (stdout);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  char **argv;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             main (arge, argv)
                                                                                                                                                                                                                                                                    ns aperture
                                                                                                                 long nhunk
                                                                                                  param init ()
                                                                                                                                                                                                             ns before
                                                                                                                                                                                                                                                                                                                        nb before
                                                                                                                                                                                                                                                                                      deams su
                                                                                                                                                                                                                                                                                                                                        nb after
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      #ifndef LPA
                                                                                                                                                                                                                               ns after
                                                                                                                                                                                                                                                 ns write
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     endif LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                  #1fdef LPA
rate
nbuf
                                                                                                                                                                        bufszb
                                                                                                                                                       bufez
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           andi f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 *
      Online seismic processing system with LPA or CDD Data Sampler
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    buffer size for a2d reads, shorts */
                                                                                                                                                                                                                                                                Many seismically important arguments are in seconds (not bufs). When executed with no args, options are documented.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               **
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       >>>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               secs of data for short term av */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                decimation for trigger calcing */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    numerator of long-term weight */
                                                                                                                                                    DMG. from LPA (buffer size and number of bufs set dynamically). Cache in core or on disk file (raw or cooked) as desired. Automatic triggering and all i/o in one real-time process.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             secs for coincident statn trig */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       denominator of long-term weight*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          seconds of data save bef trig
seconds of data save aft trig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 don't diff samps bef computatn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 dynamic flags are not enabled
                                                                           PLWard, August 1987, June, July, 1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sampling rate in samples/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            weigted average denominator
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             num of bufs for a2d to use
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       minimum eta for a trigger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              weigted average increment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             weigted average numerator
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  fprintf(stderr,"%s: Die called with arg=%d\n", progname,n);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       number of ald channels
                                                          USGS, Manlo Park, CA, August, 1982
                                                                                                                                                                                                                                                Most parameters dynamically set from command line.
                                                                                                                                                                                                                            Output is compatable with Ping and Pong programs.
                                                                                                                                                                                                           Final output on disk or tape or both as desired.
                                                                                                                                                                                                                                                                                                                                                                                                                umask */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            set_defaults & param_init ---
                                                                                                                                                                                                                                                                                                                                                                           |define DETECTDIR "/usr/eqdetector/detected"
                                                                                                                                                                                                                                                                                                                                                                                                                *
                                             J. Herriot
                                                                                                                                                                                                                                                                                                                                                                                          define DETECTIOG "detect.log"
                                                                                                                                                                                                                                                                                                                                                                                                              define PERMISSIONS 0133
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        include "eqdetector.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    finclude <sys/file.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   50 ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            90
        :
                                                                                                                   Program features:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        finclude <signal.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                   finclude <stdio.h>
        eqdetector.c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    set defaults() (
                                                                                                                                                                                                                                                                                                                                        GROUPID
                                                                                                                                                                                                                                                                                                                                                           define USERID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           thar *progname;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       threshold
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                dyn flag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sperture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      exit (n);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Iffindef LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WAY inc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            di ffsan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      endif LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               eweep
decim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          const3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          const4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 int n;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          before
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    const1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     const2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            after
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         nchan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  bufez
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      rate
                                                                                                                                                                                                                                                                                                                                        define
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ppar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        O die (n)
```

```
onquit() { signal (SIGQUIT, onquit); fake_trig=1; fprintf(stderr, "\nFake_trigger\n"); }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* set all parameters to defaults */
/* change parameters given in command line */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* Disconnect standard input from terminal and attach to /dev/null */
  * *
                                                                                                                                                                                                      **
                                                                                                                                                                                                                                                                               * ::
                                                                                                                                                                                                                                                                                                                                                           rate) / decim;
rate) / decim; /* Note: decim div */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* aperture of sweeps */
                                                                                                                                                     /* getsweep sz words */
                                                                                                                                                                                                      /* want multiple
/* in bytes
/* sampling rate in samples/sec
/* num of bufs for a2d to use
                                                                                                                                                                                                                                                                                    /* num samples
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* Divert standard output and standard error to a logfile */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* Increase priority where initial priority is unknown */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if(nice(-40)im0) st_error(0,0,"Unable to set nicem-20");
if(nice(16)im0) st_error(0,0,"Unable to set nicem-4");
                                                                                                                                                                                                                                                                                                                                                                                                                                   nchan + bufsz - 1) / bufsz;
nchan + bufsz - 1) / bufsz;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         onquit() {fake_trig=1; fprintf(stderr, "fake trigger\n");}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(setgid(GROUPID))st_arror(0,0,"unable to setgid");
if(setuid(USERID ))st_arror(0,0,"unable to setuid");
                                                                                                                                                                                                                                 sizeof(short);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* for unix version 4.2bsd */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* for 44unix, version 7 */
                                                                                                                                                                                                                                                                                                                                    ns after;
                                                                                                                                                        * decim;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               / sweep;
                                                                                                                                                                                                        * nbunk;
                                                                                                                                                                                                                                                                                    rate;
                                                                                                                                                                                                                                                                                                                rate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       tempfilemefopen (DETECTIOG, "a+");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             open("/dew/null", o_RDONLY);
                                                                                                                                                                                                        (bufsz/nhunk)
                                                                                                                                                     - (long)nchan
                                                                                                                                                                                                                                                                                                                                                                                                                                     (ns_before
(ns_after
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILE *tempfile, *efopen();
```

```
87 (1978)
      10:30
```

```
abs_ltas[s]=st_abs_sum[s]/ns_sweep; }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ltas[s] = new lta;
                                                                                                                                                                                                     s = looksta[i];
                                                                                                                                                                                                                                                                                            sta = sbs sta -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         while (s
                                                                    return(0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            return(0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       while(
                                                                                                                                                                             /* eqdetection: calculate running averages and trigger on suspected events */
/* display values of parameters */
/* for testing online startup */
/* fake trigger on cntl-\ key */
                                                                                      /* init cache */
/* open a2d */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /* save curr sample */
/* diff with last */
/* remember last samp */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* speed short cut */
/* ignore a2d data */
/* don't call trigger */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /*for(s=0;s<16;s++)fprintf(stderr, "%d ",psamp[s]forr);
fprintf(stderr, "\n"); */ /* print headers to show ald working */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 just some stations */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               and rectified sums */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* calc etas, station and master triggers */
/* return: 1-waster trigger, 0-mo trigger */
new_lta, new_abs_lta, thresh;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     get station number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* diff for abs func
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /* get l sample/stat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          use differences?
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ck dynamic flags
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* for each sample
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             add to reg sums
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* just some stati
/* get station num
/* get a2d sample
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        may trigger
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* trigger: done once after each ns_sweep=sweep+rate/decim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                for (s=0; s<nstations; s++) st_sum[s] =st_abs_sum[s]=0;
                                                                                      cach init (cach file, nb before, nb after, bufsz); a2dopen(rate, 0, 1, nchan, nbuf, bufsz);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -thissamp-lastsamp[s];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 for(1=0; 1<ns_sweep; 1++)getsweep();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       - samp - ltas[s];
                                                                                                                                                                                                                                                                                                                                                                                                                                                static int lastsamp[MAX_STA], thissamp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             st_abs_sum[s] += Abs(diff);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 samp = psamp[s] - A2D ZERO;
                      if(exit_early)exit(0);
if(fake_ok) signal (SIGQUIT, onquit);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          last samp[s] =thissamp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           'dure =+
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for (sweepnum=0; 1; sweepnum++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if( dyn_flag ) ck_flags();
if( trigger() ) trig_on();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               for (1=0; i<ns sweep; i++) {
  psamp = getsweep();</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   for (j=0; j<nlook; j++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for (1=0; i < nlook; i++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       - looksta[j];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if(shortcut && trig){
                                                                                                                                                                                                                                                                                                                                                                                                       1, s, j, samp, diff;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 int eta, sta, abs sta,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              thissamp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if (diffsam) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        static firsttime=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         st_sum[s]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         continue;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           register i, s;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (firsttime) {
                                                                                                                                                                                                                                                                                                                                                                                                                           short *psamp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     diff
                                                                                                                                                                                                                                                                      eqdetection();
    wrt parame()
                                                                                                                                                                                                                                                                                                                                                           agdetection ()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     trigger() (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100
```

ltas[s]=st_sum[s]/ns_sweep;

s = looksta[i];

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   **
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* age trigger */
/* set statn trig */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* save for diagn */
                                                                                                                                                              /* one-time fake trig */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* weighted avg
/* if no change
/* favor sta...
/* over long avg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* weighted avg
/* if no change
/* favor sta...
/* over long avg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* loop thru subnet vector looking for a particular subnet
* whose number of triggered stations is >= to thresh for that net.
* Structure of subnet where thresh-threshhold and sustation num is:
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * <t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ( (thresh = subnet[1++]) != -1 )
[le( (s = subnet[1++]) != -1 )
if( (thresh -= sts_trigger[s] > 0 ) <= 0)return(1);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            new_abs_ltam(abs_sta+const3*abs_ltas[s])/const4;
if(new_abs_lta == abs_ltas[s]){
   if(abs_sta > new_abs_lta)new_abs_lta+=wav_inc;
   if(abs_sta < new_abs_lta)new_abs_lta+=wav_inc;
}</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        new_lta = (sta + const3 * ltas[s]) / const4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          etas[s]meta; stas[s]msta; abs_stas[s]mabs_sta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if (eta > 0) sta_trigger[s] = nsw_aperture;
                                                                                                                                                   if(fake_trig) { fake_trig=0; return(1); }
                                                                                                                                                                                                                                                                                                                                                                                                                                                              (const1 * abs ltas[s]) / const2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        abs (ltss[s]-sta) - threshold;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if(sta trigger[s])sta trigger[s]--;
                                                                                                                                                                                                                                                                                                                     stamst_sum[s]/ns_sweep;
abs_stamst_abs_sum[s]/ns_sweep;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(sta > new_lta)new_lta++;
if(sta < new_lta)new_lta---;</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   abs_ltas[s] = new_abs_lta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (prt_diag) wrt_diags (0);
if (log_file) fflush (stderr);
if (prt_diag) wrt_diags (0);
                                                                                                                                                                                                                                    for(1=0; 1< nstations; 1++)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if(new_lta == ltas[s]) {
```

```
80/03/08
10:30:33
```

```
= (short *)a2dptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if(a2dcount <= 0)a2dread();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a2dfd = open pseudo ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         signal (SIGINT, onintr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a2dcount -= a2dsize;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                += a2dsize;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    if (a2dbuff == 0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      short *getsweep() {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                char *a2dread();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       return (sp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1f (prt_a2d) {
                                                                                                                         long scrate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             short *sp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       return;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          register 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  #1fndef LPA
                                                                                                                                                                                                                                                                                                                                                                                                                              #ifndef LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a2dptr
                                                                                                                                                                                                                                                                                                           ifdef LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         #ifdef IPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Condif LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       #endif
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             endif.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* number of bytes per word */
                                                                                                                                                                                                                                                        This routine is only called by getsweep or a getsweep macro. Ipsread reads one buffer from a2d and calls putcach.
                                                                                                                                        Opens a2d. Locks in core so no mallocs after this point.
                                                                                                                                                                                    Returns pointer to a vector of samples of one time slice. If decim is 1 time slices will be skipped accordingly.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /* diagnostic switch set in args.c */
/* diagnostic switch to print time */
/* decimation factor for detaweep */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* pointer to current buffer */
/* size of sample vector in bytes */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* idx of current buff (0..nchan-1) */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /* entire contiguous a2d data area
/* file descriptor for a2d
/* size of one a2d buffer in bytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* decimation factor for getsweep
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* allow fake trigger from signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int fake ok; /* allow fake trigger from signal char *pseudo a2d; /* data from file instead of a2d int prt_mall; /* print out mallocs
getsweep.c -- a2d read routines for stdio-like access
                                                                                           aldopen (rate, ichan, chani, nchan, nbuf, bufer)
                                            The following routines are called from online.c: open and foctl for SCSI atod or for lps call
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     static double bef time, aft_time, now_time;
static double clock() {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   return (tp.time + tp.millitm * .001);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "/dev/rst1";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sizeof (short)
                                                                                                                                                                                                                                                                                                                                 "eqdetector.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   include <sys/ioctl.h>
include <sys/types.h>
                                                                                                                                                                                                                                                                                                                                                                             include <sys/types.h>
                                                                                                                                                                                                                                                                                                                                                                                                                          include <eys/timeb.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    static int a2dbufs;
static char a2dbufn;
static char *a2dbed;
                                                                                                                                                                                                                                                                                                                                                                                                   include <sys/stat.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                include < sys/file.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          static char *a2dbuff;
static int a2dfd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a2dsize;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     prt_a2d;
prt_tim;
decim;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              include <whoami.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  static char A2D[] =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  struct timeb tp;
ftime ( &tp );
                                                                                                                                                                                                                                                                                                                                                      include <stdio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      define BSIZE 4096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              #include <signal.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 include "lpa.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           define BSIZE 1
                                                                                                                                                                                                                                     a2dread()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        # define MBPW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ifndef LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      int intr=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       i i i i
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    endif LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           onintr() {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  intral;
                                                                                                                                                                                                                                                                                                                                 include
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sudif
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    J
```

```
fprintf(stderr, "Need to re-adjust parameters or use disk-file cache.\n\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (pxt_a2d) {
    fprintf(stderr,"a2d: scrate ichan chani nchan nbuf bufex eixe bufex\n");
    fprintf(stderr," %6D %5d %5d %8d %5d %4d %5d\n\n",
    scrate,ichan,chan,nbuf,bufex, a2deixe,a2dbufex);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          fprintf(stderr,"a2d: scrate ichan chani nchan nbuf bufsx sixe bufsx\n");
fprintf(stderr," %6D %5d %5d %4d %5d %4d %5d\n\n",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if(a2dbuff == 0 || (long)a2dbufer * nbuf > 655351) { /* malloc err */
fprintf(stderr, "********* a2d buffers are too large. ********\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(pseudo_a2d) {
   if(prt_a2d) fprintf(stderr, "pseudo_a2d to be used. Lps not opened.\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                       if(prt mall) fprintf(stderr,"a2dopen: malloc(%u)\n", a2dbufss*nbuf);
a2dbuff = (char *)malloc(a2dbufss*nbuf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    scrate,ichan,chan,nchan,nbuf,bufex, a2dsixe,a2dbufex); }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   scrate*nchan, ichan, chani, nchan) < 0 )
*a2dptr; /* pointer to next sample vector */
a2dcount; /* num bytes still valid in cur buf */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    st_error(0,0,"a2dopen: malloc(%u)\n", a2dbufsr*nbuf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if (prt_mall) fprintf (stderr, "a2dopen: malloc(%u) = %u\n",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                st_error(0,0,"online/a2dopen: cannot open a2d");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if( (a2dfd = adopen(a2dbuff, a2dbufsx/MBPW, nbuf,
                                                                                                                                                                                                                                                                                                                    a2dsize = nchan * (decim>1 ? decim : 1) * NBPW;
a2dbufsz = (bufsz/nchan)*nchan * MBPW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   aldbufsz*nbuf, aldbuff);
                                                                                                                               a2dopen (scrate, ichan, chani, nchan, nbuf, bufsx)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   a2dfd = atod_open(A2D, 1000/rate, nchan);
                                                                                                                                                                                    int ichen, cheni, nchen, nbuf, bufer;
    char *a2dptr;
```

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89/03/29
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```
/* try to avoid malloc to save space */
                                                                                                                                                                                                                                                                 r = read(fd, h, n);
if(r != n) st_error(0,0, "Error in reading pseudo a2d file header. r=$d", r);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (r != a2dbufsz) st_error(0,0, "End of file reached on %s pseudo a2d file",
                                                                                                                    if (h == 0) st_error(0,0, "Can't mallog(%d) for for reading a2d header.", n);
                                                                                                                                                                            fd = open(pseudo_a2d, 0); if (fd < 0) st_error(0,0,"Can't open %s as pseudo a2d file", pseudo_a2d)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if(prt_a2d) fprintf(stderr, "get_pseudo: %d = read(%d, %u, %u)\n",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            r, a2dfd, a2dbuff, a2dbufsa);
                                                                                                                                                                                                                                                                                                                                                                                     if(prt_a2d) fprintf(stderr, "open_pseudo() called n=td\n", n);
                                                                                    h = n < 2048 ? buf : (char *)malloc(n);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              pseudo_s2d);
/* n = sireof h();

NEED TO FIX THIS UP TO NORK 7/27/88 PIM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       r = read(a2dfd, a2dbuff, a2dbufez);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     get_pseudo(n) int *n;
                                                                                                                                                                                                                                                                                                                                                                                                                                                return (fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        return (1);
                                                                                                                                                                                                                                                                                                                              free (h);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           *n = 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if(r != BSIZE) st_error(0,0,"\n A2D read failure: please restart online program");
                                                                                                                    /**** before ****/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /**** after ****/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* a2d buffer is full */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* get data from a file */
/***** read the a2d *****/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /**** read the a2d *****/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /**** after ****/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* try again */
                                                                                                                                                                                                                                                                                                                                                                                                             /* if(prt_a2d)fprintf(stderr,"a2d"); */
if(prt_tIm) {
    now_time=clock();
    if(aft_time)=0)fprintf(stderr,"calc time = %-6.5g/%-6.5g = %-6.3g\n",
    if(aft_time)=0)fprintf(stderr,"calc time = %-6.5g/%-6.5g = %-6.3g\n",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fprintf(stdout, "\nOnline program interrupted by Cntr-C.\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          fprintf(stderr, "\nonline program interrupted by Cntr-C.\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if(r != BSIZE && fake_ok) r = read(a2dfd,a2dbuff,BSIZE);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(atod_geterr(a2dfd) == 4) {
st_error(0,0," AtoD buffer overflow. Resetting.");
                                                                                                                                                                                                                                      now_time-aft_time, now_time-bef_time,
(now_time-aft_time) / (now_time-bef_time) );
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                = a2dptr = a2dbuff + a2dbufn * a2dbufsz;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* put cache is in cache.c */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (pseudo_a2d) r = gat_pseudo(a2dbuff);
else
r = read(a2dfd,a2dbuff,BSILE);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if(prt_a2d)fprintf(stderr,"(%d) ", a2dbufn);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /* if(prt_s2d)fprintf(stderr, "(%d) ", r);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          r = read(a2dfd,a2dbuff,BSISE);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if (prt_tim) aft_time=clock();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             = a2dptr = a2dbuff;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if (remEOF && !pseudo &2d) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                atod resero (a2dfd);
                                                                                                                                                                                                                                                                                                 bef time-now time; }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (stderr!=stdout)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a2dcount = a2dbufaz;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                a2dcount = a2dbufsz;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int i, n, r, fd;
char *h, buf[2048];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         putcach (a2dbed);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              close (a2dfd);
                          char *a2dread() {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 return a2dbed;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  fflush(stderr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   () opnesd uedo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if (intr) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ifndef LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  #ifndef LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a2dbed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             a2dbed
                                                                                                                                                                                                                                                                                                                                                                                     #1fdef LPA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       endif
```

```
/*start it up*/
if( loctl(ffd, SETLPAP, &sg) <0 )
st_error(0,0, "init error on lpa file %s", A2D);
return ffd;
sg.lclkbits = ENACTR|RIM|MFIE|MRI;
                                                                                                                                                                                                                                             return stakup(n);
                                                                                                                            static int stakup (n)
                                                                                                                                                                                                int junk[10];
                                                                                                                                                        int n;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    st_error(0,0,"write error on microcode %s",MCODE);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if( (nread = read(fd, junk, size junk)) <0 )
    st error(0,0, "read error on microde %s", MCODE);
if( write(ffd, junk, nread)!=nread )</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 at error(0,0,"can't open lpa file %a",A2D);
if( {fd = open(MCODE,0)><0 }
st_error(0,0,"can't open microcode %a",MCODE);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       st_error(0,0, "write error on table %s", DMDT);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /*sample rate in hz*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*buf size in words*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             st error(0,0, "read error on table %s", DMDT);
                                                                                                                                                                                                                                                                                                                                                                                                                            adopen(buf,bufsix,nbuf,rate,ichan,chani,nchan)
short *buf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 st_error(0,0,"can't open table %s",DMDT);
if( inread = read(fd,junk,sizo junk))<0 )</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /*scan sequence*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /*expand preparatory to locking in core*/
free(malloc(2048));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /*#buffers*/
                                                                                                                                                                                                                                                                                                                                                     "/dev/ad0";
"/kmc11/dmast.dat";
                                                                                                                                                                                                                                                                                                                                                                                          "/kmcll/dmdt.dat";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sg.lbufdesc = (nbuf-1)<<13 | bufsix;
if( nchan<=0 )</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if( write (ffd, junk, nread) !=nread )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sg.lmochan = L_MCHM | nchan;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    #g.lcinc = chani<<8 | 1chan;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if( (fd = open(DeDT, 0)) <0 )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sg.lsrate = -1000000L/rate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if( (ffd = open(A2D,2))<0 )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if( nchan>1 && chani<=0 )
  chani = 1;</pre>
                                         adopen() --
open lps for a / d input.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   short ichan, chani, nchan;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sq. lmochan = ichan;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         extern char *malloc();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *sequential mode
                                                                                                                                                                          include <sys/param.h>
include "lpa.h"
                                                                                                                                                                                                                                                                                                                                                                  static char MCODE[] =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sg.lbufvad = buf;
                                                                                                                                                                                                                                                                                                                                                                                            static char DMDT[] =
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  char junk[2048];
                                                                                                                                                  include <whosmi.h>
                                                                                                                                                                                                                                                                                                                                                     static char A2D[] =
                                                                                                                                                                                                                    include <egtty.h>
                                                                                                                                                                                                                                                                                                       struct lpastty sg;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      reg int nread;
int ffd, fd;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        nchan = 1;
                                                                                                             exits on error?
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if (chanil=0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              short bufsiz;
                                                                                                                                                                                                                                                             include "key.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       short nbuf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           stakup (10);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               long rate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      close (Ed);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               close (fd);
                                                                                       for now,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -120
                                                                                                                                                                                                                                                                                                                                                                                                                                        int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  104
```

```
striptime(getcach(current), smd.begintime, smd.loctime, timestring);
fprintf(stderr, "Event detected at %s\n", timestring);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if(xchg tape &6 event num > xchg tape){
  unit num = tape file + strlen(tape_file) - 1;
  tunit num = *unit num == '1' ? '3' : '1';
  /*????? event_num == 0; What about disk_file naming ?????*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        fprintf(stderr, "changing tape output to %s/n", tape_file);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                st error (die, 0, "Unable to open tape file %s", tape file);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     st put (ats, TRIGSETTING, sizeof (struct trigsetting), d fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   st put (6tr, TRIGGERS, sizeof (struct triggers), d fd);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        strncpy(tr.tr_name.st_name,stids[i].st_name,5);
tr.tr_name.component=stids[i].component;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 strncpy (tr.tr name.network, stids[i].network, 4);
                                                                                                                                                                                                                                                                                /* dont write header */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (disk_file) {
sprintf (full_name, "%s%s", disk_file, timestring);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            tr.tr_name.inst_type=stids[i].inst_type;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if((t fd=fopen(tape file, "w")) != NULL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 tr.num_triggers=sta_trigger[i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if(pxt_trig) {
st_init(TPIGSETTING, sts);
strncpy(ts.netwname, network, 4);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tr.trig time-md.begintime;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                d_fd=st_open(full_name, "w");
                                                                                                                                                                                                                                                                                                                                                                   strncpy (md.netname, network, 4);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ts.beginttime and.begintime;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 tr.abs stamabs stam[1];
tr.abs ltamabs ltam[1];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        st init (TRIGGERS, &tr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      tr.trig value-etas[i];
     tm *qmtime(), *stmp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for (j=0; j<njook; j++){
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ts.threshold-threshold;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ts.aperture-aperture;
                                                                                                                   extern short *getcach();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ts.wav inc-wav inc;
                                                         trigsetting ts;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     md.numchans=nstations;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           tr.lta=ltas[i];
                                                                                                                                                                                                                                                                                                                                       init (MUXDATA, and);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               tr.stamstas[1];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ts.constl=constl;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ts.const3=const3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ts.const4=const4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ts.const2=const2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             [=looksta[j];
                                                                                  triggers tr;
                                                                                                                                              extern int current;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ts.sveep=sveep;
                                                                                                                                                                                                                                                                                   if (no bead) return;
                                muxdata md;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              md.dig rate=rate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          md.typedata='r';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (tape file) (
                                                                                                                                                                                                event_num++;
                                                                                                                                                                                                                                 ert num-0;
       struct
                                   truct
                                                            rtruct
                                                                                       rtruct
                                                                                                                                         /* disk and tape file descriptors */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* calculate difference GMT-local time */
                                                                                                                                                                                                                       /* 4 least significant bits */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sec=(tbuf[9] & MSK4)*10.0+(tbuf[10] & MSK4)*1.0+(tbuf[11] & MSK4)*0.1+
(tbuf[12] & MSK4)*0.01+(tbuf[13] & MSK4)*0.001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                st_error(0,0, "Data error: Magic time bits at time %s=%d",timstr,i);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* calculate the matime
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 st error(0,0,"Clock error bits at time %s=%d",timstr,err);
if((i=tbuf[15] MSK4) != 14)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              dy=(tbuf[2] & MSRA)*100+(tbuf[3] & MSRA)*10+(tbuf[4] & MSRA);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        st_error(0,0,"Unable to get time of day from UNIX");
return(0);
out.c -- final output routines for online.c */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         hr=(tbuf[5] & MSK4)*10+(tbuf[6] & MSK4);
mn=(tbuf[7] & MSK4)*10+(tbuf[8] & MSK4);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   *mstime=make mstime(yr,0,dy,hr,mn,sec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         gt=gmtime(6tp);
diff=(60*gt->tm_min)-diff;
                                                                                                                                                                                                                                                                           int striptime (tbuf, mstime, locdiff, timstr)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 stropy (timstr, list_mstime (*mstime, 1));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dy=1900+((gt->tm_year/10)*10)+i;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          full_name[100], *unit_num;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  *ctime(), timestring[14];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           diff=60*gt->tm_hour+gt->tm_min;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         else if (diff<-720) diff+=1440;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             diff=gettimeofday(&tp, &tzp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        extern char *list metime();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if (dy-yr>1) dy-=10;
else if (dy-yr<1) dy+=10;</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1£ (d1££>720) d1££-=1440;
                                                                                                                                                                                                                                                                                                                                                                                                                int yr, dy, hr, mn, err, i;
                                                                                                                                  static FILE *d_fd, *t_fd;
                                                                                                                                                                                                                                                                                                                                                                                                                                           double sec;
MS TIME make metime();
                                                                                                                                                                                                                                                                                                       short *tbuf, *locdiff;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  yr=gt->tm year+1900;
if(yr%10!=i) {
                                                                             #include "eqdetector.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           struct timesone trp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            time(), timep;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  struct timeval tp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gt=localtime (Gtp);
                                                                                                                                                                                           #include <sys/time.h>
                                                                                                                                                                                                                                                                                                                             MS TIME *metime;
                                                    |include <stdio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1-tbuf [1] chsK4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              struct tm *gt;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     *locdiff=diff;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if (diff== -1)
                                                                                                                                                                                                                    define MSK4 OxF
                                                                                                                                                                                                                                                                                                                                                           char *timstr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Int diff;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     newfile()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     int
```

```
/* skip comments
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /* read subnets
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             for(i=0; i<nst; i++)if( EQ(stansme[i]) )return(i);
fprintf(stderr,"online:read net: unknown station name %s\n", s);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               else subnet[nsub++] = snam2snum(s, stanames, nstations);
                                                                                             strncpy (stids[j].network, sc_ptr->sc_name.network, 4);
                                                                                                                               strncpy(stids[j].st_name, sc_ptr->sc_name.st_name,5);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  st error (die, 0, "Unable to open subnet file %s", fname);
                               if (j==1) strncpy (network, sc_ptr->sc_name.network, 4);
                                                               strncpy (staname[j], sc ptr->sc name.st name, 5);
                                                                                                                                                          stids[j].component=sc_ptr->sc_name.component;
stids[j].inst_type=sc_ptr->sc_name.inst_type;
staname[j][4]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1f( EQ("/*") )while ( GET TOK 66 | EQ("*/") );
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ( stromp(s, strg) == 0 )
( fscanf(fp, "%s", s) == 1 )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        if((fp = fopen(fname, rdaccess)) == 0 )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ( stromp(s, strg)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            if (nsub) subnet [nsub++] = -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               alsa 1f (*s>='0' 66 *s<='9')
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  subnet [nsub++] =stoi(s);
if(j>maxstat)maxstat=j;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              #define EQ(strg) ( stremp(s
#define GET TOK ( fscanf()
static char *rdaccess = "r";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      snam2snum(s, staname, nsts)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   char *s, staname[][NSZ];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           net=1, nsta, nsub;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 getsubnets (fname, subnet)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            subnet[nsub++] = -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         subnet[nsub++] = -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILE *fp, *fopen();
                                                                                                                                                                                                                                                                                       st free (sc ptr);
                                                                                                                                                                                                                                                                                                                                                       st close (statfile);
                                                                                                                                                                                                                                                                                                                                                                                         return (maxstat+1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     while ( GET TOK )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              int *subnet;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        char s[128];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 char *fname;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         fclose (fp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   int nate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        neub=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* read stationcomp structure information */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if (nstations > MAX_STA) st_error(0,0, "Too many stations %d", nstations);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         st_error(die, 0, "Channel number not assigned for station %s",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if (folose (d_fd) ==EOF) st_error (die, 0, "Unable to close disk file");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(fclose(t_fd)==EOF)st_error(die,0,"Unable to close tape file");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             while ( (s=subnet[i++]) != -1) stamssk[s]++;
for(nlook=s=0; s<nstations; s++)if(stamssk[s])looksta[nlook++] = s;</pre>
                                                                                                                                                                                                                                                 if(fwrite(buf, 1, bufszb, d fd) != bufszb)
st_error(0, 0, "Unable to write full data buffer to disk");
                                                                                                                                                                                                                                                                                                                                                                                                              if(fwrite(buf,1,bufszb,t_fd) != bufszb)
st_error(0,0,"Unable to write full data buffer to tape");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sc ptr->sc name.st name);
if(sc ptr->channel>=st_ara)
st_arror(die,0,"Channel number too large. %d>=%d",
sc_ptr->channel,MAX_STA);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 while (st_get (sec_ptr, sst_type, sst_len, statfile) !=EOF)
if (st_type==STATIONCOMP) {
                                                 st put(&md,MUXDAIA, sizeof(struct muxdata), d_fd);
if(prt_wbse)wrt_diags(1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (prt_out) fprintf(stderr, "(%d) ", wrt_num);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         nstations = getstats(stat_file, stanames);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      for (i=0; i < nstations; i++) stamask[i] = 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 if (sc_ptr->channel == (short) NODATA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (prt_out) fprintf (stderr, "tape");
                                                                                                                                                                                                                                                                                                                 if (prt_out) fprintf (stderr, "disk");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    statfile-st_open(stats_file, "r");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                char *state file, staname[][NSZ];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      getsubnets (subnet file, subnet);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       struct stationcomp *sc_ptr;
int i, j, maxstat, st_type, st_len;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                int getstats (stats file, staname)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int i, s, stamask[MAX STA];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        J=sc_ptr->channel-1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   while ( subnet[i++] != -1)
                                                                                                                                                                                       wrtfile(buf) short *buf; {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILE *statfile;
                                                                                                                                                                                                                          if(disk file) [
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if (disk file)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if (tape file)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       maxetat= -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           wrt num++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              rec num++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               head init ()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        endfile()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  106
```

÷÷

while
echo restarting online system
do
online -v -o online.log
done

/* on!	online.h (Online seismic pr	Online seismic processing system with LPA	1H	conttape;	Jt +/	write all data continuously	
* 1						ţ	to tape */	
. * *		USGS, Men]	J. Berriot and D. Fong USGS, Menlo Park, CA, August, 1982	*/	derived paramete	rs calculated f	derived parameters calculated from parameters above+ $^{+}$	
+ Pro	Program features:	:: 3		†ut	bufszb;			
* 1				long	ns before;	## */	num of samples to save before trigger */	
. 4	1. DMA from 1	LPA (butter size	from LPA (buffer size and number of bufs set dynamically).	782	nb berore;			
*		trindering and a	Cathe in the or on tisk like (raw of cooked) as desired. Automatic trindering and all 1/0 in one real-time process.	tut.	nb_after;	**	of buffers to save after tringer	
*		but on disk or ta	are or both as desired.	long	ns write:	/* tot	il num samples to write on trioner	
*		compatable with	Output is compatable with Ping and Pong programs.	long	ns aperture;			
*		meters dynamical	Most parameters dynamically set from command line.	long	ne eveep;	# n #/	samples in one trigger sweep	
*	7. Many seisn	mically important	Many seismically important arguments are in seconds (not bufs).	int	new aperture;	# n.m		
*	8. When execu	uted with no argu			1			
*				*/	variables u	sed in triggeri	variables used in triggering calculations	
#inclu	tinglude <asis ands.h=""></asis>	, p		long	at sum (MAX STA)	*	abort term sums for one sweet	
#inclu	include <stdio.h></stdio.h>	ì		lond	st abs sum MAX STA	.*	rectified short-term sums */	
				tut,		*		_
#defin	define MAX STA	32	/* maximum number of stations */	int		*	rectified short-term averages */	_
#defin	define MAX NET	196	/* maximum size of subnet vector */	int	Itas [MAX STA]	*		_
#define MSZ	ZSM •	ın	111	int		*		
				Int	etas [MAX STA];	*		
#11001				Tut Tut	8	* :	cigger	
#derine	•	(4096/2)	/* logical zero for lps */	T I		. :		
* fords	11.W			CDEL			stations names per aza chan	
# A A S A A	A MEA			786		. :	status as money, sellonestally	
A LANGE	DELLING ACU ZEKO	>	/" logical zero ror ipa	STATE	STATILLENT SCIUS (MAX_ST	. :	station component identifiers "/	_
į ū				100				
A Adefine abe(n)	a he (n)	1	/+		Hermore [4];		cwork name read from STATIDENT for	_
	(m)					-		
/*		erameters either	settable parameters either by command args or by default+/	*/	mis	misc global variables	/*	_
int	bufar.		/# huffer after for all mands	ţ	event nim:	*	ewent number has at 1 for output	_
int	ppnt:			long	rec pile:	*	count of all non-header records */	_
int	const1:		numerator for tricaer const	int	wrt. num:	*	of per-event non-hd records	_
int	const.2:			104		*		_
int	threshold		threshold for trigger	Tut	nbuftria:		Teb2	_
int	const.3:		weighted average numerator	4 mt	a2dsize:	/* a1		_
int	Const. 4:		weighted average denominator	char	*a2dotr:			_
int	way inc.		selficial evering desirement	į	a 2 decembre :		ant buffe	-
float	he fore		menyion everage anti-mone	100				٠.
float	after:		apacoa a					
float	anert ure.		seconds for coincident station tric	/*	diamontic as	- diagnostic switches to produce	use terminal output	
float	BWB BD:		sage of data for short t					
long	rate:			int	prt diag:	10 */	Drint outs of misc disconding	
int	decin			111	ort perm	'* pr	outs of	
int	nstations;			Int	prt etas;	/* pr	outs of	
int	nchan;		/* num channels from a2d, dflt nstations */	int	prt strg;		outs of	_
int	zchq_tape;		exchange tape units after event	int	prt_trig;		master trigger	
int	short cut;		suppress trigger computations	1nt	prt_vbse;		triger verbose	
int	diffsam;		difference samples before computation	1nt	prt_st_av;		outs of st av and It av	
int	dyn_flag;		/* enable use of dynamic flags +/	1 tr	prt st abs av;		of st abs av and it abs av	
				7ut	prt_cach;		of cache activity	_
/*	file names	also set by o	also set by command arguments or by default+/	Int	prt_a2d;			
				7ut	prt_out;		outs of output activity	
char	*otat_file;	*	-1	Int	prt_tim;	/* pr	print outs of time in a2d read */	
char	*subnet file;	110;	network and subnet file name	7ut	prt_mall;	/* pr	print outs malloc calls *	
char	*cach_file;	*						
char	*disk_file	*	final output to disk file name	*/	diagnostic switches	for	debugging the system+	_
Char	*tape file;		/* final output to tape file name */	_	•	1		
cher	"pseudo a2d;	ď;	data input from file, not a2d	i i	not rtp;	ne */	suppress RTP (real-time process) */	
char	*log_file;			1nt	fake_ok;	1. */		_

***	/*	*
<pre>/* fake trigger from signal SIGGUIT /* suppress write out of header /* for testing program startup</pre>	**	/* returns ptr to 1 vector of data
fake trig; no head; exit_early;	[b]	short *getsweep();
int int int	/*	short

```
89/03/29
13:55:38
```

```
-----
                                                                                                                                                                                         /* total number of channels in data
/* number of samples per second per channel
/* Tape record size
/* ascil hr,min,and sec from 1134 realtime clock
/* Date (day, month, year) in binary
/* Numning sum of signal for each chan
/* Running sum of rectified signal
                                                                                                                                                                                                                                                                                                                                               Long term signal average
Long term rectified signal average
Trigger criteria: plus for triggered station
Trigger state for each station
Set value for each station
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* Subnet list (changed to 196 2/12/80
/* Odds and ends and intertask commication
                                                                                                                                                                                                                                                                                                                                                                                                                                                         The master trigger
The set value for the master trigger
Decimation factor for trigger routine
                                                                                                                                                                                                                                                                                 Date (day, month, year) in binary
Running sum of signal for each chan
Running sum of rectified signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             See the common block structure of 11/34 routines for details
               These are the data included in that part of the common
structure which is written at the begining of each triggered
event on 11/34 tape. It is of a fixed size independent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   of most of the above. Flag values that are of interest to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         flag[3] Event number on tape.

flag[4],flag[5] fraction for computing eta

flag[7] number of buffers to process in one trigger sweep

flag[8] length of disc delay "tank" in buffers.

flag[9] number of tape records written (figured out by "get34")

*/
HEADER structure of 11/34 seismic data - -
                                                                                   of how many channels are being digitized.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       char station[MAXSIA][4];/* Station list
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       us here are listed below.
                                                                                                                                                                                                                                                                                                                                                                                                                                 strval[MAXSTA];
                                                                                                                                                                                                                                                                                                                                                   sbrbr[MAXSTA];
                                                                                                                                                                                                                                                                                                                                                                       rbrbr[MAXSTA];
                                                                                                                                                                                                                                                                                                                                                                                                               short strig[MAXSTA];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               short subnet[196];
                                                                                                                                                                                                                                                                                                                                                                                             short eta[MAXSTA];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ); #define HEADSIZE sizeof(h)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         short flag[100];
                                                                                                                                                                                                                                                                                                         6 [MAXSTA];
                                                                                                                                                                                                                                                                                                                             r[MAXSTA];
                                                                                                                                                                                                                                         short bufsize;
                                                                                                                                                                                                                                                                                   short date[3];
                                                                                                                                                                                                                                                               char time [8];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     short decim;
                                                                                                                                                                                             short tchan;
                                                                                                                                                                                                                     short rate;
                                                                                                                             #define MAXSTA 32
                                                                                                                                                                           header (
                                                                                                                                                                                                                                                                                                                                                                                                                                                           short
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 short
                                                                                                                                                                                                                                                                                                                                                   short
                                                                                                                                                                                                                                                                                                                                                                       short
                                                                                                                                                                                                                                                                                                                                                                                                                                       short
                                                                                                                                                                                                                                                                                                         long
                                                                                                                                                                                                                                                                                                                               long
                                                                                                                                                                           struct
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           = 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       D
```

```
# define reg register
# define until(x) do
# define until(x) while(!(x))
# define sixo sixeof
# define sixo continue
# define nonneg unsigned
# define nonneg long)(unsigned
# define bool char
/*
# define new(x) ([x=malloc(sixo*x))=0]
# define mowe(x) * moopy(x,y,sixo(*y))
*/
```

```
/*external event time mode*/
/*external event time mode from zero base*/
                                                                                                                                                                                                                                          channels for sgl channel mode
15:8 channel incr for seq mode
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /*external rate (from stl input)*/
                                                                                                                                                                                                                                                                     7:0 start channel for seq mode
                                                                                                                                                                                                                                                                                                      user requested clk params
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /*mode flag interrupt enable*/
                                                                                                                                                                                           15:15 1 for seq channel mode 0 for sgl channel mode
                                                                                                                                                                                                                        7:0 #channels for seq mode
                                                                                                                                                                                12:0 buffer size in words
                                                                                                                                                                                                                                                                                                                                                                                           hi order bits of buffer phys addr
lo order bits of buffer phys addr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /*single interval mode*/
/*repeat interval mode*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /*stl enable counter*/
/*stl interrupt enable*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      /*line frequency rate*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /*mode -- clock start*/
                                                                                                                                                                                                                                                                                                                                                                             gtty -- to get the real address of the buffers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  = 00 for analog imput
= 01 for analog imput with second ado
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ignored in this version of the driver
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           channel parameters passed in as above
                                                                                                                                                                                                                                                                                       ignored in agl mode
                                                                                                                                                  (-10**6/freq in hz)
15:13 #buffers-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /*enable counter*/
                                                                                                                                                                                                                                                                                                                                 read - 1 character indicating buffer index
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /*100 KHz rate*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /*100 Hz rate*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /*10 KHz rate*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /*1 MHz rate*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /*1 KHz rate*/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /*clock A*/
/* clock b */
                           modified by WFJolitz, D. Fong, EJHaug
                                                                        open
write microcode
write dedicated mode dispatch table
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 * minor device number = DDCCCCC where:
                                                                                                                                   buffer address
                                                                                                                                                                                                                                                                                                                                                  fill or empty buffer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 = channel number
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /*CLOCK START COMMAND*/
                                                                                                                    stty to set parameters
                                                                                                                                                                                                                                                                                                                                                                                                                         pesnun
                                                                                                                                                                 nbufe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              *clock status word*/
                                                                                                                                                                                bufez
                                                                                                                                                                                                                                                                         1 chan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ('1'<<8) |'g'
('1'<<8) |'s'
                                                                                                                                                   rate
                                                                                                                                                                                                                             chen
                                                                                                                                                                                                                                                          incr
                                                                                                                                                                                              apout
                                                                                                                                                                                                                                                                                                     clk
* LPA driver header file
                                                                                                                                                                                                                                                                                                                                                                                                           word1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (3<<8)
                                                                                                                                                                                                                                                                                                     word5
                                                                                                                                                                                              word3
                                                                                                                                                                                                                                                          word4
                                                                                                                                                                                                                                                                                                                                                                                              word0
             Ass Romberger
                                                                                                                                                   Wordl
                                                                                                                                                                 word2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   #define CLOCK 1
#define CLOCKA (0<<4)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (2<<1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (0<<8)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          040000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 define CLOCKB (1<<4)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (1<<1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (4<<1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (2 < 1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (1>>9)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (7<<1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (1<<8)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (2<<8)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0100
                                                        method of usage:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       define GETLPAP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ENACTR 1
                                                                                                                                                                                                                                                                                                                                                                                                                                    # ifdef notdef
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          # endif notdef
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              200000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            R100K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    #define REXT
#define REXT
#define R60
#define WTE
#define WSI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            define MEETS
define STIEC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              #define MRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          define STIL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RIOK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           define i
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              define l
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        define
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5
```

define SETLPAP

CFIAGS = -g -f68881 LIBS= -lm -lsuntcol -lsunwindow -lpixrect

all: cdd plotatod

cdd: cdd.o CDDatod.o
\$(CC) \$(CFLAGS) -o cdd cdd.o CDDatod.o -lsuds -lm

plotatod: plotatod.o CDDatod.o
\$(CC) \$(CFIAGS) -o plotatod plotatod.o CDDatod.o -lauda \$(LIBS)

op plotatod cdd /usr/seis/bin

install:

plotatod.o: /usr/include/seis/suds.h plotatod.o: /usr/include/seis/seis.icon

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89/03/29
10:40:50
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if(day<0 || day > 366) {ret++; fprintf(stderr,"Incorrect day of %d\n",day);}
if(hour<0 || hour > 23) {ret++; fprintf(stderr,"Incorrect hour of %d\n",hour);}
if(min<0 || min > 59) {ret++; fprintf(stderr,"Incorrect minute of %d\n",min);}
if(sec<0 || sec > 59) {ret++; fprintf(stderr,"Incorrect second of %d\n",sec);}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if(ioc== -1) st_error(dis,errno,
    "Unable to get error from CDD Data Sampler on file number %d",fd_atod);
                                                 ret=write(fd atod,wrtbuf,WRTBUF);
if(ret!=WRTBUF) st_error(die,erroc,
"Unable to initialize CDD Data Sampler on file %s. Write returns %d",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sprintf(wrtbuf, "INTERNAL RIC\nTDG %d %d %d %d\n", day, hour, min, sec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if(msec<0) sprintf(wrtbuf,"RETARD %f\n",-msec);
else sprintf(wrtbuf,"ADVANCE %f\n",msec);
ret=write(fd_atod,wrtbuf,WRIBUF);</pre>
                                                                                                                                                                                                                                                          int stod settime (fd stod, day, hour, min, sec)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ret=write(fd atod,wrtbuf,WRTBUF);
return(atod geterr(fd atod));
                                                                                                                                                                                                                                                                                                                                                                                                                               sprintf(wrtbuf, "EXTERNAL RIC\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                         ret-write (fd atod, wrtbuf, WRIBUF);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           iocwioctl(fd_atod,)mIOCGET,&stat);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          return(atod geterr(fd atod));
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               return (atod geterr (fd atod));
                                                                                                                                                                                                                                                                                         int fd stod, day, hour, min, sec;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  int atod incrtime (fd atod, meec)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             return (stat.mt_erreg);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  atod geterr (fd atod)
                              atod rezero (fd atod);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         int fd stod, msec;
                                                                                                                                                                          return (fd stod);
                                                                                                                                                device, ret);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       int fd stod;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    int ret, err;
                                                                                                                                                                                                                                                                                                                                                 int ret, err;
                                                                                                                                                                                                                                                                                                                                                                                                        if(day<0) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (ret==0)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  return (1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     int ioc;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tut
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            check ms_samp is within limits of atod: aggragate rate 25,600 samps per sec */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "ad milliseconds per sample too small. Must be at least %d for %d channels",
  *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 *
     /* size buffer to write data to coDated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Unable to resero CDD Data Sampler on file number %d", fd atod);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* test byte order *b=780 on SUN3/50 and *b is 3075 on DEC 11/70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* Calculate number of multiplexers (groups of 16 channels) */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* set atod for twos domplement arithmetic */
sprintf(wrtbuf,"%s28 COMP \n",wrtbuf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           if (*b==3075) sprintf(wrtbuf, "MsIG1 \n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         int stod open (device, ms_samp, numchan)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if (ms_samp < maxi) st_error(die, 0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ioc=ioct1(fd_stod,MTIOCTOP, &ctl);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          else sprintf(wrtbuf, "LBIG1 \n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /* set year counter in atod */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (loc== -1) st error (0, errno,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   int fd_stod,ret,nummux,maxi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ms_samp,maxi,nummux*16);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               extern double get_mstime();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   numnux=(numchan+15)/16;
                                                                                                                                                                                                                                                                                                                                                                                                int atod rezero (fd atod)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        maxi=(nummux*10)/16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               int me samp, numchan;
                                                                                                                                   include <sys/ioctl.h>
                                                                                                                                                               include <sys/types.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 lnt yr, mo, dy, hr, mn;
                                                                                                         include <sys/file.h>
                                                                                                                                                                                            finclude <sys/mtio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 b=(short *) &a[0];
     4096
                            thar wrtbuf[WRTBUF];
                                                                                  linclude <stdio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ctl.mt_op=5;
ctl.mt_count=1;
                                                                                                                                                                                                                             struct mtop ctl;
struct mtget stat;
                                                                                                                                                                                                                                                                                                                                               extern int errno;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   char *device;
                                                                                                                                                                                                                                                                                                                                                                                                                               int fd atod;
define WRTBUF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      return (10c);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              char a[2];
                                                                                                                                                                                                                                                                                                                  extern die();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        double sc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  short *b;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a[1]=12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int ioc;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           a[0]=3;
```

sprintf(wrtbuf,"%sINITATOD %d %d\n",wrtbuf,ms_samp,nummux);

decode_mstime(get_mstime(), &yr,&mo,&dy,&hr,&mn,&sd); sprintf(wrtbuf,"%sYEAR %d\n",wrtbuf,yr);

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10:41:11
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if(wrtbuf[i]>='a' && wrtbuf[i]<='x')wrtbuf[i]=wrtbuf[i]-'a'+'A';</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 dev.tmm->tm_yday+1,tmm->tm_hour,tmm->tm_min,tmm->tm_sec)==4)
fprintf(stderr,"Atod buffer overflow\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          fprintf(stderr, "Set time to %d %d %d %d\n", day, hr, min, sec);
                                                                                                                                                                                                                                                                                                                                 if (err==4) fprintf (stderr, "Atod buffer overflowed. \n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       fprintf(stderr,"Set time to %d %d %d %d\n",
tum->tm yday+1,tmm->tm_hour,tum->tm_sec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fprintf(stderr, "Change time by %d milliseconds\n", sec);
if(stod_incrtime(dev, sec) ===4)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 'c':sscanf(&input[2],"%d",£ssc);
    fprintf(stderr,"Change time by %d milliseconds\n",sec);
if(atod_incrtime(dev,sec)===4)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      fprintf(stderr, "\nError %d on dev %d: ",errno,dev);
                                                                                                                                                                                                                                                                                                                                                            else fprintf(stderr, "Error register is %d\n",err);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                fprintf(stderr, "\nPut (%s) returns %d\n", wrtbuf, ioc);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      case 't':sscanf(Einput[2], "%d %d %d", Eday, Ehr, Emin, Esec);
                                                                                                                                                                                                                                                                                                                                                                                                                        fprintf(stderr, "Getheader returns %d bytes\n", iog);
                                                                                                                                                                                                                                                                        st error (0,0, "Error %d on dev %d: ", errno, dev);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       printf(stderr, "Unable to read system clock");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if(ioc>0) for(i=0;i<NUMPRN;i++) {
    fprintf(stderr,"%2d ",ibuf[i] & LOW4BITS);
    j++; if(j==16) {fprintf(stderr,"\n");j=0;}</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               fprintf(stderr, "Atod buffer overflow\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               fprintf(stderr,"Atod buffer overflow\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fprintf(stderr, "Atod buffer overflow\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fprintf(stderr, "%d (%s)", wrtbuf[i], wrtbuf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if(atod_settime(dev,day,hr,min,sec)==4)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             fprintf(stderr, "%d ",wrtbuf[i]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         case 'T':if(gettimeofday(&tp,&tzp)===-1) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for(i=0;i<strlen(wrtbuf);i++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               iocmrite (dev, wrtbuf, WRIBUF);
                           fprintf(stderr,"\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fprintf(stderr, "Send: ");
                                                                                                                                                                                                                 !oc=read(dev,buf,WRIBUF);
                                                                                                                                                                                                                                                                                                         err=atod geterr (dev);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               :mm=gmtime(&tp.tv_sec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         perror ("doit.put");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                secretp.tv usec/1000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      ibuf=(short *)buf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            i=strlen(wrtbuf);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      wrtbuf[++1]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if (atod settime (
  1£(++1>=16) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          wrtbuf[1]='\n';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fflush (stderr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               gets (wrtbuf);
                                                                                                                                                                                                                                             If (100=-1)
                                                                 ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                break;
                                                                                                                                                        break;
                                                                                                                                                                                 case 'h':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CASO '8':
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "\no open(type msec/sample and number of channels)\nr rezero atod\ng get data\nh get head
                                                                                       /* When writing to Atod, must send full buffer */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Open the CDD Data Sampler on file descriptor %d \n", dev);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          printf(stderr, "Rezero atod on file descriptor &d\n", dev);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       fprintf(stderr," for %d msec/channel and %d channels.\n",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if(err==4) fprintf(stderr, "Atod buffer overflowed.\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          else fprintf(stderr, "Error register is %d\n",err);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          st_error(0,0,"Error %d on dev %d: ",errno,dev);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           fprintf(stderr, "Getdata returns %d bytes\n",ioc);
ibuf=(short *)buf;
if(loc>0) for(i=0, j=0;i<NOMPRN;i++) {</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ioc=sscanf(finput[2], "%d %d", fmssamp, fnumchans);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                dev=atod_open (DEVICE, mssamp, numchans);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     fprintf(stderr, "%6d", ibuf[i]/16);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             int dev.ioc,i,j,err,mssamp,numchans,day,hr,min,sec;
Exercise the Cutler Digital Design Data Sampler
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    loc=read(dev, buf, WRTBUF);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              errestod geterr (dev);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               case 'o':if(dev!=0)close(dev);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        mssamp, numchans);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               case 'r': atod_rezero (dew);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          numchans=16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fprintf (stderr,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             fprintf(stderr, "%s", menu);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              mssamp=10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if(ioc== -1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if (ioc! =2)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              struct tm *tmm, *gmtime();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   fprintf (stderr, "\n");
                                                           "/dev/rstl"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    switch (input[0]) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             break;
                                                                                                                                                   WRTBUF/2
                                                                                                                                                                                                                                                                                                                                                                                             die (n) int n; {exit (n);}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                struct time zone tzp;
                                                                                                                                                                                                                                                                                                                                    extern char *progname;
                                                                                                                                                                                                                                                                     Finclude <sys/time.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     struct timeval tp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        char input[100];
char buf[WRTBUF];
                                                                                         4096
                                                                                                                                                                                                            char wrtbuf[WRIBUF];
                                                                                                                                                                                 define LOWABITS OFF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       progname margy [0];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             gets (input);
                                                                                                                                                                                                                                             include <stdio.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CASO 'Q':
                                                                                                                                                                                                                                                                                                      extern int errno;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          short *ibuf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       char **argv;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           main (argo, argv)
                                                                                                                                                   define NUMPRN
                                                           define DEVICE
                                                                                         define WRIBUF
                                                                                                                                                                                                                                                                                                                                                                                                                                                      char menu[]=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 while (1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     dev= -1;
```

break;
case 'q':die(0);
default: fprintf(stderr, "Unknown option %c\n",input[0]);

116

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10.41:37
70 E E E E E
```

```
default: printf("plotatod: Unknown argument %s\n", argv[i]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fprintf(stderr, "Usage: plotatod arguments stations device\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     printf("Begin autoscaling by reading data for %d seconds.\n", GAINSWEERS*me_samp/1000);
   if(endit) return(notify_next_destroy_func(frame, status));
                                                                                                                                                                                                                                                                                                                                                                            long sta_offset [MAX_STA], stamax [MAX_STA], stamin [MAX_STA];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       case 'n': numstatsmatoi(argv[++1]); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    case 'm': ms_samp=atoi(argv[++i]); break;
                                                                                                                                                                    int dec, dev, ysize, ys, yincr, ysero, numstin, numchan;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 'g': gain matof(argv[++i]); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                case '1': last matoi(argv[++i]); break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        case 'f': first=atoi(argv[++i]); break;
                                                                                                                                                                                                                                                                                                                                                                                                 float sta_gain[MAX_STA], conmvolts [MAX_STA];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if (dec<1) dec=1; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           case 'd': decmatoi (argv[++i]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          case 'p': print ave=1; break;
                                                                                                                                                                                                                                                                                                                                                                                                                        char statname [MAX_STA][5], temp[12];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     for(i=1;argv[i][0]=='-';i++) {
                      notify veto destroy(frame); return(NOTIFY DOME);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            plotit (argv[i], argv[i+1]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      switch(argw[i][1]) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       signal (SIGINT, onintr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  int 1, j, ioc, num, samp;
                                                                                                       int ms samp=MS SAMPLE;
int numstats=NUMSTATS;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 struct pixfont *font;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if (dec<1) dec=1;
                                                                                                                                                                                                                                  float gain=0.0;
float factor=1.0;
                                                                                                                                                                                                                                                                                                                    int print ave=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if(argc<3) {
                                                                                                                                                                                                               int maxptr= -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                main (argo, argv)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     char **argv;
                                                                                                                                               double atof();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             maxptr= -1;
                                                                                                                                                                                                                                                                            int first= -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      exit (1);
                                                                                                                                                                                                                                                                                                 int last= -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                dec=DECIM;
                                                                                                                                                                                                                                                                                                                                        int plotz=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                              short *ibuf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 int arge;
                                                                                                                                                                                           Int ptr= -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            autoscale ()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pixwin *pw;
                                                                                                                                                                                                                                                                                                                                                           int xfac=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ndit=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ptr= -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             int 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    struct rect framesise = {XZERO,YZERO,XSIZE,YSIZE}; /* size and position of frame */
                                                                                                                            >>>>>>>
                                                                                   number of strips in x direction to be plotted*/
                                                                                                                                           begin traces this many pisels from left
upper left x position of frame
upper left y position of frame
x width of frame
y width of frame
default percent noise will be of window
                                                                                                                                                                                                                                                                          number of atod sweeps used to autoscale
                                                                                                                                                                                                                                                                                                                                     length of time tic mark in pixels
                                                                                                                                                                                                                                                                                         default number of stations
default milliseconds per sample
                                                                                                                        blocksize for reading atod
                                                                maximum number of stations
                                                                                                       default decimation factor
                    Peter Ward, USGS, Menlo Park, Ca hacked up 8/87 and 7/88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     static Motify_value my_frame_destroyer(frame, status)
plotatod: plot output of atod in a SUN window
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DEFINE_ICOM_FROM_INGGE (my_icon, seis_icon);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     char decstr[][7]= {"", "other ", "3rd "};
                                                                                                    *******
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  finclude cpixrect/pixrect_hs.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          include <suntool/sunview.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             include <suntool/canvas.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  finclude <suntool/panel.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            static short seis_icon[]={
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      finclude <suntool/1con.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  include <seis/seis.icon>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Destroy status status;
                                                                                                                                                                                                                                                                                                                                                                        static char *menuitem[]={
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     die (n) int n; {exit (n);}
                                                                                                                        4096
                                                                                                                                                                                                          1152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            finclude <seis/suds.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                #include <sys/types.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              #include <stdio.h>
#include <sys/file.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                       "Halve gain",
"Double timebase",
"Halve timebase",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            #define LOW4BITS OxF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              finclude <signal.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  char buf[2*NUMGET];
                                                                                                                                                                                                                                                                      define GAIMSWEEPS
                                                                                                                                             define BEGINTRACE
                                                                                 define SHOWWIDTH
                                                                                                                                                                                                                                                                                                              define MS SAMPLE
                                                                                                                                                                                                                                                                                                                                                                                                 "Auto gain",
"Double gain",
                                                                                                                                                                                                                                                                                         define NUMSTATS
                                                                                                                                                                                                                                                 define PERNOISE
                                                                                                                                                                                                                                                                                                                                   define TICMARK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Frame frame;
                                                            define MAX STA
                                                                                                                          define NUMGET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             int menutot=6;
                                                                                                      define DECIM
                                                                                                                                                                                     define YZERO
                                                                                                                                                                  define XZERO
                                                                                                                                                                                                          define XSIZE
                                                                                                                                                                                                                              define YSIZE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     onintr();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           int endit=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   int intr=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           intr=0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        onintr()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Exit"
```

/* milliseconds per sample*/

/* number of stations /* print averages

first station in scan */ /* first station in scan
/* fixed gain
/* last station in scan

/* decimation

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89/03/29
10:41:37
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printf("Number of channels received from device %s is %d.\n",device,numst);
if(first>last) { tempp=first; first=last; last=tempp; }
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /* number of multiplexers */
                                                                                                                                                                                                           if(sc ptr->con mvolts=matof(MODARA) || sc ptr->con mvolts ==0)
st arror(dis,0,"con mvolts not set for station %s",
sc ptr->sc name.st name);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* number of channels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Input from &s for &d channels and plotting every &dth point.",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (void) notify_interpose_destroy_func(frame,my_frame_destroyer);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Input from &s for &d channels and plotting every &spoint.",
                                                        st_error (die, 0, "Channel number too large. %d>=%d",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           font=pf_open("/usr/lib/fonts/fixedwidthfonts/screen.r.7");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    printf("Plot channels %d through %d.\n", first, last);
                                                                                                                                                        strncpy (statname[j], sc ptr->sc name.st name, 5)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         where pr=(Pixrect *) icon_get(fmy_icon,ICOM_INGE);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if((j=ibuf[i]glOM4BIIS) > numchan) numchan=j;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            icon set (amy icon, ICOM INGE, where.pr, 0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       dev=atod_open(device,ms_samp,numstats);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if(last== -1 || last>numst)last=numst;
                                                                                                                                                                                                                                                                                                         conmwolts[j]=sc_ptr->con_mwolts;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        decision,
                                                                                                sc ptr->channel, MAX STA);
          sc ptr->sc name.st name);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               text (where, PIX_SRC, font, device);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                XSIZE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FALSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Canvas-window greate (frame, CANVAS,
CANVAS, AUTO SHRIME, FALSI
                                  if (sc ptr->channel>=t0X STA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               frame label,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             & framesize,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for (numchan=0, 1=0; i<257; i+=16) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             device, numst, decstr[dec-1]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               cmy 1con,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     if (dec<4) sprintf(frame label,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        framesize.r height=ysize+25;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Erame-window create (0, FRAME,
                                                                                                                             j=sc ptr->channel-1;
                                                                                                                                                                                   statname[j][4]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            numet=numetin=numchan*16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               loceread (dev, buf, NUMGET);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          else sprintf(frame_labal,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        perror ("first read");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Wincr= (YSIZE-12) /numst;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   device, numet, dec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ysize=yincr*numst+12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if (first<=0) first=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FRAME OPEN RECT,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            numet=last-first+1;
                                                                                                                                                                                                                                                                                                                                                                    st_free (sc ptr);
                                                                                                                                                                                                                                                                                                                                                                                                                       close (statfile);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Lbuf=(short *)buf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WIN EVENT PROC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CANVAS NIDTH,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FRAME LABEL,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if (ioc!=NUMGET)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         where.pos.y=60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ICOM.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         where pos.x=2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        return(1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   numchan++;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FRAME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ;
()
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sta_gain[i]=((stamax[i]-stamin[i])*100.0/PERNOISE)*commvoits[i];
stamin[i]=(stamax[i]-stamin[i])*100/(PERNOISE*yincx);
                                                                                                                                                      /* determine scaling of traces */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      st_error(die, 0, "Channel number not assigned for station %s",
                                                                                                                                                                                                                                                                   printf ("only %d sweeps of data decimated by %d. \n", j, dec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if(print ave)printf("%5s min=%5d max=%5d ave=%5d)n",
statname[i].stamin[i],stamax[i],sta_offset[i]);
/* calculate samples per pixel */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                while (st get (ssc ptr, sst type, sst len, statfile) (=EOF)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   stemin[i] =gain/ (commosits[i] *yincr);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /* read stationcomp structure information */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       sta offset[i]=sta offset[i]/num;
                                                                                                                                                                                                                                                                                                                                                                                                                       if(samp<stamin[i])stamin[i]=samp;
                                                                                                                                                                                for (j=0, num=1; j<GAINSWEEPS; j++, num++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                    if (samp>stamax[i]) stamax[i]=samp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       struct stationcomp *sc_ptr;
int st_type, st_len,ms_thase, pixpersec, tm;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /*printf("%x ", samp&LOW4BITS); */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           st type==sTATIONCOMP) {
if (sc ptr->channel==(short)NODATA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if(stemin[i]<1)stemin[i]=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       short z, z0, ez0, y[MAX_STA], y0[MAX_STA];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int i, j, k, s, numst, ioc, yy, yyl, swidth;
                                                                                                                                                                                                         loc=getsweep (lbuf, numstin, 1);
                                                                                                                                                                                                                                                                                                                                                         for(i=first-l;i<last;i++) {</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sta_gain[i] =gain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if (j==CAINSWEEPS-1) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sta offset [1] +=samp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        statfile=st_open(stats, "r");
for (i=first-l;i<last;i++) {</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int xcounts, xshow, dx, tempp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1f(gain!=0.0)
                                                                                                                                                                                                                                                                                                    -CAINSWEEPS-1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /*printf("\n"); */
                                                                                                                                                                                                                                                                                                                                                                                            samp=ibuf[1];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 char frame label[120];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    extern char *malloc();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 struct pr prpos where;
                             stamax[i]= -10000;
stamin[i]=10000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Notify value decision();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                char *stats, *device;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              else (
                                                                                           sta_offset[1]=0;
                                                                                                                                                                                                                                         if(ioc==EOF)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        plotit (stats, device)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            char ttime [16];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILE *statfile:
                                                                                                                                                   if (numchan<=2)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Canvas canvas;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Frame frame;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Icon icon;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1£ (st
```

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```
pw_writebackground(pw, BEGINTRACE, 0, swidth+10, YSIZE, PIX_SRC);
                                                                                                                                                                                                               pw wector (pw.tm.0,tm.TICMARK, PIX SRC,1);
pwwector (pw.tm.YSIZE, tm.YSIZE-TICMARK, PIX SRC,1);
                                                                                                                                    pw writebackground(pw,z,0,swidth+10,YSIZE,PIX_SRC);
pixpersecwifac*(1000/ms_samp)/plotx;
for(;tm<zshow;tm+-pixpersec) {</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              printf(" AtoD buffer overflow. Resetting. \n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Notify_value decision(canvas, event, arg)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  maxptr=(got/2);
buffer[1]=ibuffr[ptr++]/16;
    xshow=BEGINTRACE+swidth;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                got=read (dev, buf, NUMGET);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         got=matcd geterr(dev);
if(got==4) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   buffer[1]=ibuffr[ptr++];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (intr==0) return(EOF);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        getsweep (buffer, numch, decim)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              atod_remento (dev);
                                                                                                                                                                                                                                                                                                                                                             (void) notify dispatch();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               window main_loop (frame);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1buffr=(short *)buf;
                                                                                                             xshow+=swidth;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ptr+=numch*decim-numch;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            for (1=0; 1<numch; 1++) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                if (got<NUMCET) (
                                                                                                                                                                                                                                                                                                                                                                                                                                               notify dispatch();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ptr=ptr-maxptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   pw batch off (pw);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   static short *ibuffr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (ptromaxptr)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            int numch, decim;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Canvas canvas;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 register 1,11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 short *buffer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               int got, next;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Event *event;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             caddr_t arg;
                                                                                    else (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Menu decide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             int i, which;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    andit=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 close (dev);
                                                                                                                                                                                                                                                                                                                                                                                                          if(intr) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                return (0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       else (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               for (tm=BEGINTEACE+((1000-ms thase) *pixpersec)/1000;tm<zsbow;tm+=pixpersec) (pw vector(pw,tm,0,tm,TcMARK,PIX SRC,1);
                                                                                                                                                                                                                                                                                                                                                                              pw vector(pw, 0,ymero, DEGINTBACE,ymero,PIX_SRC,1);
sprintf(temp, "%3d %s",i+1,statname[i]);
pw text(pw,1,ymero+ym+6,PIX_SRC,NULL,temp);
pw text(fewp,"%3,0f",(filoat) sta. offset[i]*commvoits[i])/factor);
pw text(pw,65,ymero+ym+8,PIX_SRC,font,temp);
sprintf(temp,"%3.0f",mig_ain[i]);
pw text(pw,65,ymero+ym-1,PIX_SRC,font,temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /* change time at beginning of trace */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    yy=yzero-(factor*(ibuf[i]-sta_offset[i])/ stamin[i]);
pw_vector(pw,x0,y0[i],x,yy,PIX_SRC,1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        pw vector (pw, tm, YSIZE, tm, YSIZE-TICMARK, PIX SRC, 1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  while (intr && ((loc=getsweep(ibuf,numstin,dec))!=EOF) ) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        pw_text(pw, BEGINTRACE, ysize-1, PIX_SRC, MULL, ttime);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     else ttime[i]=(char) (ibuf[j++]&low4BITS)+'0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              printf("Now begin plotting data.\n");
pw vector(pw,0.yxero,BEGINTRACE,yxero,PIX_SRC,1);
atod_rexero(dev);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (++xcounts>mplotx) {xcounts=0; x+=dec*xfac;}
                                                                                                                                                             swidth=(xsize-begintrace+showmidth)/showmidth;
                                                                                                                                                                                                                      for(i=0;i<numst;i++) y0[i]=yzero+i * yincr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           pixpersec-xfac* (1000/ms_samp)/plotx;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* reset getsweep */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sscanf(&ttime[12],"%d", &ms_tbase);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if(i==3 || i==8)ttime[i]=' ';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       olse if (i==11)ttime[i]='.';
                           window set (frame, WIN SHOW, TRUE, 0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             for (i=first-l;i<last;i++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  for(1=0, j=2;1<15;1++) {
                                                                                                                                                                                                                                                                                                                                                          for (i=first-1; i<last; i++) {
pw=canvas pixwin(canvas);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          xshow=BEGINTRACE+swidth;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (x==BEGINTRACE) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 X0=BEGINTRACE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if (x>=xsize) (
x=Begintrace;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ttime[15]='\0';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         yzero+=yincr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      show (pw);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               if(x>=xshow) {
                                                                                                                                                                                                                                                                                                    pw batch on (pw);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 yzero+myincr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ex0=BEGINTRACE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Y0[4]=yy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          X0=BEGINTRACE;
                                                                                                                                                                                             vzero=vincr/2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            x=BEGINTRACE;
                                                                                  autoscale ();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   yreromyz;
                                                                                                                                                                                                                                                                           yz=yincr/2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            maxptra -1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 xcounts=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ptr= -1;
                                                                                                                                                                                                                                                                                                                               /zero=0;
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10:41.37
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if (event_id (event)!=MS_RIGHT) return(NOTIFY_IGNORED);

decide=menu_create(NENU_JUNP_AFTER_SELECTION, TRUE,0,0);

for (1=0;1<menutot;1++) menu_set (decide, NENU_STRING_ITEM, menuitem[1],1+1,0);

which=(int)menu_show(decide, canvas, canvas_window_event (canvas, event),0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            pw_vector(pw,0.yzero.BEGINTRACE.yzero.PIX_SRC,1);
sprintf(temp,"%3d %s",i+1,statname[1]);
pw_text(pw,1,yzero+yz+6.PIX_SRC,MULL,temp);
sprintf(temp,"%3.0f",((float) sta_offset[1]*comvolts[1]));
pw_text(pw,65.yzero+yz+8.PIX_SRC,font,temp);
sprintf(temp,"%3.0f",sta_gain[1]/factor);
pw_text(pw,65.yzero+yz-1,PIX_SRC,font,temp);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /* modify labels on laft of plot */
pw_writebackground(pw,0,0,BEGINTRACE,YSIZE,PIX_SRC);
yzero=0;
for(i=first-1;i<last;i++) {</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 5:if(xfac!=1) xfac=xfac/2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             else plotx=plotx*2;
                                                                                                                                                                                                                     case 2:factor=factor*2.0;
                                                                                                                                                                                                                                                                               case 3:factor=factor*0.5;
                                                                                                                                                                                                                                                                                                                                                                                                                     xfacexfac*2;
                                                                                                                                                                                                                                                                                                                                                         1f(plotx==0) (
                                                                                                                                                                                                                                                                                                                                     case 4:plotz=plotz/2;
                                                                                                                                                                      autoscale ();
                                                                                                                                                                                                                                                                                                                                                                                          plotx=1;
                                                                                                                                           case 1:gain=0.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    case 6:exit (0);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         return;
                                                                                                                                                                                                  bresk;
                                                                                                                                                                                                                                                        break;
                                                                                                                                                                                                                                                                                                             break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Yzero+=yincr;
                                                                                                               switch (which) (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             120
```

CC = CC - G - f68881 FC = f77 - G - f68881

demux: demux.o \$(CC) -o demux demux.o -lsuds

olddemux: olddemux.o xdr_ahheader.o

install:

cp demux /usr/suds/bin cp olddemux /usr/seis/bin

```
WARNING: %d stations in stationfile but %d stations in muzdata structure",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /* number of stations
/* number of data samples per station
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   for(j=0;j<numatats;j++) if(stats[j]==WULL)
st_error(0,0,"stationcomp structure for channel %d is missing",j);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  assigned for station %s",
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              int i, j, mux, numin, numstats, yr, mo, dy, hr, mn, err, size, type, stlen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            st_error(die, 0, "Channel number too large, %d>=%d",
                                                                                                                                                                                                                                                                                                                                                                                             while (st_get (fsc_ptr, fst_type, fst_len, statf) !=EOF) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                              st_error (die, 0, "Channel number not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    numin=st_get (sptr, stype, sstlen, datain);
if (type!=etuxnara) {
                                                                                                                                                                                                                                                                                                                                                                                                                                           if (sc_ptr->channel - (short) NODATA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sc ptr->sc name.st name);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sc ptr->channel, MAX STA);
                                                                                                                                                                                                                                                                                                                                                 for (j=0; j<Max_STA; j++) stats[j] =NULL;</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                st put (ptr, type, stlen, dataout);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if (sc ptr->channel>=MAX STA)
                                                                                                                  struct stationcomp *stats[MAX_STA];
                                                                                                                                                                                                                                     int j, numstate, st_type, st_len;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MS TIME metime, make metime();
extern char *list metime();
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      dataout=st_open(fileout,"w");
                                                                                                                                                                                                                                                                                                                                                                        statf=st_open(statfile, "r");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               datain =st_open(filein, "r");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 size-mx->numsamps/numstats;
                                                                                                                                                                                                                                                                                                                                                                                                                    if (st_type==STATIONCOMP)
                                                                                                                                                                                                                                                     struct stationcomp *sc ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      demuxit (filein, fileout, numsta)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       j=sc ptr->channel-1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     mx=(struct muxdate *)ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   if (numstal mx->numchans)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     struct descriptrace *dt;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     short *input, dats, *out;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           char *filein, *fileout;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FILE *datain, *dataout;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                stats[j] =sc ptr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            struct muxdate 'mx;
                                                                                                                                                                loadstations (statfile)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            fprintf (stderr,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       char *ptr, *ptrout;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                flost mintr, maxtr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    numetate+;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   return (numstats);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            numstats=numsta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   rt close (statf);
                                                                                                                                                                                       char *statfile;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           goto new;
                                                                                                                                                                                                                                                                                   FILE *statf;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  int numsta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       double sec;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      * *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     * *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          noise*/
                                                  ****
                                                                                                                                                                                                                                                                              /* 4 least significant bits */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            stropy(outfile, argv[i]);
for(j=0, div=0;outfile[j]!='\0';j++) if(outfile[j]=='/') div=j;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            /* change prefix to "st" for output
                                               number of samples to calc noise of trace
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* no stations in outfile
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           default: fprintf(stderr, "Unrecognized option %s ignored.\n",
                                                                    maximum size of input buffer in bytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    case 'n': noisenum-atol(argv[i++]); /* number samps to sum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      case 'o': stropy(outfile, argv[i++]);/* specify output file
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /* remove input file
                                                                                           position of mux number in header
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            fprintf(stderr, "Usage: demux options stations datafiles\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /* debug option
                                                                                                                                   /* maximum number of stations
                                                                                                                bit mask for lower 4 bits
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if(first) { first=0; numsta=loadstations(argv[i]);)
demux.c: demultiplex mx.* files into suds streams
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             demuxit (argv[i], outfile, numsta);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      case 's': statsout=0; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  case 'r': remove=1; break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 case 'd': debug=1; break;
                                                                                                                                                                                                                                                                                                                        include "/usr/suds/include/suds.h"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          if(outfile[0]=-'\0') {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 outfile[div+1]='t';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    argv[1]);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          outfile[div]='s';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          switch(argw[i][1]) (
                                             100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             break;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 break;
                                                                                                            0xF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1f(argv[1][0]--'-') {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for (1=1;1<argc;1++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                noisenum=NoISE SAMP;
                                                                                                                                                                                                          <sys/types.h>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   int 1, 3, div, numsta;
                                                                                                                                                                                                                                 <sys/stat.b>
                                                                                                                                                                                                                                                        <sys/time.b>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               char outfile[120];
                                                                    MAXINPUTBUF
                                                                                         MUXPOSITION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              outfile[0]='\0';
                                             NOISE SAMP
                                                                                                                                                                                     <stdio.b>
                                                                                                              LOWABITS
                                                                                                                                                                                                                                                                            define MSK4 0xF
                                                                                                                                         MAX STA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        char **argv;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       statsout=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            main (arge, argv)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       if (arge<3)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     exit (1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        int first;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    remove=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 int argo;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Int debug=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           first=1;
                                                                                                                                                                                                                                                                                                                                                                                                                                       exit (n);
                                                                                                                                                                                                                                                                                                                                                                                           int n;
                                                                                                                                                                                                                                 include
                                                                                                                                                                                     include
                                                                                                                                                                                                                                                        include
                                                                                                                                                                                                        include
                                             define
                                                                                                                                     define
                                                                    define
                                                                                           define
                                                                                                                define
                                                                                                                                                                                                                                                                                                                                                                      die (n)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Lut
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Int
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Int
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12

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89/03/29
10:36:05
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/* calculate the metime of first sample */
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     st_error(0,0, "Clock error bits at time %s=%d",list_mstime(mstime,l),err);
                                                            st error(die,0,
"Expect datatype 'r': Can not interpret data type '%c'",mx->typedata);
                                                                                                                                  if((i=(numin-stlen)/2) != nx->numsamps)
st_error(die,0,","%d samples read but %d samples expected",i,nx->numsamps);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sec=(input[9] & MSK4)*10.0+(input[10] & MSK4)*1.0+(input[11] & MSK4)*0.1+
(input[12] & MSK4)*0.01+(input[13] & MSK4)*0.001;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                st_put (stats[j], STATIONCOME, sixeof (struct stationcomp), dataout);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              st_put(dt,DESCRIPTRACE, size*2+sizeof(struct descriptrace), dataout);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /* check magic and error bits
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                decode mstime(mx->>begintime, &yr, &mo, &dy, &hr, &mn, &sec);
dy= (input[2] & MSR4)*100 +(input[3] & MSR4)*10+(input[4] & MSR4);
hr= (input[5] & MSR4)*10 +(input[6] & MSR4);
mn= (input[7] & MSR4)*10 +(input[8] & MSR4);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         if (debug) fprintf(stderr, "Time first sample=%s in file %s\n",
                                                                                                                                                                                                                                                                                                                                                                                                                 fprintf(etderr, "First header: ");
for(i=0;i<16;i++)fprintf(stderr, "%x ", input[i]&LOM&BITS);</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   strncpy (dt->dt_name.network,stats[j]->sc_name.network,4);
strncpy (dt->dt_name.st_name,stats[j]->sc_name.st_name,4);
dt->dt_name.component=stats[j]->sc_name.component;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  if((i=input[15]sMsK4) != 14)
st_error(0,0,"Data error: Magic time bits at time %gm%d",
list_mstime(mstime,1),i);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             dt->dt_name.inst_type=stats[j]->sc_name.inst_type;
dt->begintime=mstime;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            for(i=0,maxtr=0.0;i<noisenum;i++) maxtr+=out[i];</pre>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            metime-make metime (yr, 0, dy, hr, mn, sec);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              out[1]=input[1*numstats+j]/16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              if (out [i] <mintr) mintr=out [i];
                                                                                                                                                                                                                                                                     st create (DESCRIPTRACE, edt, size*2);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             if (out [i]>maxtr) maxtr=out[i];
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               list metime (metime, 1), fileout);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  dt->avenoise-maxtr/noisenum;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        st init (DESCRIPTRACE, dt);
numsta, mx->numchans);
                                                                                                                                                                                                                                           input=(short *) (ptr+stlen)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               dt->ratemax->dig_rate;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      if ((err=input[14] cMSK4))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       for (im0;i<size;i++) {
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    fprintf(stderr, "\n");
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     for(j=0; j<numetate; j++) {
                            if (mx->typedata!='r')
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         dt->mindata-mintr;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            dt->datatype='s';
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        dt->maxdata=maxtr
                                                                                                                                                                                                                                                                                                              out=(short *) (dt+1);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        maxtr= -32000.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         dt->length=size;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        close (dataout);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               dt->digi_by=0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 close (datain);
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        mintx=32000.0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 i=input[1] EMSK4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    if (statsout)
                                                                                                                                                                                                                                                                                                                                                                                 if (debug)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ť
```