CHS Makefile Project

The aim ¶

The project tries to provide a portable, versatile way of compiling Fortran, C and mixed projects.
It uses cfortran.h for Fortran-C interoperability.

To use the Makefile

You have to checkout the Makefile and the directory make.config/.
Open the file 'Makefile' and make the proper settings for your source code (select compiler, release, netcdf, openmp, mpi, lapack, etc.).
Read the header of the makefile for targets, etc.
'make info' gives detailed information.
You can give most makefile switches on the command line as well, eg.
make system=mcair compiler=gnu openmp=true

To add a new compiler on a given system

As an example, one wants to add the PGI compiler suite version 8.5 on the system eve2.
Choose the compiler abbreviation pgi85, i.e. leading to system=eve2, compiler=pgi85

1. Create a config file in make.config/ with the name eve2.pgi85
   One can copy an existing file and adapt it to the new compiler. Take a compiler close to the new one, e.g. eve2.pgi83.
   If there is none, take eve2.intel13 or eve2.gnu48 on a Linux system and mcair.gnu49 on a Mac as good starting points.
2. Adapt the pathes and compiler switches in the config file.
3. If wanted, you can give aliases for that compiler, e.g. simply 'pgi' instead of also the version number 'pgi85'.
   Edit eve2.alias, follow the examples of sun or nag.

To port the Makefile to a new system

As an example, one wants to port the Makefile onto a new system called 'Liclus' on which exists a gnu compiler version 4.7, i.e. leading to system=liclus, compiler=gnu47

1. Create a config file in make.config/ with the name liclus.gnu47
   One can copy an existing file of a similar system and a similar compiler.
   For example if Liclus is Mac OS X, then mcair.gnu49 might be a good start and if Liclus is Linux then eve2.gnu48 might give a head start.
2. Adapt the pathes and compiler switches in the config file.
3. One can give aliases for that compiler, e.g. simply 'gnu' instead of also the version number 'gnu47'.
   Therefore a file liclus.alias is needed. Create it in make.config/; even an empty is possible if no alias is wanted.
   One can copy eve2.alias for examples.

Makefile Header

```
# -*- Makefile -*-
#
# PURPOSE
#     CHS Makefile for Fortran, C and mixed projects
#
```

```
# CALLING SEQUENCE
#     make [options] [VARIABLE=VARIABLE ...] [targets]
#
#     Variables can be set on the command line [VAR=VAR] or in the section SWI
#
#     If $(PROGNAME) is given, an executable will be compiled.
#     If $(LIBNAME)  is given, a library will be created.
#
#     Sources are in $(SRCPATH), which can be several directories separated by
#
#     File suffixes can be given in $(F90SUFFIXES), $(F77SUFFIXES), and $(CSUF
#     Default Fortran 90 is: .f90, .F90, .f95, .F95, .f03, .F03, .f08, .F08
#     Default Fortran 77 is: .f,   .F,   .for, .FOR, .f77, .F77, .ftn, .FTN
#     Default C is:          .c,   .C
#
# TARGETS
#     all (default), check (=test), clean, cleanclean, cleancheck (=cleantest=
#     dependencies (=depend), html, pdf, latex, doxygen, info
#
# OPTIONS
#     All make options such as -f makefile. See 'man make'.
#
# VARIABLES
#     All variables defined in this makefile.
#     This makefile has lots of conditional statements depending on variables.
#     If the variable works as a switch then the condition checks for variable
#     i.e. ifeq ($(variable),true)
#     otherwise the variable can have any other value.
#     See individual variables in section SWITCHES below or type 'make info'.
#
#     Variables can be empty for disabling a certain behaviour,
#     e.g. if you do not want to use IMSL, set:  imsl=no  or  imsl=
#
#     For main variables see 'make info'.
#
# DEPENDENCIES
#    This makefile uses the following files:
#        $(MAKEDPATH)/make.d.sh, $(CONFIGPATH)/$(system).$(compiler), $(CONFIG
#    The default $(MAKEDPATH) and $(CONFIGPATH) is make.config
#    The makefile can use doxygen for html and pdf automatic documentation.
#        It is then using $(DOXCONFIG).
#    If this is not available, it uses the perl script f2html for html documen
#        $(CONFIGPATH)/f2html, $(CONFIGPATH)/f2html.fgenrc
#
# RESTRICTIONS
#    Not all packages work with or are compiled for all compilers.
#    The static switch is maintained like a red-headed stepchild. Libraries mi
#    if static linking and --begin-group/--end-group is not supported.
#
#    C-file dependencies are generated with
#        $(CC) -E $(DEFINES) -MM
#
# EXAMPLE
#    make system=eve compiler=intel release=debug mkl=mkl95 PROGNAME=prog
#
# NOTES
#    Further information is given in the README, for example on
#    the repository of the makefile,
#    further reading,
#    how to add a new compiler on a given system, or
#    how to add a new system.
```

```
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