Directory and File Naming Standards

for
FTP Servers *

* This is a working document on an evolving concept. Further change is to be expected.

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1. Introduction

Draft Directory and File naming Standards for FTP Servers were first adopted at a Restricted Session of the CBS Working Group on Data Management (WGDM) in February, 1995. These standards were intended for use by FTP servers participating in trial implementations of the CBS Distributed Databases Concept. Since the standards adopted referred to an emerging concept, evolution in the standards themselves was expected. Related software development was therefore suggested to be approached with caution. Since that time, evolution has occurred, but not in a coordinated manner.

In a 1997 meeting of the COPC, it was requested that the OFCM WG/CIDE look into developing standards for directory and file naming standards for FTP servers used by centers within the US. The subsequent meeting of the WG/CIDE requested a small group consisting of representatives from FNMOC, NWSTG, and NCEP undertake such a development. The group reviewed the experiences of the CBS WGDM effort and found some of the concepts in the 1995 draft standards were deficient and should be discarded, while others were useful and should be retained. In the next section, some of the issues that must be addressed in the standards are discussed. A proposal for some basic features the standard should contain is presented in Section 3.

2.Some Issues for the Standards *(background)*

Type of Information: The first issue is what set of information the revised standards should contain in the directory and file names. There is some commonality in the types of information FTP servers now use, for most contain some of the following kinds of information (referred to as information elements in this paper) in their directory and file names (note that this list is not exhaustive):

Order of Information: Once the type of information to be contained in the revised standards is established, the order that information should appear needs to be decided. For example, should reference date precede generating process or should generating process precede reference date? Should level of data precede grid or should reverse be true? Different centers maintain their servers for different purposes, and the order this information appears has a significant effect on the ease or difficulty of retrieving the information contained. A brief review of some FTP servers suggests that while there is considerable commonality with respect to the information elements they use, there is no commonality regarding how these information elements are assembled into directory and file names. *The group felt that consensus would be difficult to reach on this point, and the standards must therefore permit the center maintaining the server to decide the order of the information elements.*

Length of Directory and File Names: If we adopt the position of using convenient UNIX constructs to create user-friendly directory and file names, the issue of how many characters are allowed for the directory and file names must be addressed. Long file names can be made more user friendly than short ones. However, different server implementations have different restrictions. A quite small sample revealed permissible file name lengths from 14 characters to over a thousand. Lengths of 14 characters leave precious little opportunity to create user-friendly file names.

Composition of Information Elements: A decision to rely more heavily on alphabetic rather than numeric information elements carries with it the challenge of reaching agreement on what the alphabetic entrees should be. This will be particularly challenging when complete common-usage names must be abbreviated in the interests of compactness.

Number of Directory Levels: Different servers may also permit different numbers of directory levels. Once the type of information to be contained in the revised standards is established, the number of directory levels and the number of characters allowed in the directory and file names could be considered. *However, as no consensus is likely to exist on this point either, the revised standards must also allow the center maintaining the server to decide the number of directory levels and the lengths of the directory and file names*.

3. The Current Evolution of the Directory and File Naming Standards for FTP Servers

In light of the past experience, the group felt revised standards should incorporate several basic features.

First, the individual information elements that comprise the standards must be nationally coordinated with respect to their form and content.

Second, except for insisting the server location be the first directory level, the centers responsible for the servers should be allowed to assemble these information elements into directory and file names as needed.

Third, use should be made of alphabetic or alphanumeric entrees whenever possible.

Fourth, the individual information elements should be of limited but fixed length.

Fifth, the allowable character set should be restricted to A-Z, a-z, 0-9, period (.), underscore (_), and hyphen (-).

Sixth, an allowable ". character string" at the file name level only as an extension to the file for potential processing by standard commercial software applications. The normal extensions expected to be used are ".bin", ".txt", ".pdf", ".html", ".xml", ".gif", ".jpg", ".xls", ".doc", etc as they become commonly available within the industry. They will not have "element IDs" as defined within this standard.

One method of allowing centers to assemble the information elements as they wish, yet ensure the information elements can always be uniquely identified, is to first consider each information element to consist of an **element ID** - made up of two letters followed by a period - and element information. This would ensure unique identification of which information element(s) each directory and file name entry consists of yet allow the needed flexibility. Second, each directory and file name should be allowed to consist of several information elements connected by an underscore. Finally, use of the dash should be reserved for indicating that the information element is a spatial or temporal interval. The following description of the individual elements adheres to these basic principles and represents the current evolution of our efforts:

ELEMENT NAME ELEMENT ID

{SL|sl}.ccnnnsss ==> server location

============================== ROOT ==================================

{AR|ar}.a...a ==> area of data

{BC|bc}.x ==> bufr collectives

{BS|bs}.aaaaa ==> bufr stations

{CU|cu} lllll ==>customer

{CS|cs} aaaa ==>center supplier

{CY|cy}.hh ==> cycle of run

{DC|dc}.ccc(ccc) ==> data category

{DD|dd}.yyyymmdd ==> data date

{DF|df}.ff(f)(.fff) ==> data format

{DO|do}.dddd ==> documents

{DP|dp}.yy1mm1dd1-yy2mm2dd2 ==> data date period

{DS|ds}.sss(sss) ==> data subcategory

{DT|dt}.{hhnnss|aaaaaa} ==> data time

{FD|fd}.cc(c) ==> flow direction

{FH|fh}.hhhh(c) ==> forecast hour

{GP|gp}.ppppp(pppp) ==> generating process

{GR|gr}.gggggggg ==> grid

{GT|gt}.gg(gg) ==> guidance type

{LV|lv}.sddddd grid ==> level of data

{LY|ly}.sddddd1-sddddd2 ==> layer of data

{MR|mr}.rrr ==> run of model

{MS|ms}.ss(ssss) ==> model subcategory

{MT|mt}.mmm(mm) ==> type of model

{NS|ns}.xxx(xxxxxxxxxxx) ==> name of storm

{PA|pa}.pppppppp ==> parameter

{PT|pt}.pppp ==> product type

{RD|rd}.yyyymmdd ==> reference date

{RE|re}.mm(mmmm) ==> resolution type

{RT|rt}.hhnnss ==> reference time

{SD|sd}.ccnnnxxx ==> server directory tree

{SF|sf}.hhnnss ==>stat file

{SI|si}.aa(aaaaaaaa) ==> data site

{SN|sn}.xx(xx) ==> sequence number

{ST|st}.ssss ==> status of data files

{TB|tb}.tttt ==> tables

{TE|te}.ddhhnnss ==> time written

{TL|tl}.ttttt ==> type of level or layer

{TP|tp}.hh1nn1-hh2nn2 ==> data time period

EXAMPLES

In the above, the notation {a|b} indicates a choice may be made to use either "a" or "b". The convention suggested is to use upper case when the information element is used in a directory name and lower case when the information element is used in a file name. The specific description of these information elements is given in Annex 1. It should be noted that the above list of information elements is not exhaustive, and more can be anticipated to be needed. Furthermore, several tables described in Annex 1 are incomplete and others will need to be developed and maintained by the center responsible for the server.

As a *first* example, the US National Centers for Environmental Prediction (NCEP) might choose to

assemble the above information elements into following directory and file naming configuration for observational data:

/(server location)/(reference date)/(reference time)/(generating process)/(data time period)/

(area of data)_(data format)_(data category)_(data subcategory)

Symbolically, this would appear as:

/SL.ccnnnsss/RD.yyyymmdd/RT.hhnnss/GP.ppppp/TP.hh1nn1-hh2nn2/ ar.aaaaaaaa_df.ff_dc.ccccc_ds.sssss

A file of radiosonde observations from fixed land sites for the period from 3 hours prior to 2 hours 59 minutes after a reference date/time of 8 December, 1997/1200 UTC stored in BUFR on the NCEP DDBs server would then appear as:

/SL.us007003/RD.19971208/RT.120000/GP.obvns/TP.0300-0259/ar.allglobe_df.bu_dc.vsndn_ds.raobf

Note that other centers would be free to organize their directory and file names for the same observational data with a different combination of information elements, or with the same information elements but in a different order.

As a *second* example, the US National Weather Service (NWS) might choose to assemble the above elements into following directory and file naming configuration for a specific observational data type:

/(server location)/(area of data)/(data format)/(data category)/(customer sequence number)

Symbolically, this would appear as:

/SL.ccnnnsss/AR.aaaaaaaa/DF.ff/DC.ccccc/cu.llll_sn.xx(xx)

A file of surface synoptic data for the area of South America in WMO character code for use by a customer would appear as:

/SL.us008001/AR.wmora03l/DF.an/DC.sflnd/cu.mitre_sn.01

Note this is the first "cu.mitre" file of the "DC.sflnd" data type subdirectory where there will be a number of sequences of sn=01 through sn=36, for 36 different file names under that subdirectory. This provides a way of generating files of data as they arrive at the communications switching center. As the definition of area is not yet defined here, this AR = wmo for World Meteorological Organization, ra for region, 03 for region number of South America, and l (lower case L) for continent specific area.

Stat File

The stat file is a mandatory file in the server root directory. This file contains the last new file(s) by file name written on the server from the time of the last written stat file. The stat file content structure would be defined by the center; however, a suggested form could be as follows.

CONTENT SAMPLE

do.code_tb.bufr.dd.19990821_te.24133002 = is a new file added to the stat file

where: {do.code_tb.bufr.dd.19990821} ==> Directory name(s) defined in Annex 1 "Optional Fields"

{TE|te} ==> Indicator for information element "Time written"

dd ==> day written
hh ==> hour written (on 24 hour clock)
nn ==> minutes written
ss ==> seconds written

This would represent an entry in the stat file of a document on BUFR code tables written on August 21, 1999 which was placed on the file server on day 24, hour 13, minute 30 and, second 02.

Server Directory Tree

The directory tree is a mandatory file in the server root directory which contains the directory structure of the server. The file content contains a list of all directory/sub-directory names from *highest* to *lowest* as defined by directory names from the Annex 1 listed "Selected IDs" that are directories defined on this file server. (See Annex 2)

Annex 1: Description of Directory and File Name Information Elements with element IDs

MANDATORY FIELDS

server location ==> {SL|sl}.ccnnnsss

where

{SL|sl} ==> Indicator for information element "server location"

cc ==> country [FIPS standard 10-4]
nnn ==> center [WMO standard 306 Part II]{examples: 007 = NCEP/NCO; 008 = RTH Washington}
sss ==> sub-center [center defined]

server stat file ==> {SF|sf}.hhnnss or {STATx}

where

{SF|sf}or{STATx}==> Indicator for file status information

x ==> numeric value for multiple files
hh ==> hour
nn ==> minutes
ss ==> seconds

OPTIONAL FIELDS (Selected IDs and their order as determined by Center)

area of data ==> {AR|ar}.a...a

where

{AR|ar} ==> Indicator for information element "area of data"
aaaaaaaa ==> is a string of eight characters. International coordination of a group of frequently-used areas would be useful.

aaaaaaaa = 8kmnest ==> 01 - 26 Geographic Locations
aaaaaaaa = 8kmnst01 ==> PHI0=33.5N LAM0=121.0W,
SW Corner=26.732N,127.602W NE Corner=39.859N, 113.312W
aaaaaaaa = 8kmnst02 ==> PHI0=32.0N LAM0=114.0W,
SW Corner=25.242N,120.519W, NE Corner=38.373N, 106.474W
aaaaaaaa = 8kmnst03 ==> PHI0=31.0N LAM0=107.0W,
SW Corner=24.429N,113.467W, NE Corner=37.381N, 99.575W
aaaaaaaa = 8kmnst04 ==> PHI0=30.0N LAM0=100.0W,
SW Corner=23.255N,106.417W, NE Corner=36.389N, 92.671W
aaaaaaaa = 8kmnst05 ==> PHI0=30.0N LAM0=93.0W,
SW Corner=23.255N, 99.417W, NE Corner=36.389N, 85.671W
aaaaaaaa = 8kmnst06 ==> PHI0=30.0N LAM0=86.0W,
SW Corner=23.255N, 92.417W, NE Corner=36.389N, 78.671W
aaaaaaaa = 8kmnst07 ==> PHI0=29.0N LAM0=79.0W,
SW Corner=22.261N, 85.717W, NE Corner=35.397N, 71.763W
aaaaaaaa = 8kmnst08 ==> PHI0=39.5N LAM0=125.0W,
SW Corner=32.690N, 132.008W, NE Corner=45.800N, 116.530W
aaaaaaaa = 8kmnst09 ==> PHI0=39.5N LAM0=116.5W,
SW Corner=32.690N, 123.508W, NE Corner=45.800N, 108.030W
aaaaaaaa = 8kmnst10 ==> PHI0=39.0N LAM0=108.0W,
SW Corner=32.194N, 114.970W, NE Corner=45.305N, 99.605W
aaaaaaaa = 8kmnst11 ==> PHI0=37.5N LAM0=99.5W,
SW Corner=30.705N, 106.359W, NE Corner=43.821N, 91.318W
aaaaaaaa = 8kmnst12 ==> PHI0=37.5N LAM0=91.0W,
SW Corner=30.705N, 97.859W, NE Corner=43.821N, 82.818W
aaaaaaaaggggggggg = 8kmnst13 ==> PHI0=36.5N LAM0=83.0W,
SW Corner=29.712N, 89.790W, NE Corner=43.831N, 74.951W
aaaaaaaaggggggggg = 8kmnst14 ==> PHI0=36.0N LAM0=75.0W,
SW Corner=29.216N, 81.757W, NE Corner=42.336N, 67.015W
aaaaaaaa = 8kmnst15 ==> PHI0=46.0N LAM0=124.0W,
SW Corner=39.138N, 131.608W, NE Corner=52.219N, 114.351W
aaaaaaaa = 8kmnst16 ==> PHI0=45.5N LAM0=115.0W,
SW Corner=38.642N, 122.555W, NE Corner=51.726N, 105.457W
aaaaaaaa = 8kmnst17 ==> PHI0=45.0N LAM0=106.0W,
SW Corner=38.146N, 113.503W, NE Corner=51.233N, 96.561W
aaaaaaaa = 8kmnst18 ==> PHI0=44.5N LAM0=97.0W,
SW Corner=37.651N, 104.452W, NE Corner=50.740N, 87.662W
aaaaaaaa = 8kmnst19 ==> PHI0=44.0N LAM0=88.0W,
SW Corner=37.155N, 95.403W, NE Corner=50.247N, 78.760W
aaaaaaaa = 8kmnst20 ==> PHI0=43.5N LAM0=79.0W,
SW Corner=36.659N, 86.354W, NE Corner=49.753N, 69.855W
aaaaaaaa = 8kmnst21 ==> PHI0=43.0N LAM0=70.0W,
SW Corner=36.163N, 77.307W, NE Corner=49.259N, 60.947W
aaaaaaaa = 8kmnst22 ==> PHI0=21.5N LAM0=157.0W,
SW Corner=14.805N, 77.307W, NE Corner=49.259N, 60.947W
aaaaaaaa = 8kmnst23 ==> PHI0=61.0N LAM0=150.0W,
SW Corner=53.965N, 160.053W, NE Corner=66.890N, 134.834W
aaaaaaaa = 8kmnst24 ==> PHI0=65.0N LAM0=147.5W,
SW Corner=57.897N, 158.641W, NE Corner=70.724N, 129.377W

aaaaaaaa = 8kmnst25 ==> PHI0=58.5N LAM0=134.5W,
SW Corner=51.501N, 143.995W, NE Corner=64.469N, 120.716W
aaaaaaaa = 8kmnst26 ==> PHI0=18.5N LAM0=67.35W,
SW Corner=11.822N, 73.372W, NE Corner=24.972N, 60.846W
aaaaa = conus ==> Contiguous United States
aaaaaaaa = alaska ==> Alaska
aaaaaaaa = atl ==> Atlantic
aaaaaaaa = crgrlake ==> Central Great Lakes
aaaaaaaa = crmissvy ==> Central Mississippi Valley
aaaaaaaa = crplains ==> Central Plains
aaaaaaaa = crrocks ==> Central Rockies
aaaaaaaa = domain ==> Alaska 10km, West 8km, East 8km, Central 8km, Hawaii 8km, Puerto Rico 8km
aaaaaaaa = ergrtlak ==> East Great Lakes
aaaaaaaa = guam ==> Guam
aaaaaaaa = hawaii ==> Hawaii
aaaaaaaa = midatlan ==> Middle Atlantic
aaaaaaaa = neast ==> North East
aaaaaaaa = nplains ==> North Plains
aaaaaaaa = nrockies ==> North Rockies
aaaaaaaa = octante ==> 0 - 355 E Northern Hemisphere
aaaaaaaa = octantf ==> 0 - 355 E Southern Hemisphere
aaaaaaaa = octanti ==> 30W - 60 E Northern Hemisphere
aaaaaaaa = octantj ==> 60W - 150E Northern Hemisphere
aaaaaaaa = octantk ==> 150E - 120W Northern Hemisphere
aaaaaaaa = octantl ==> 120W - 30W Northern Hemisphere
aaaaaaaa = octantm ==> 30W - 60E Southern Hemisphere
aaaaaaaa = octantn ==> 60W - 150E Southern Hemisphere
aaaaaaaa = octanto ==> 150E - 120W Southern Hemisphere
aaaaaaaa = octantp ==> 120W - 30W Southern Hemisphere
aaaaaaaa = pacnwest ==> Pacific North West
aaaaaaaa = pacswest ==> Pacific South West
aaaaaaaa = puertori ==> Puerto Rico
aaaaaaaa = seast ==> South East
aaaaaaaa = smissvly ==> South Mississippi Valley
aaaaaaaa = splains ==> South Plains
aaaaaaaa = srockies ==> South Rockies
aaaaaaaa = umissvly ==> Upper Mississippi Valley

bufr collectives ==> {BC|bc}.x
where

{BC|bc} ==> Indicator for information element "bufr collectives"

x ==> 1-7 and 9

bufr station ==> {BS|bs}.aaaaa
where

{BS| bs} ==> Indicator for information element "bufr stations"

aaaaa ==> is the station number

x ==> 1-7 and 9

center supplier ==> {CS|cs}.aaaa

where

{CS| cs} ==> Indicator for information element "center supplier"

aaaa ==> is the center identifier.
aaaa ==> knes ==> NESDIS, National Environmental Satellite, Data, and Information Service (Supplies data to the NWS.)

Customer ==> {CU|cu}.lllll

where

{CU|cu} ==> Indicator of customer the file is established for

lllll = faa ==> Federal Aviation Administration
lllll = fnoc ==> Fleet Numerical Oceanographic Center
lllll = genrl ==> general purpose files (implies file content is not customer restricted)
lllll = hads ==> Hydrometeorological Automated Data System
lllll = hydro ==> Office of Hydrologic Development
lllll = knhc ==> National Hurricane Center
lllll = kwbc ==> RTH Washington
lllll = mitre ==> company name
lllll = ncdc ==> National Climatic Data Center
lllll = oejd ==> WMO Regional Telecommunications Hub Jeddah, Saudia Arabia
lllll = jpss ==> Joint Polar Satellite System
lllll = srrs ==> NCDC records retention system
lllll = usgs ==> US Geological Survey

cycle of run ==> {CY|cy}.hh

where

{CY|cy} ==> Indicator for information element "cycle of run"
hh(hh) ==> cycle time in hours or minutes (see time of data - FM 92-X Ext. GRIB Section 1, Octet 16 & 17)

data category ==> {DC|dc}.ccc(ccc)

where

{DC|dc} ==> Indicator for information element "data category"

cc = ua ==> Upper Air
ccc = cap ==> Alert messages in Common Alerting Protocol XML
ccc = mos ==> Model Output Statistics (MOS) guidance
cccc = adst ==> Advective Statistical Forecast Guidance
cccc = etss ==> extratropical storm surge forecasts
cccc = icao ==> IWXXM World Meterogiccal Organization (WMO)/International Civil Aviation organization (ICAO)
cccc = lamp ==> Local AWIPS MOS Program (LAMP) Data
cccc = ndfd ==> National Digital Forecasts Database
cccc = snoc ==> Snow Cover Product
cccc = traj ==> Trajectory Model Data
ccccc = altyp ==> All types of data category
ccccc = avspt ==> Aviation support products
ccccc = awips ==> Special Products to Support AWIPS
ccccc = cloum ==> Cloud Mask Product
ccccc = gsati ==> GOES Satellite Imagery
ccccc = radar ==> above Surface data - radar imagery
ccccc = satim ==> upper atmosphere data - satellite imagery
ccccc = sflnd ==> Surface data - land
ccccc = sfmar ==> Surface data - sea
ccccc = sfsat ==> Surface data - satellite
ccccc = sluan ==> Single level upper-air data - other than satellite
ccccc = sluas ==> Single-level upper-air data - satellite
ccccc = textf ==> textual format written products - warnings, advisories, forecasts, discussions
ccccc = vsndn ==> Vertical sounding - other than satellite
ccccc = vsnds ==> Vertical sounding - satellite
cccccc = ensmos ==> Ensamble Model Output Statistics (MOS) guidance

data date ==> {DD|dd}.yyyymm(dd)

where

{DD|dd} ==> Indicator for information element "data date"
yyyy ==> 4-digit Year
mm ==> month
dd ==> day (optional parameter)

data format ==> {DF|df}.ff(f)(.fff)

where

{DF|df} ==> Indicator for information element "data format" that optionally can take on
a final file attribute to meet commercial extension standards (ie. gif,wpd,doc,jpg,pdf,etc.)

ff = an ==> WMO bulletins of alphanumeric data as GTS exchanged (ASCII)
ff = bb ==> WMO bulletins of binary fields in GRIB as GTS exchanged
ff = bf ==> WMO bulletins of binary fields in BUFR as GTS exchanged
ff = c5 ==> Data in character code form alphabet 5 (ASCII)
ff = f1 ==> CCITT T4-1D facsimile
ff = f2 ==> CCITT T4-2D facsimile
ff = gt ==> mixed information as exchanged on the GTS
ff = of ==> other U.S. data formats (source defined)
ff = rgb ==> U.S. Red Book Vector Graphics
ff = xt ==> files with extensions
fff = anf ==> Alphanumeric data - files
fff = buf ==> WMO BUFR (binary) - files
fff = crx ==> WMO CREX (ASCII character) - as GTS exchanged
fff = gr1 ==> WMO GRIB version 1 (binary) - files
fff = gr2 ==> WMO GRIB version 2 (binary) - files
fff = xml ==> WMO eXtensible Markup Language (XML)/Geography Markup Language (GML)

when ff = f1,
file name(s) = ttaaii.fax ==> First 6 characters of WMO Heading facsimile charts in T4 format

when ff = f1,
file name(s) = ttaaii.gif ==> First 6 characters of WMO Heading facsimile charts in GIF format

when ff = f1,
file name(s) = ttaaii.tif ==> First 6 characters of WMO Heading facsimile charts in TIFF format

documents ==> {DO|do}.dddd

where

{DO|do} ==> Indicator for information element "documents"
dddd = code ==> data representation (code) form documents
dddd = drft ==> draft documents
dddd = prod ==> production documents
dddd = tcom ==> telecommunications documents

data subcategory ==> {DS|ds}.ss(ssss)

where

{DS|ds} ==> Indicator for information element "data subcategory"

when cccc = adst,
sssss = lghtg ==>Lightning
sssss = precp ==> Precipitation
sssss =svrst ==> Severe Storms

when ccccc = avspt,
sssss = cipgb ==> Integrated Icing Detection Algorithm product for aviation
sssss = cip20 ==> Aviation Support 20 KM Resolution Current Icing Potential Products
sssss = fipgb ==> Forecast Icing Potential product for aviation
sssss = gtggb ==> Graphical Turbulence Guidance for aviation
sssss = ncwd ==> National Convective Weather Diagnostic for aviation
sssss = ncwf ==> National Convective Weather Forecast for aviation
sssss = sigwx ==> Aviation Support Significant Weather Products

when cccc = icao,
ssssss = airmet ==> XML/GML ICAO - AIRMET
sssss = metar ==> XML/GML ICAO - METAR
ssssss = sigmet ==> XML/GML ICAO - SIGMET
sssss = speci ==> XML/GML ICAO - SPECI
sssss = tafst ==> XML/GML ICAO - TAF
ssssss = tcasig ==> XML/GML ICAO - Tropical Cyclone Advisory
ssssss = vaasig ==> XML/GML ICAO - Volcanic Ash Advisory

when cccc = ndfd,
ss = td ==> Dew point Temperature
ss = wx ==> Weather
sss = qpf ==> Quantitative Precipitation Forecast
sss = sky ==> Sky Cover
ssss = maxt ==> Daytime Max Temperature
ssss = mint ==> Nighttime Min Temperature
ssss = snow ==> Snowfall Amount
ssss = temp ==> Surface Temperature
ssss = wdir ==> Wind Direction
ssss = wspd ==> Wind Speed
sssss = aespf ==> Auto Estimator Satellite Precipitation Estimate
sssss = fwdir ==> Free Air Wind Direction
sssss = fwspd ==> Free Air Wind Speed
sssss = ghwnd ==> GOES Satellite Derived High Density Winds
sssss = gsndr ==> GOES Satellite Derived Soundings
sssss = miffa ==> Manual Interactive Flash Flood Analyzer
sssss = phwnd ==> POES Satellite Derived High Density Winds
sssss = pop12 ==> Probability of Precipitation (12 hour period)
sssss = psndr ==> POES Satellite Derived Soundings
sssss = wavwh ==> Wave Height

when ccccc = sflnd,
sssss = allsc ==> All sub-categories
sssss = amosx ==> Aviation - AMOS
sssss = asosx ==> Aviation - ASOS
sssss = autob ==> Aviation - AUTOB
sssss = autox ==> Aviation - AUTO(0-9)
sssss = avnma ==> Aviation - manual
sssss = awosx ==> Aviation - AWOS
sssss = cipgb ==> Current Icing Analysis
sssss = coavn ==> Synoptic - converted aviation
sssss = coops ==> Cooperative - SHEF
sssss = meson ==> Cooperative - MesoNet (various code forms)
sssss = metar ==> Aviation - METAR
sssss = ramos ==> Aviation - RAMOS
sssss = sclim ==> Aviation - Supplementary Climate Data Report
sssss = snotl ==> Cooperative - SNOTEL
sssss = synop ==> Synoptic - manual and automatic
sssss = tafst ==> Aviation - TAF (Terminal Area Forecast)

when ccccc = sfmar,
sssss = allsc ==> All sub-categories

sssss = dbuoy ==> Drifting buoy
sssss = lcman ==> Land-based CMAN station
sssss = mbuoy ==> Moored buoy
sssss = oilrg ==> Oil rig or platform
sssss = ships ==> Ship - manual and automatic
sssss = slpbg ==> Sea level pressure bogus
sssss = wavob ==> WAVEOB

when ccccc = vsndn,
sssss = allsc ==> All sub-categories
sssss = dropw ==> Dropwinsonde
sssss = nxrdw ==> NEXRAD winds
sssss = pibal ==> Pibal
sssss = prflr ==> Profiler
sssss = raobf ==> Rawinsonde - fixed land
sssss = raobm ==> Rawinsonde - mobile land
sssss = raobs ==> Rawinsonde - ship

when ccccc = vsnds,
sssss = allsc ==> All sub-categories
sssss = geost ==> Geostationary
sssss = mstbg ==> Moisture bogus
sssss = synsy ==> Sun synchronous
sssss = tovsx ==> Polar orbiting - TOVS

when ccccc = sluan
sssss = acars ==> ACARS
sssss = airep ==> AIREP
sssss = allsc ==> All sub-categories
sssss = asdar ==> ASDAR
sssss = pirep ==> PIREP
sssss = recco ==> RECCO - flight level
sssss = sigmt ==> SIGMET

when ccccc = sluas
sssss = allsc ==> All sub-categories
sssss = airmet ==> Airmen's Meteorological Information
sssss = comeu ==> Winds derived from motion observed in a combination of spectral channels by EUMETSAT
sssss = comin ==> Winds derived from motion observed in a combination of spectral channels by India
sssss = comja ==> Winds derived from motion observed in a combination of spectral channels by Japan
sssss = comus ==> Winds derived from motion observed in a combination of spectral channels by the U.S.
sssss = h20eu ==> Winds derived from motion observed in water vapor channels by EUMETSAT
sssss = h20in ==> Winds derived from motion observed in water vapor channels by India
sssss = h20ja ==> Winds derived from motion observed in water vapor channels by Japan
sssss = h20us ==> Winds derived from motion observed in water vapor channels by the U.S.
sssss = infeu ==> Winds derived from cloud motion observed in infrared channels by EUMETSAT
sssss = infin ==> Winds derived from cloud motion observed in infrared channels by India
sssss = infja ==> Winds derived from cloud motion observed in infrared channels by Japan
sssss = infus ==> Winds derived from cloud motion observed in infrared channels by the U.S.
sssss = viseu ==> Winds derived from cloud motion observed in visible channels by EUMETSAT
sssss = visin ==> Winds derived from cloud motion observed in visible channels by India
sssss = visja ==> Winds derived from cloud motion observed in visible channels by Japan
sssss = visus ==> Winds derived from cloud motion observed in visible channels by the U.S.

when ccccc = sfsat,
sssss = allsc ==> All sub-categories
ssssss = altika==> Ka-band Altimeter for the measuring of ocean surface topography
sssss = clsr ==> Clear Sky Radiances
sssss = csbt ==> Clear Sky Brightness
sssss = cswv ==> Clear Sky Water Vapor Winds
sssss = elrw ==> Expanded Low Resolution Winds
sssss = ersal ==> ERS/Radar altimeter Data
sssss = ersar ==> ERS/SAR
sssss = erswn ==> ERS/scatterometer Wind
sssss = gssd ==> GOES Sounder BUFR
sssss = hdw ==> High Density Winds
sssss = hrvw ==> High Resolution Visible Winds
sssss = hrwv ==> High Resolution Water Vapour Wind
sssss = qscat ==> Quick Scatterometer
sssss = ssmie ==> SSM/I - Derived Products Environmental (EDR)
sssss = ssmis ==> SSM/I - Derived Products Sensor (SDR)
sssss = ssmit ==> SSM/I - Brightness Temperatures (TDR)
sssss = sstns ==> DOC/NESDIS sea surface temperatures
sssss = sstnv ==> DOD/Navy sea surface temperatures
sssss = swind ==> Satellite Wind Products

when ccccc = satim,
sssss = satir ==> Satellite Infrared imagery
sssss = satvs ==> Satellite visible imagery
sssss = satwp ==> Satellite water vapor imagery

when ccccc = gsati,

sssss = goese ==> GOES East coverage for the CONUS
sssss = goesw ==> GOES West coverage for the Eastern Pacific and Western half of the CONUS
sssss = gwfll ==> GOES West full disk coverage for the Pacific and CONUS

when ccccc = radar,
sssss = 134il ==> 134/DVL Digital Vertical Integrated Liquid
sssss = 135et ==> 135/EET Enhanced Echo Tops
sssss = 138dp ==> 138/DSP Digital Storm Total Precipitation
sssss = 141md ==> 141/MD Data Subcategory: Mesocyclone
sssss = 152rs ==> 152/ASP Archive III Status Product
sssss = 159x0 ==> 159/DZD Digital Differential Reflectivity (angle = 0.5°)
sssss = 159x1 ==> 159/DZD Digital Differential Reflectivity (angle = 1.3°/1.5°)
sssss = 159x2 ==> 159/DZD Digital Differential Reflectivity (angle = 2.4°/2.5°)
sssss = 159x3 ==> 159/DZD Digital Differential Reflectivity (angle = 3.1°/3.4°/3.5°)
sssss = 159xa ==> 159/DZD Digital Differential Reflectivity (angle = 0.9°)
sssss = 159xb ==> 159/DZD Digital Differential Reflectivity (angle = 1.8°)
sssss = 161c0 ==> 161/DCC Digital Correlation Coefficient (angle = 0.5°)
sssss = 161c1 ==> 161/DCC Digital Correlation Coefficient (angle = 1.3°/1.5°)
sssss = 161c2 ==> 161/DCC Digital Correlation Coefficient (angle = 2.4°/2.5°)
sssss = 161c3 ==> 161/DCC Digital Correlation Coefficient (angle = 3.1°/3.4°/3.5°)
sssss = 161ca ==> 161/DCC Digital Correlation Coefficient (angle = 0.9°)
sssss = 161cb ==> 161/DCC Digital Correlation Coefficient (angle = 1.8°)
sssss = 163k0 ==> 163/DKD Digital Specific Differential Phase (angle = 0.5°)
sssss = 163k1 ==> 163/DKD Digital Specific Differential Phase (angle = 1.3°/1.5°)
sssss = 163k2 ==> 163/DKD Digital Specific Differential Phase (angle = 2.4°/2.5°)
sssss = 163k3 ==> 163/DKD Digital Specific Differential Phase (angle = 3.1°/3.4°/3.5°)
sssss = 163ka ==> 163/DKD Digital Specific Differential Phase (angle = 0.9°)
sssss = 163kb ==> 163/DKD Digital Specific Differential Phase (angle = 1.8°)
sssss = 165h0 ==> 165/DHC Digital Hydrometeor Classification (angle = 0.5°)
sssss = 165h1 ==> 165/DHC Digital Hydrometeor Classification (angle = 1.3°/1.5°)
sssss = 165h2 ==> 165/DHC Digital Hydrometeor Classification (angle = 2.4°/2.5°)
sssss = 165h3 ==> 165/DHC Digital Hydrometeor Classification (angle = 3.1°/3.4°/3.5°)
sssss = 165ha ==> 165/DHC Digital Hydrometeor Classification (angle = 0.9°)
sssss = 165hb ==> 165/DHC Digital Hydrometeor Classification (angle = 1.8°)
sssss = 166m0 ==> 166/ML Melting Layer (angle = 0.5°)
sssss = 166m1 ==> 166/ML Melting Layer (angle = 1.3°/1.5°)
sssss = 166m2 ==> 166/ML Melting Layer (angle = 2.4°/2.5°)
sssss = 166m3 ==> 166/ML Melting Layer (angle = 3.1°/3.4°/3.5°)
sssss = 166ma ==> 166/ML Melting Layer (angle = 0.9°)
sssss = 166mb ==> 166/ML Melting Layer (angle = 1.8°)
sssss = 169oh ==> 169/OHA One Hour Accum
sssss = 170aa ==> 170/DAA Dig. Accum Array (unbiased)
sssss = 171st ==> 171/STA Storm Total Accum
sssss = 172dt ==> 172/DSA Dig. Storm Total Accum
sssss = 173u1 ==> 173/DUA Dig. User-Selectable Accum: 3hr/hrly
sssss = 173u3 ==> 173/DUA Dig. User-Selectable Accum: 24hr/12Z
sssss = 174od ==> 174/DOD Dig. One Hour Difference Accum
sssss = 175sd ==> 175/DSD Dig. Storm Total Difference Accum
sssss = 176pr ==> 176/DPR Digital Inst. Precip. Rate (in/hr)
sssss = 177hh ==> 177/HHC Hybrid Scan Hydrometeor Classification
sssss = 181r0 ==> 181/R Base reflectivity - 48 nmi Range (angle = 0.1°-0.8°)
sssss = 181r1 ==> 181/R Base reflectivity - 48 nmi Range (angle = 1.0°)
sssss = 181r2 ==> 181/R Base reflectivity - 48 nmi Range (angle = 1.6°-3.7°)
sssss = 182v0 ==> 182/DV Base Radial Velocity - 48 nmi Range (angle = 0.1°-0.8°)
sssss = 182v1 ==> 182/DV Base Radial Velocity - 48 nmi Range (angle = 1.0°)
sssss = 182v2 ==> 182/DV Base Radial Velocity - 48 nmi Range (angle = 1.6°-3.7°)
sssss = 186zl ==> 186/DR Long Range reflectivity - 248 nmi Range (angle = 0.6°)
sssss = 32dhr ==> 32/DHR Digital Hybrid Reflectivity
sssss = 34cf1 ==> 34/CFC Clutter Filter Control (Segment 1)
sssss = 34cf2 ==> 34/CFC Clutter Filter Control (Segment 2)
sssss = 34cf3 ==> 34/CFC Clutter Filter Control (Segment 3)
sssss = 34cf4 ==> 34/CFC Clutter Filter Control (Segment 4)
sssss = 34cf5 ==> 34/CFC Clutter Filter Control (Segment 5)
sssss = 48vwp ==> 48/VWP Velocity Azimuth Display (VAD) Wind Profile
sssss = 56rm0 ==> 56/SRM Storm Relative Mean radial velocity map (angle = 0.5°)
sssss = 56rm1 ==> 56/SRM Storm Relative Mean radial velocity map (angle = 1.3°/1.5°)
sssss = 56rm2 ==> 56/SRM Storm Relative Mean radial velocity map (angle = 2.4°/2.5°)
sssss = 56rm3 ==> 56/SRM Storm Relative Mean radial velocity map (angle = 3.1°/3.4°/3.5°)
sssss = 57vil ==> 57/VIL Vertical Integrated Liquid
sssss = 58sti ==> 58/STI Storm Tracking Information
sssss = 61tvs ==> 61/TVS Tornadic Vortex Signature
sssss = 65lrm ==> 65/LRM Layer Composite Reflectivity Maximum (low)
sssss = 66lrm ==> 66/LRM Layer Composite Reflectivity Maximum (middle)
sssss = 67apr ==> 67/APR Layer Composite Reflectivity with AP removed
sssss = 74rcm ==> 74/RCM Radar Coded message
sssss = 75ftm ==> 75/FTM Free Text message
sssss = 78ohp ==> 78/OHP Surface rainfall accums - one hr
sssss = 79thp ==> 79/THP Surface rainfall accums - three hr
sssss = 80stp ==> 80/STP Surface rainfall accums - storm total
sssss = 81dpa ==> 81/DPA Hourly digital precip array
sssss = 81dpr ==> 81/DPA Hourly digital precip array
sssss = 82spd ==> 82/SPD Supplemental precip data
sssss = 90lrm ==> 90/LRM Layer composite reflectivity max - high level

sssss = p19r0 ==> 19/R Base reflectivity - 124 nmi Range (angle = 0.5°)
sssss = p19r1 ==> 19/R Base reflectivity - 124 nmi Range (angle = 1.3°/1.5°)
sssss = p19r2 ==> 19/R Base reflectivity - 124 nmi Range (angle = 2.4°/2.5°)
sssss = p19r3 ==> 19/R Base reflectivity - 124 nmi Range (angle = 3.1°/3.4°/3.5°)
sssss = p20-r ==> 20/R Base reflectivity - 248 nmi Range (angle = 0.5°)
sssss = p25-v ==> 25/V Base Radial Velocity - 32 nmi Range (angle = 0.5°)
sssss = p27v0 ==> 27/V Base Radial Velocity - 124 nmi Range (angle = 0.5°)
sssss = p27v1 ==> 27/V Base Radial Velocity - 124 nmi Range (angle = 1.3°/1.5°)
sssss = p27v2 ==> 27/V Base Radial Velocity - 124 nmi Range (angle = 2.4°/2.5°)
sssss = p27v3 ==> 27/V Base Radial Velocity - 124 nmi Range (angle = 3.1°/3.4°/3.5°)
sssss = p28sw ==> 28/SW Base spectrum Width - 32 nmi Range (angle = 0.5°)
sssss = p2gsm ==> 2/GSM general status of the the radar message
sssss = p30sw ==> 30/SW Base Spectrum Width - 124 nmi Range (angle = 0.5°)
sssss = p36cr ==> 36/CR Composite Reflectivity - 8 levels, 248 nmi range
sssss = p37cr ==> 37/CR Composite Reflectivity - 16 levels, 124 nmi range
sssss = p38cr ==> 38/CR Composite Reflectivity - 16 levels, 248 nmi range
sssss = p41et ==> 41/ET Echo Tops
sssss = p59hi ==> 59/HI Hail Index
sssss = p60-m ==> 60/M Mesocyclone
sssss = p62ss ==> 62/SS Storm Structure
sssss = p94r0 ==> 94/DR Base reflectivity - 248 nmi Range (angle = 0.5°)
sssss = p94r1 ==> 94/DR Base reflectivity - 248 nmi Range (angle = 1.3°/1.5°)
sssss = p94r2 ==> 94/DR Base reflectivity - 248 nmi Range (angle = 2.4°/2.5°)
sssss = p94r3 ==> 94/DR Base reflectivity - 248 nmi Range (angle = 3.1°/3.4°/3.5°)
sssss = p94ra ==> 94/DR Base reflectivity - 248 nmi Range (angle = 0.9°)
sssss = p94rb ==> 94/DR Base reflectivity - 248 nmi Range (angle = 1.8°)
sssss = p99v0 ==> 99/DV Base Radial Velocity - 162 nmi Range (angle = 0.5°)
sssss = p99v1 ==> 99/DV Base Radial Velocity - 162 nmi Range (angle = 1.3°/1.5°)
sssss = p99v2 ==> 99/DV Base Radial Velocity - 162 nmi Range (angle = 2.4°/2.5°)
sssss = p99v3 ==> 99/DV Base Radial Velocity - 162 nmi Range (angle = 3.1°/3.4°/3.5°)
sssss = p99va ==> 99/DV Base Radial Velocity - 162 nmi Range (angle = 0.9°)
sssss = p99vb ==> 99/DV Base Radial Velocity - 162 nmi Range (angle = 1.8°)

where ccc = mos
sss = fwc ==> short-range guidance based on the NGM model
sss = mav ==> short-range guidance based on the Global Forecast System (GFS)
sss = mcg ==> MOS Coop Forecasts from the Global Forecast System (GFS)
sss = mcx ==> MOS Coop Forecasts from the extended GFS Global Forecast System (GFS)
sss = met ==> short-range guidance based on the Global Forecast System (GFS)
sss = mex ==> extended-range guidance based on the Global Forecast System (GFS)
sssss = fmrfo ==> forecast medium-range guidance WMO Header developed in the 1990's
sssss = fmrjs ==> buffer forecast medium-range guidance WMO Header developed in the 1990's
sssss = fwcaf ==> short-range guidance for Air Force based on the NGM model
sssss = fwcfo ==> short-range guidance WMO Header based on the NGM model
sssss = fwcjs ==> buffer short-range guidance WMO Header based on the NGM model
sssss = mavaf ==> short-range guidance for Air Force based on the Global Forecast System (GFS)
sssss = mavak ==> short-range guidance for Alaska based on the Global Forecast System (GFS)
sssss = mavfo ==> short-range guidance WMO Header based on the Global Forecast System (GFS)
sssss = mavjs ==> buffer short-range guidance WMO Header based on the Global Forecast System (GFS)
sssss = metak ==> short-range guidance for Alaska based on the Global Forecast System (GFS)
sssss = metjs ==> buffer short-range guidance based on the Global Forecast System (GFS)
sssss = mexaf ==> extended-range for Air Force guidance based on the Global Forecast System (GFS)
sssss = mexak ==> extended-range for Alaska guidance based on the Global Forecast System (GFS)
sssss = mexfe ==> extended-range guidance WMO Header based on the Global Forecast System (GFS)
sssss = mexjs ==> buffer extended-range guidance WMO Header based on the Global Forecast System (GFS)
ssssss = mavcns ==> short-range guidance for CONUS based on the Global Forecast System (GFS)
ssssss = mavsvr ==> short-range thunderstorm and severe thunderstorm guidance based on the Global Forecast System (GFS)
ssssss = metcns ==> short-range guidance for the CONUS based on the Global Forecast System (GFS)
ssssss = metsvr ==> short-range thunderstorm and severe thunderstorm guidance based on the Global Forecast System (GFS)
ssssss = mexcns ==> extended-range for the CONUS guidance based on the Global Forecast System (GFS)
ssssss = mexsvr ==> extended-range thunderstorm guidance based on the Global Forecast System (GFS)

where cccccc = ensmos
sssss = c0mex ==> extended-range guidance based on the control run of the global ensemble
sssss = n1mex ==> extended-range guidance based on the 1st negative perturbation of the global ensemble
sssss = n2mex ==> extended-range guidance based on the 2nd negative perturbation of the global ensemble
sssss = n3mex ==> extended-range guidance based on the 3rd negative perturbation of the global ensemble
sssss = n4mex ==> extended-range guidance based on the 4th negative perturbation of the global ensemble
sssss = n5mex ==> extended-range guidance based on the 5th negative perturbation of the global ensemble
sssss = p1mex ==> extended-range guidance based on the 1st positive perturbation of the global ensemble
sssss = p2mex ==> extended-range guidance based on the 2nd positive perturbation of the global ensemble
sssss = p3mex ==> extended-range guidance based on the 3rd positive perturbation of the global ensemble
sssss = p4mex ==> extended-range guidance based on the 4th positive perturbation of the global ensemble
sssss = p5mex ==> extended-range guidance based on the 5th positive perturbation of the global ensemble

where cccc = traj
sssss = ftjfo ==> FOUS trajectory forecast WMO Header

where cccc = etss
sss = mrpfq ==> techniques development laboratory marine product WMO Header
ssss = ssak ==> storm surge forecasts for Alaska
ssss = ssar ==> storm surge forecasts for the Artic coast of Alaska

ssss = ssec ==> storm surge forecasts for the East Coast
ssss = ssgm ==> storm surge forecasts for the Gulf of Mexico
ssss = sswc ==> storm surge forecasts for the West Coast

when ccccc = textf,
sssss = 30lfe ==> Average Monthly Weather Outlook (local)
sssss = afdfx ==> Area Forecast Discussion
sssss = afpfl ==> Area Forecast Product
sssss = agffn ==> Agricultural Forecast
sssss = apgae ==> Air Stagnation Guidance Narrative
sssss = aqiae ==> Air Quality Index statement
sssss = asaae ==> Air Stagnation Advisory
sssss = awgwo ==> National Attack Warning
sssss = awsaw ==> Area Weather Summary
sssss = awufl ==> Area Weather Update
sssss = awwww ==> Aviation Weather Warning
sssss = ccffp ==> Coded City Forecast
sssss = cfwwh ==> Coastal Flood Warnings, Watches or Statements
sssss = clicd ==> Climatological Report (Daily)
sssss = clmcx ==> Climatological Report (Misc, Inc monthly reports)
sssss = cwffz ==> Coastal Waters Forecast
sssss = cf6cx ==> WFO Daily Climate WEB Page Messages
sssss = ddoau ==> Daily Dispersion Outlook
sssss = efpfe ==> 3 to 5 day extended Forecast
sssss = eolfe ==> Average 6 to 10 day weather outlook (local)
sssss = eonfe ==> Average 6 to 10 day weather outlook (national)
sssss = eqrse ==> Earthquake report
sssss = esffg ==> Flood Potential outlook
sssss = essfg ==> Water Supply Outlook
sssss = fa0fa ==> Aviation Area Forecast(Pacific)
sssss = fa1fa ==> Aviation Area Forecast (Northeast U.S.)
sssss = fa2fa ==> Aviation Area Forecast (Southeast U.S.)
sssss = fa3fa ==> Aviation Area Forecast (North Central U.S.)
sssss = fa4fa ==> Aviation Area Forecast(South Central U.S.)
sssss = fa5fa ==> Aviation Area Forecast (U.S. Rocky Mountains)
sssss = fa6fa ==> Aviation Area Forecast (U.S. West Cost)
sssss = fa7fa ==> Aviation Area Forecast (Juneau, Alaska)
sssss = fa8fa ==> Aviation Area Forecast (Anchorage, Alaska)
sssss = fa9fa ==> Aviation Area Forecast (Fairbanks, Alaska)
sssss = fdifn ==> Fire Danger Indices
sssss = ffawg ==> Flash Flood Watch
sssss = ffgfo ==> Flash Flood Guidance
sssss = ffhfo ==> Headwater Guidance
sssss = ffswg ==> Flash Flood Statement
sssss = ffwwg ==> Flash Flood Warning
sssss = flnfg ==> National Flood Summary
sssss = flswg ==> Flood Statement
sssss = flwwg ==> Flood Warning
sssss = fssfg ==> Urban and Small Stream Flood Advisory
sssss = fwdfn ==> Fire Weather Outlook Discussion
sssss = fwefe ==> Extended Fire Weather Outlook
sssss = fwffn ==> Routine Fire WX FCST(with/without 6-10 day outlook)
sssss = fwlfn ==> Land Management Forecasts
sssss = fwmfn ==> Miscellaneous Fire Weather Product
sssss = fwnsh ==> Fire Weather Notification
sssss = fwsfn ==> Suppression Forecast
sssss = glffz ==> Great Lakes Forecast
sssss = glofz ==> Great Lakes Storm Outlook
sssss = glsww ==> Great Lakes Storm Summary
sssss = hcmng ==> Hydrometeorlogical Coordination Message
sssss = hlswt ==> Hurricane Local Statement
sssss = hsffz ==> High Seas Forecast
sssss = hwofl ==> Hazardous Weather Outlook
sssss = hydsx ==> Daily Hydrometeorological Products
sssss = hymcs ==> Monthly Hydrometeorological Plain Language Product
sssss = hywcw ==> Weekly Hydrometeorological Plain Language Product
sssss = icefz ==> Ice Forecast
sssss = iobsv ==> Ice Observation
sssss = lfpfl ==> Local Forecast
sssss = lshwh ==> Lakeshore Warning or Statement
sssss = lsrnw ==> Local Storm Report
sssss = mapag ==> Mean Areal Precipitation
sssss = mawfz ==> Amended Marine Forecast
sssss = misax ==> Miscellaneous Local Product
sssss = mrpag ==> Techniques Development Laboratory Marine Product
sssss = mwsfz ==> Marine Weather Statement
sssss = nowfp ==> Short Term Forecast
sssss = npwww ==> Non-Precipitation Warnings, Watches, Advisories
sssss = nshfz ==> Nearshore Marine Forecast / Surf Forecast
sssss = offfz ==> Offshore Forecast
sssss = opufp ==> Other Public Products
sssss = oswag ==> Ocean Surface Winds
sssss = pbffn ==> Prescribed Burn Forecast

sssss = pnsno ==> Public Information Statement
sssss = psmfx ==> Prognostic Snow Melt
sssss = psnac ==> Post Storm Hurricane Report
sssss = pwowo ==> Public Severe Weather Outlook
sssss = rdffo ==> Revised Digital Forecast
sssss = recsx ==> Recreational Report
sssss = rersx ==> Record Report
sssss = rfdfn ==> Rangeland Fire Danger Forecast
sssss = rfwww ==> Red Flag Warning
sssss = rtpas ==> Regional Max/Min Temp and Precipitation table
sssss = rvasr ==> River Summary
sssss = rvffg ==> River Forecast
sssss = rvifi ==> River Ice Statement
sssss = rvmsr ==> Miscellaneous River Product
sssss = rvrfg ==> River Recreation Statement
sssss = rvsfg ==> River Statement
sssss = rwsaw ==> Regional Weather Summary
sssss = rzffp ==> Regional Zone Forecast
sssss = sabww ==> Snow Avalanche Bulletin
sssss = saffn ==> Speci Agri Wx Fcst/Advisory/Flying Farmer FCST Outlook
sssss = sagfw ==> Snow Avalanche Guidance
sssss = sccac ==> Storm Summary
sssss = scdcx ==> Supplementary Climatological Data (ASOS)
sssss = scsfp ==> XML Selected Cities Summary
sssss = sdsfu ==> Special Dispersion Statement
sssss = selww ==> Severe Local Storm watch and watch Cancellation Msg
sssss = sfdfx ==> State Forecast Discussion
sssss = sfpfp ==> State Forecast
sssss = sftfp ==> Tabular State Forecast
sssss = sgwfa ==> Plain Language Significant Weather Forecast
sssss = slsww ==> Severe Local Storm Watch and Areal Outline
sssss = smaww ==> Marine Subtropical Storm Advisory
sssss = smffn ==> Smoke Management Weather Forecast
sssss = smwwh ==> Special Marine Warning
sssss = spfwt ==> Storm Strike Probability Bulletin (TPC)
sssss = spsww ==> Special Weather Statement
sssss = stdat ==> Satellite Tropical Disturbance Summary
sssss = stosx ==> Road Condition Reports (State Agencies)
sssss = stpas ==> State Max/Min Temperature and Precipitation Table
sssss = svrwu ==> Severe Thunderstorm Warning
sssss = svsww ==> Severe Weather Statement
sssss = swoac ==> Severe Storm Outlook Narrative (AC)
sssss = swras ==> State Weather Roundup
sssss = swsaw ==> State Weather Summary
sssss = tavfp ==> Travelers Forecast Table
sssss = tcafk ==> Tropical Cyclone Advisory
sssss = tcdwt ==> Tropical Cyclone Discussion
sssss = tcewt ==> Tropical Cyclone Position Estimate
sssss = tcmwt ==> Msrine/Aviation Tropical Cyclone Advisory
sssss = tcpwt ==> Public Tropical Cyclone Advisory
sssss = tcstx ==> Satellite Tropical Cyclone Summary
sssss = tcuwt ==> Tropical Cyclone Update
sssss = tidso ==> Tide Report
sssss = torwf ==> Tornado Warning
sssss = tsmse ==> Tsunami Tide/Seismic Message
sssss = tsuwe ==> Tsunami Watch/Warning
sssss = tvlfp ==> Travelers Forecast
sssss = twdac ==> Tropical Weather Discussion
sssss = twoac ==> Tropical Weather Outlook and Summary
sssss = twsac ==> Tropical Weather Summary
sssss = uviae ==> UltraViolet Index
sssss = vaafv ==> Volcanic Activity Advisory
sssss = wcrax ==> Weekly Weather and Crop Report
sssss = wdacx ==> Weekly Data For Agriculture
sssss = wswww ==> Winter Weather Warnings, Watches, Advisories
sssss = xforx3 ==> XML Three day Extended Forecast National Highs/Lows
sssss = xforx7 ==> XML Seven day Extended Forecast National Highs/Lows
sssss = xobrx ==> XML Coded Cities Forecast
sssss = zfpfp ==> Zone Forecast Product

when ccccc = altyp,

sssss = (not used)

data site ==> {SI|si}.aaaa

where

{SI|si} ==> Indicator for information element "data site"

aaa(a) ==> is a string of three or four characters indicating the name of the site.
aaa(a) = kwal ==> Wallops Island, Wallops Command and Data Acquisition Station

aaa(a) = que ==> CMC, Quebec CANADA
aaa(a) = xft ==> Franktown, CANADA

data time ==> {DT|dt}.{hhnnss|a...a}

where

{DT|dt} ==> Indicator for information element "data time"
hh ==> hour
nn ==> minute
ss ==> second
aaaaaa ==> textual description (ie. latest)

data time period ==> {TP|tp}.hh1nn1-hh2nn2

where

{TP|tp} ==> Indicator for information element "data date period"

hh1 ==> number of hours (00-99) before reference date/time data time period begins
nn1 ==> number of minutes (00-99) before reference date/time data time period begins
hh2 ==> number of hours (00-99) after reference date/time data time period ends
nn2 ==> number of minutes (00-99) after reference date/time data time period ends

Flow Direction ==> {FD|fd}.cc(c)

where

{FD|fd} ==> Indicator for the file communications flow direction

cc(c) = in ==> incoming data on file server
cc(c) = out ==> outgoing data on file server

forecast hour ==> {FH|fh}.hhhh(c)

where

{FH|fh} ==> Indicator for information element "forecast hour"

hhhh = afhr ==> all forecast hours
hhhh = anal ==> analysis
hhhh = #### ==> forecast hour (such as 1200 UTC forecast, 1500 UTC forecast)
hhhhc = ####i ==> forecast hour index file
hhhhc = anali ==> analysis index file

generating process ==> {GP|gp}.pppppp(pppp)

where

{GP|gp} ==> Indicator for information element "generating process"

pppppp = agrids ==> analysis grids
pppppp = agrphs ==> analysis graphics
pppppp = discsn ==> discussions
pppppp = fgrids ==> forecast grids
pppppp = fgrphs ==> forecast graphics
pppppp = forcst ==> forecast (general)
pppppp = obsvns ==> observations
pppppp = warngs ==> warnings
ppppppp = tractcf ==> tracker files

grid ==> {GR|gr}.gggggggg

where

{GR|gr} ==> Indicator for information element "grid"

gggggggg ==> is a string of eight characters indicating the grid used (table maintained by originating center). Multiple grids are indicated by setting gggggggg = allgrids. International coordination of a group of frequently-used grids would be useful.

guidance type ==> {GT|gt}.gg(gg)

where

{GT|gt} ==> Indicator for information element "guidance type"

gggg = rtma ==> real time mesoscale analysis grids

layer of data ==> {LY|ly}.s1ddddd1-s2ddddd2

where

{LY|ly} ==> Indicator for information element "layer of data"

{s1|s2} = h ==> height
{s1|s2} = p ==> pressure
{s1|s2} = s ==> sigma
{s1|s2} = t ==> potential temperature
ddddd1 ==> value of lower surface of layer of type s1.
ddddd2 ==> value of upper surface of layer of type s2.
(multiple layers are indicated by setting ddddd1 = ddddd2 = 99999)

level of data ==> {LV|lv}. sddddd

where

{LV|lv} ==> Indicator for information element "level of data"
s = h ==> height
s = p ==> pressure
s = s ==> sigma
s = t ==> potential temperature
ddddd ==> value of surface. Multiple levels are indicated by setting ddddd = 99999.

model subcategory ==> {MS|ms}.ss(ssss)

where

{MS|ms} ==> Indicator for information element "model subcategory"

ss(ssss) ==> is a string of two to six characters indicating the model subcategory.

ss(ssss) = ocean ==> ocean

name of storm ==> {NS|ns}.xxx(xxxxxxxxxxx)

where

{NS|ns} = => Indicator for the name of storm

xxx(xxxxxxx) = => is a string of three or ten characters indicating the name of the storm.

parameter ==> {PA|pa}.pppppppp

where

{PA|pa} ==> Indicator for information element "parameter"

pppppppp ==> is a string of eight characters or less indicating the parameter

(table maintained by originating center)
allparms ==> is multiple parameters
ensmeans ==> is ensemble means
membernn ==> where nn = iteration for a fcst on a redefind set of base values International coordination of a group of frequently-used parameters would be useful.
modclim ==> is model climatology data
modstd ==> is model standard deviation
modvar ==> is model variance data
monthavg ==> is monthly averages
obsclim ==> is observations climatology data
obsstd ==> is observations standard deviation
obsvar ==> is observations variance data
rmseclim ==> is root mean square error climatology data
seasavg ==> is seasonal averages
smodclim ==> is seasonal average model climatology data
smodstd ==> is seasonal average model stadard deviation
smodvar ==> is seasonal average model variance
sobsclim ==> is seasonal average observation climatology data
sobsstd ==> is seasonal average observation standard deviation
sobsvar ==> is seasonal average observation variance
srmseclm ==> is seasonal average root mean square error climatology data
sw10m ==> is U and V 10 Meter Surface Winds

product type ==> {PT|pt}.ppp(p)

where

{PT|pt} ==> Indicator for information element "product type"

pppp = bin ==> binary data products
pppp = graf ==> graphic product
pppp = grid ==> gridded product
pppp = mrgm ==> meteogram
pppp = sndn ==> sounding product
pppp = txt ==> text product

reference date ==> {RD|rd}.yyyymm(dd)

where

{RD|rd} ==> Indicator for information element "reference date"
yyyy ==> 4-digit Year
mm ==> month
dd ==> day (optional parameter)

resolution type ==> {RE|re}.mm(mmmm)

where

{RE|re} ==> Indicator for information element "resolution type"

mmmmmm ==> is a string of six characters or less indicating the resolution

mm(mmmm) = low ==> (~300) current resolutions, 1 deg to 84 hours, 2.5 deg to 384 hours
mm(mmmm) = high ==> limited (~50-60) parameters, at high resolution (1 degree) out to 384 hours

reference time ==> {RT|rt}.hhnnss

where

{RT|rt} ==> Indicator for information element "reference time"
hh ==> hour
c nn ==> minute
ss ==> second

run of model ==> {MR|mr}.rrr(r)

where

{MR|mr} ==> Indicator for information element "run of model"
rr(rr) ==> is a string of two to four characters indicating the model run

(table maintained by originating center)
rr(rr) = em ==> eulerian mass-core run
rr(rr) = fcst ==> climate forecast model run
rr(rr) = hind ==> climate hindcast model run
rr(rr) = nmm ==> non-hydrostatic MESO meso model run

server directory tree ==> {SD|sd}-ccnnnxxx

where

{SD|sd} ==> Indicator for directory tree on server
cc ==> country [FIPS standard 10-4]
nnn ==> center [WMO standard 306 Part II]
xxx ==> file server number (001-999)

sequence number ==> {SN|sn}.xx(xx)
where

{SN|sn} ==> Indicator for cycle sequence numbers

xx(xx) = 01(01)

thru 99(99) ==> sequence number, length of two or four digits determined when number of subdirectories or files are established by center writing the files

status of data files ==> {ST|st}-ssss

where

{ST|st} ==> Indicator for status of data files for appropriate use level

ssss = expr ==> experimental
ssss = opnl ==> operational
ssss = opnt ==> operational test

tables ==> {TB|tb}.tttt

where

{TB|tb} ==> Indicator for information element "tables"
tttt = bufr ==> BUFR tables
tttt = crex ==> CREX tables
tttt = grib ==> GRIB tables
tttt = stns ==> observing station information

time entered ==> {TE|te}-ddhhnnss (OPTIONAL)

where

{TE|te} ==> Indicator for information element in stat file "Time entered or written"

dd ==> day written
hh ==> hour written (on 24 hour clock)

nn ==> minutes written
ss ==> seconds written

type of level or layer ==> {TL|tl}.ttt(tt)

where

{TL|tl} ==> Indicator for information element "type of level or layer"

ttttt = aerol ==> aerological diagrams (ash cloud)
ttttt = atmos ==> entire atmosphere considered as a single level or layer
ttttt = cape ==> convective available potential energy
ttttt = cin ==> convective inhibition
ttttt = cloud ==> cloud parameters
ttttt = cprec ==> convective precipitation
ttttt = curnn ==> current component-V
ttttt = curre ==> current component-U
ttttt = danly ==> ocean depth anomaly
ttttt = depth ==> ocean depth
ttttt = dflt ==> default for unidentified file type
ttttt = div ==> divergence
ttttt = dspow ==> direction of spectral peak of the ocean waves
ttttt = hight ==> geopotential height
ttttt = htsww ==> height of swell waves
ttttt = htwnw ==> height of wind waves
ttttt = hlcy ==> helicity
ttttt = iccon ==> ice concentration
ttttt = iccvg ==> ice convergence/divergence
ttttt = icdft ==> ice drift
ttttt = icgrt ==> ice growth
ttttt = icthk ==> ice thickness
ttttt = icwfp ==> cloud or non-conforming ICWF parameters
ttttt = lftdx ==> surface lifted index
ttttt = mdsw ==> mean direction of swell waves
ttttt = mdww ==> mean direction of wind waves
ttttt = mixed ==> a variety of levels or layers
ttttt = mpsw ==> mean period of swell waves
ttttt = mpww ==> mean period of wind waves
ttttt = mxdt ==> mixed data
ttttt = mxwnd ==> maximum wind
ttttt = ncprc ==> nonconvective precipitation
ttttt = ocean ==> ocean
ttttt = osfc ==> ocean surface
ttttt = otemp ==> ocean temperature
ttttt = ownde ==> U-wind component at 10m above msl
ttttt = owndn ==> V-wind component at 10m above msl
ttttt = plots ==> observational plotted data
ttttt = potmp ==> potential temperature
ttttt = prcrt ==> precipitation rate
ttttt = precp ==> precipitation parameters
ttttt = precw ==> precipital water
ttttt = press ==> pressure
ttttt = probp ==> probability parameters
ttttt = proby ==> probability values (thunderstorms, precip)
ttttt = pspow ==> period of spectral peak of the ocean waves
ttttt = pwd ==> period of wave direction
ttttt = pwp ==> primary wave period
ttttt = radtn ==> long wave radiation
ttttt = rhmdy ==> relative humidity
ttttt = scwd ==> secondary wave direction
ttttt = scwp ==> secondary wave period
ttttt = sfcp ==> surface parameters
ttttt = sflux ==> surface flux
ttttt = sfsig ==> surface sigma
ttttt = sigma ==> sigma
ttttt = sigwx ==> significant weather
ttttt = siwht ==> significant wave height
ttttt = slnty ==> ocean salinity
ttttt = snow ==> snow properties
ttttt = snpar ==> snow parameters
ttttt = soilp ==> soil parameters
ttttt = stabi ==> stability index
ttttt = strme ==> U-component of storm motion
ttttt = strmn ==> V-component of storm motion
ttttt = surfc ==> earth's surface
ttttt = tempr ==> temperature
ttttt = tempv ==> temperature values (max, min, dew point)
ttttt = thkns ==> thickness (relative topography)
ttttt = tmpwr ==> water temperature warming
ttttt = tprec ==> total precipitation
ttttt = tropx ==> tropopause
ttttt = turbl ==> clear air turbulence
ttttt = uvin ==> uv index

ttttt = vis ==> visibility
ttttt = vwind ==> vertical wind shear
ttttt = vvel ==> vertical velocity
ttttt = vortc ==> vorticity
ttttt = waveh ==> wave height
ttttt = waves ==> swell height
ttttt = wdir ==> wind direction at 10m above msl
ttttt = winde ==> eastward wind component-U
ttttt = windn ==> northward wind component-V
ttttt = wndsh ==> wind sea height
ttttt = wspd ==> wind speed at 10m above msl
ttttt = o1hac ==> 1-hour averaged categorical ozone concentration
ttttt = o8hac ==> 8-hour averaged categorical ozone concentration
ttttt = o1hba ==> 1-hour backward average
ttttt = o8hba ==> 8-hour backward average

type of model ==> {MT|mt}.mmm(mm)

where

{MT|mt} ==> Indicator for information element "type of model"

mmm(mm) ==> is a string of four or five characters indicating the type of model used (table maintained by originating center)

NCEP Models

mmm(mm) = anoc ==> Ocean Analysis
mmm(mm) = anst ==> Sea Surface Temperature Analysis
mmm(mm) = cfs ==> Climate Forecast System Model
mmm(mm) = clim ==> Climate Prediction Model
mmm(mm) = cmaq ==> Community Multiscale Air Quality Model
mmm(mm) = convc ==> National Aviation Convective Weather
mmm(mm) = ensg ==> Global Ensembles
mmm(mm) = ensr ==> Regional Ensembles
mmm(mm) = etao ==> Eta Forecast Model (Olympics)
mmm(mm) = fnl ==> Global Data Assimilation System (Final) Model
mmm(mm) = gfs ==> Global Forecast System Model
mmm(mm) = ghm ==> Geophysical Fluid Dynamics Laboratory Hurricane Model
mmm(mm) = icing ==> Icing Detection & Forecast Models
mmm(mm) = mrge ==> Merge of Models (ETA, RUC, & GFS)
mmm(mm) = nam ==> North American Mesoscale Model
mmm(mm) = ngm ==> Nested Grid Forecast Model
mmm(mm) = ngx ==> Navy NOGAPS Model
mmm(mm) = nmm ==> Non-Hydrostatic MESO Model
mmm(mm) = ocen ==> Ocean Forecast
mmm(mm) = ofs ==> Ocean Forecast System
mmm(mm) = rsas ==> RUC Surface Assimilation System
mmm(mm) = rsm ==> Regional Spectral Model
mmm(mm) = ruc ==> Rapid Update Cycle Forecast Model
mmm(mm) = sref ==> Short Range Ensemble Forecast Model
mmm(mm) = wrf ==> Weather Research and Forecasting Model
mmm(mm) = wvwm ==> NOAA Wave Watch III Model

JMA Models

mmm(mm) = jmasm ==> Global Spectral Model

UK Models

mmm(mm) = bmoav ==> Global Aviation Forecast Model

ECMWF Models

mmm(mm) = cy23r ==> ECMWF Regional Forecast Model

BMO Models

mmm(mm) = gasp ==> GASP Global Assimilation& Prognosis spectral Model

CMC Models

mmm(mm) = gem ==> GEM model-uniform-resolution 100 km global grid

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Annex 2 : Server Directory Tree Description and Structure

The contents of the **server directory tree** ==> {SD|sd}-ccnnnxxx

Directory trees in this file are designated with /### and the end of each tree limb is flagged with ## ; therefore, any definition beyond the ## flag would be *file names* within that sub-directory. Depending on the size of the file server and extent of the directories and sub-directories used, this file could be very large, but would map the entire server site directory structure.

For Example: **sd-us008001** ==> file name of server directory map on the RTH Washington (OSO Gateway) file server

Content structure of this file (assume a continuous string of fields in the file):

```
/###RD.19971208_RT.120000_GP.obvns_TP.0300-0259
##RD.19991208_RT.120000_GP.warng_TP.0100-0359
##RD.19971208_RT.000000_GP.obvns_TP.0300-0259
##RD.19971207_RT.120000_GP.obvns_TP.0300-0259##
/###CU.knhc##
/###CU.ncep##
/###DO.drft_DD.19990305_TB.crex
##DO.code_DD.19990510
##DO.tcom_DD.19990818
##DO.tcom_DD.19990821##
/###CU.genrl_RD.19990605_DC.sfmar
##CU.genrl_RD.19990605_DC.sflnd
##CU.genrl_RD.19990604_DC.sfmar
##CU.genrl_RD.19990604_DC.sflnd
##CU.genrl_RD.19990603_DC.sfmar
##CU.genrl_RD.19990603_DC.sflnd##
```

Taking the example set of defined directory tree limbs above, the more familiar display format would look like:

root

```
|----RD.19971208
| |------RT.120000
| | |----- GP.obvns
| | | |----- TP.0300-0259
| | |----- GP.warng
| | |----- TP.0100-0259
| |------RT.000000
| |----- GP.obvns
| |------ TP.0300-0259
|-----RD.19971207
| |----- RT.120000
| |----- GP.obvns
| |----- TP.0300-0259
|-----CU.knhc
|-----CU.ncep
|-----DO.dfrt
| |-----DD.199990305
| |-----TB.crex
|-----DO.code
| |-----DD.199990510
|-----DO.tcom
| |----- DD.19990818
| |-----DD.19990821
|----CU.genrl
|------RD.1990605
| |------DC.sfmar
| |------DC.sflnd
|------RD.19990604
| |------DC.sfmar
| |------DC.sflnd
|------RD.19990603
|------DC.sfmar
|------DC.sflnd
```

Remembering that only Directory names will be listed in the {SD|sd}-ccnnnxxx file.