

1. Overview

2. NCSS

2.1. Dataset description

2.2. Grid requests

2.3. Grid as point requests

3. CdmrFeature

- **TDS Subsetting services:**

- **Spatial coordinates:**

- NetCDF Subset Service: NCSS

- CDM Remote Feature: CdmrFeature

- **Array index subsetting:**

- OpenDAP

- **NetCDF Subset Service: NCSS**
 - Subset on Grid feature collections.
 - Allows grid subsetting and point extraction.

- **Cdm Remote Feature: CdmrFeature**
 - Subset on point feature collections.
 - Experimental

- threddsConfig.xml

- **Enabling the service:**

```
<NetcdfSubsetService>  
  <allow>true</allow>  
  <!--maxFileDownloadSize>300 MB</maxFileDownloadSize -->  
</NetcdfSubsetService>
```

- **Enabling netcdf4 as output (optional):**

```
<Netcdf4Clibrary>  
  <libraryPath>C:/cdev/lib/</libraryPath>  
  <libraryName>netcdf4</libraryName>  
</Netcdf4Clibrary>
```

- Catalogs:

```
<service name="subsetServer" serviceType="NetcdfSubset"  
base="/thredds/ncss/grid/" />
```

- Document that provides all the information to formulate valid requests
- Contains:
 - coordinate axes
 - variables
 - spatial ranges
 - supported formats
 - ...

- Two views of the dataset description:
- Form view:
 - Web interface for accessing the service
 - Simple grid pre-visualization
- Xml document

Subsetting on variables

- Parameter var (mandatory)
- Variables as declared in the dataset description separated by “,”
 - var=all
 - var=Pressure_surface, Temperature_tropopause

Spatial subsetting

- Lat/Lon bounding box:
 - params: north, south, west, east (all of them!!!)
 - `var=Pressure_surface,Temperature_tropopause&north=80&south=60&west=200&east=280`
- Projection bounding box
 - params: minx, maxx, miny, maxy (all of them!!!)
 - `var=Pressure_surface,Temperature_tropopause&minx=0&maxx=3000&miny=-1000&maxy=0`

Temporal subsetting

- By default closest time to present
- All range, parameter temporal:
 - temporal=all
- Single time, parameter time (all times in W3C format):
 - time=2012-10-22T18:00:00Z
- Time range (all times and durations in W3C format):
 - params: time_start, time_end, time_duration (two of them!!!):
 - time_start=2012-10-22T15:00Z&time_duration=P1DT12H

Vertical subsetting

- Default: all vertical levels
- vertCoord: only on variables with same vertical levels
- vertCoord=400

Vertical subsetting: transformations

- If a vertical transformation is defined in the dataset (CF-1.0) all the variables needed to perform the transformation are included in the grid output

- **Example:**

http://geoport-dev.whoi.edu/thredds/ncss/grid/coawst_2_2/fmrc/coawst_2_2_best.ncd/dataset.html

Supported Formats

- netCDF, netCDF4
- NetCDF4 has to be configured in threddsConfig.xml
- Parameter: accept
 - accept=netcdf
 - accept=netcdf4

Grid As Point

- Extracts point features from grids
- Parameters latitude and longitude to define the requested point
 - latitude=86&longitude=220

Vertical levels

- All vertical levels are returned by default
- Parameter `vertCoord` can be used on variables with different vertical levels.

Vertical levels

- If a vertical transformation is defined in the dataset the service returns:
 - The values of the dimensionless vertical coordinate.
 - The actual values of the vertical levels.

Supported Formats

- csv, xml, netCDF, netCDF4
- NetCDF4 has to be configured in `threddsConfig.xml`
- Parameter: `accept`
 - `accept=netcdf`
 - `accept=netcdf4`
 - `accept=xml`
 - `accept=csv`

- CdmrFeature: subsetting on point feature collections
- Still under development. Unstable.
- Eventually, NCSS and CdmrFeature will merge into one single API for subsetting grid and point features.

- Example requests:

Metadata requests

- Dataset form
 - req=form
- Dataset description (capabilities):
 - req=capabilities
- Stations:
 - req=stations

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Metadata requests

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 - req=stations

Data requests:

- req=data
- Spatial subsetting:
 - variables=some
 - spatial=bb
 - temporal=range

```
http://thredds.ucar.edu/thredds/cdmrfeature/nws/metar/ncdecoded/Metar_Station_Data_fc.cdmr?  
req=data&variables=some&var=air_temperature&var=cloud_area_fraction&spatial=bb&north=41&west=-109&east=-  
102&south=37&temporal=range&time_start=2013-07-  
09T23:00:00Z&time_end=2013-07-10T00:00:00Z&time=2013-  
05-10T00:00:00Z&accept=csv
```

- Data requests:
- Stations subsetting:
 - spatial=stns
 - stn=LEST,LEVX,LECO

http://thredds.ucar.edu/thredds/cdmrfeature/nws/metar/ncdecoded/Metar_Station_Data_fc.cdmr?req=data&variables=some&var=air_temperature&spatial=stns&stn=LEST,LEVX,LECO&temporal=range&time_start=2013-07-09T23:00:00Z&time_end=2013-07-10T00:00:00Z&time=2013-05-10T00:00:00Z&accept=csv

- Data requests:
- Closest station:
 - spatial=point
 - Latitude=39.98
 - longitude=-105.02

http://thredds.ucar.edu/thredds/cdmrfeature/nws/metar/ncdecoded/Metar_Station_Data_fc.cdmr?req=data&variables=some&var=air_temperature&spatial=point&latitude=39.98&longitude=-105.02&stn=&temporal=range&time_start=2013-07-09T23:00:00Z&time_end=2013-07-10T00:00:00Z&time=2013-05-10T00:00:00Z&accept=csv