

Datasets in netCDF file format

The modelled outputs are stored in netCDF (network Common Data Form) file format. The netCDF (network Common Data Form) format is a file format for storing and sharing multidimensional scientific data. It is a self-describing and platform-independent format that stores data, metadata, and attributes in a structured way. It is used by researchers to organize and exchange complex multidimensional data and it is very popular among earth observation and environmental scientists. The fundamental building blocks of a netCDF file are variables, dimensions, and attributes. Variables hold the actual data values, dimensions define the sizes of the variable arrays, and attributes provide additional information about the variables and file as a whole.

netCDF are accessible through popular software packages (Panoply, QGIS), programming languages (Python, R, Matlab, NCL) and command line tools (CDO, NCO) which are used for reading and manipulating netCDF files.

Examples

For example, listing the attributes, dimensions and variables, of a netCDF file is possible with the use of *ncdump*. The following example will list the attributes of *cell.land_0.5.nc*:

```
ncdump -h cell.land_0.5.nc
```

The output will be:

```
netcdf cell.land_0.5 {  
  dimensions:  
    lon = 720 ;  
    lat = 360 ;  
    time = 19 ;  
  variables:  
    double lon(lon) ;  
        lon:units = "degrees_east" ;  
        lon:long_name = "lon" ;  
    double lat(lat) ;  
        lat:units = "degrees_north" ;  
        lat:long_name = "lat" ;  
    double time(time) ;  
        time:units = "years" ;  
        time:long_name = "time" ;  
        time:calendar = "standard" ;  
    double crop(time, lat, lon) ;  
        crop:units = "Mha per grid-cell" ;  
        crop:_FillValue = NaN ;  
    double past(time, lat, lon) ;  
        past:units = "Mha per grid-cell" ;
```

```

        past:_FillValue = NaN ;

double forestry(time, lat, lon) ;
    forestry:units = "Mha per grid-cell" ;
    forestry:_FillValue = NaN ;

double primforest(time, lat, lon) ;
    primforest:units = "Mha per grid-cell" ;
    primforest:_FillValue = NaN ;

double secdforest(time, lat, lon) ;
    secdforest:units = "Mha per grid-cell" ;
    secdforest:_FillValue = NaN ;

double urban(time, lat, lon) ;
    urban:units = "Mha per grid-cell" ;
    urban:_FillValue = NaN ;

double other(time, lat, lon) ;
    other:units = "Mha per grid-cell" ;
    other:_FillValue = NaN ;

// global attributes:
    :unit = "Mha per grid-cell" ;
}

```

It is possible to translate netcdf to geotiff using gdal tools (*gdal_translate*):

```
gdal_translate -a_srs <CRS> NETCDF:"Input.nc":variable Output.tif
```

The following example will translate *crop* variable from *cell.land_0.5.nc* to geotiff.

```

NETCDF="cell.land_0.5.nc"
VARIABLE="crop"
gdal_translate -a_srs EPSG:4326 NETCDF:$NETCDF:$VARIABLE "${NETCDF}_${VARIABLE}.tif"

```