

## Metadata recommendations for encoding netCDF products based on CF convention

This documentation provides some recommendations and examples for the encoding of structural metadata in a form suitable for archiving. The main encoding format is the netCDF file format. These metadata recommendations are based on the CF-1.X Conventions, but some modifications and extensions are applied. The main objective of these recommendations is to provide input to the different data management plans for C3S projects (and others).

- [The Ultimate Guide](#)
- [Presentation at ECMWF's Seminar on 2017-07-05](#)

### The use case for the example dataset been used in loaderR

The example dataset been used in [loaderR](#) needs to be refactorized following the next rules:

```
<?xml version='1.0' encoding='UTF-8'?>
<netcdf xmlns='http://www.unidata.ucar.edu/namespaces/netcdf/ncml-2.2'
  location='NCEP_Q.nc' >
  <explicit/>
  <dimension name='time' length='18262' />
  <dimension name='lat' length='6' />
  <dimension name='lon' length='9' />
  <dimension name='lev' length='4' />

  <!-- Updated the SMG URL -->
  <attribute name='history' value='Created by MeteoLab2netCDF on 04-Jun-2014 18:27:34' />
  <attribute name='institution' value='Santander Meteorology Group (UC-CSIC, http://meteo.unican.es)' />
  <attribute name='info' value='Data generated for downscaleR toolbox (https://github.com/SantanderMetGroup/downscaleR)' />
  <!-- updated the CF convention version and URL-->
  <attribute name='Conventions' value='CF-1.6' />
  <attribute name='conventionsURL' value='http://cfconventions.org/' />
  <attribute name='creation_date' value='04-Jun-2014 19:07:33' />

  <variable name='time' type='double' shape='time' >
    <!-- Add the standard_name attribute -->
    <attribute name='standard_name' value='time' />
    <!-- Improve long name attribute for Time or Valid Time -->
    <attribute name='long_name' value='time' />
    <attribute name='units' value='days since 1950-01-01 00:00:00' />
    <!-- Remove the Unidata Convention attributes. They are not required -->
    <!--attribute name='_CoordinateAxisType' value='Time' /-->
    <!-- Calendar attribute is required -->
    <attribute name='calendar' value='standard' />
  </variable>
  <variable name='lat' type='double' shape='lat' >
    <attribute name='standard_name' value='latitude' />
    <attribute name='long_name' value='latitude' />
    <attribute name='units' value='degrees_north' />
    <!-- Remove the Unidata Convention attributes. They are not required -->
    <!--attribute name='_CoordinateAxisType' value='Lat' /-->
  </variable>
  <variable name='lon' type='double' shape='lon' >
    <attribute name='standard_name' value='longitude' />
    <attribute name='long_name' value='longitude' />
    <attribute name='units' value='degrees_east' />
    <!--attribute name='_CoordinateAxisType' value='Lon' /-->
  </variable>
  <variable name='lev' type='double' shape='lev' >
    <!-- correct standard_name -->
    <attribute name='standard_name' value='air_pressure' />
    <!-- Improve long name attribute -->
```

```
<attribute name='long_name' value='pressure level' />
<attribute name='units' value='millibar' />
<!-- Remove the Unidata Convention attributes. They are not required -->
<!-- attribute name='_CoordinateAxisType' value='Z' /-->
<attribute name='positive' value='down' />
</variable>
<variable name='Q' type='float' shape='time lev lon lat' >
  <attribute name='standard_name' value='specific_humidity' />
  <attribute name='long_name' value='Specific humidity' />
  <attribute name='units' value='kg kg**-1' />
  <!-- If missing data it's not expected, better it's not to use it -->
  <!-- attribute name='missing_value' value='-9999.0 ' type='float' /-->
  <!-- Coordinates are better to be explicit -->
  <attribute name='coordinates' value='time lev lon lat' />
</variable>
</netcdf>
```