

# IMPORT ECMWF ERA-INTERIM REANALYSIS ARCHIVE DATA

## Data Source

The current data access point is [http://data-portal.ecmwf.int/data/d/interim\\_full\\_daily](http://data-portal.ecmwf.int/data/d/interim_full_daily). Data can also be retrieved from [http://apps.ecmwf.int/datasets/data/interim\\_full\\_daily/](http://apps.ecmwf.int/datasets/data/interim_full_daily/) for the daily fields. Select an appropriate month, time step and parameter and (after accepting conditions of use and login) select “Retrieve NetCDF”. Use the default area (the script expects a Global extent) and download the “NC” file.

## Further information

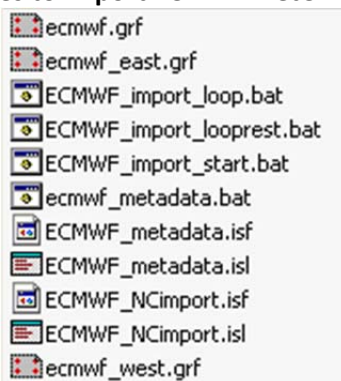
See [http://www.ecmwf.int/publications/library/ecpublications/pdf/era/era\\_report\\_series/RS\\_1\\_v2.pdf](http://www.ecmwf.int/publications/library/ecpublications/pdf/era/era_report_series/RS_1_v2.pdf) and <http://www.ecmwf.int/publications/library/do/references/show?id=90276>

## Installation of the Utilities

Follow the procedure described below:

1. Download the file “ECMWF2ILWIS.zip” from [ftp://ftp.itc.nl/pub/52n/ilwis\\_scripts/](ftp://ftp.itc.nl/pub/52n/ilwis_scripts/);
2. Create your working directory (directory name without spaces!!). Unzip the file “ECMWF2ILWIS.zip” in this active working directory. Check the content. See figure 1 for the files that should be at your disposal;
3. Ensure that you have properly installed “ILWIS” and the “GEONETCast toolbox”. The routines use “GDALINFO.exe” and “GDAL\_TRANSLATE.exe”, which should be available in your ILWIS sub-directory \Extensions\Geonetcst-Toolbox\GDAL\bin. See also <http://52north.org/communities/earth-observation/about-geonetcst/>;
4. Open ILWIS, use the Navigator to move to your newly created working directory and close ILWIS. Open ILWIS again, it should now open in your selected working directory. It is assumed that a copy of your downloaded ECMWF dataset (NetCDF file containing the daily data per month) is in the same working directory.

**Figure 1: Required files to import ECWMF NetCDF data in ILWIS format**

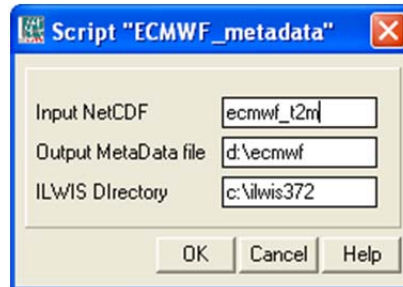


## Generating metadata

Before importing a metadata text file should be generated to obtain the scaling, offset, missing and fill values, etc. From the ILWIS catalog double click the script “ECMWF\_metadata” and press the option “Run”, see also figure 2. Note that no extension is required for the NetCDF input file, the output metadata file is an ascii file (is given by default the extension \*.txt) and this file, after it has been created, is opened on the fly using notepad. An example of the start - top of the content list is given in figure 3.

You can also open it when navigating to your working directory with windows explorer, right click with the mouse on the file and select "Open".

**Figure 2: input required to generate a metadata file**



**Figure 3: Top of ascii metadata file, here the 't2m' layer is used as example**

```
ecmwf_t2m.txt - Notepad
File Edit Format View Help
Driver: netCDF/Network Common Data Format
Files: output.nc
Size is 480, 241
Coordinate System is ''
Origin = (-0.375000000000000,90.375000000000000)
Pixel Size = (0.750000000000000,-0.750000000000000)
Metadata:
NC_GLOBAL#Conventions=CF-1.0
NC_GLOBAL#history=2012-10-16 11:30:57 GMT by mars2netcdf-0.92
t2m#scale_factor=0.00190218
t2m#add_offset=256.946
t2m#_FillValue=-32767
t2m#missing_value=-32767
t2m#units=K
t2m#long_name=2 metre temperature
longitude#units=degrees_east
longitude#long_name=longitude
latitude#units=degrees_north
latitude#long_name=latitude
time#units=hours since 1900-01-01 00:00:0.0
time#long_name=time
Corner Coordinates:
Upper Left ( -0.3750000, 90.3750000)
Lower Left ( -0.3750000, -90.3750000)
Upper Right ( 359.625, 90.375)
Lower Right ( 359.625, -90.375)
Center ( 179.6250000, 0.0000000)
Band 1 Block=480x1 Type=Int16, ColorInterp=Undefined
NoData Value=-32767
Metadata:
NETCDF_VARNAME=t2m
NETCDF_DIMENSION_time=986160
NETCDF_time_units=hours since 1900-01-01 00:00:0.0
Band 2 Block=480x1 Type=Int16, ColorInterp=Undefined
NoData Value=-32767
Metadata:
NETCDF_VARNAME=t2m
```

Note that from this file the values used for the calibration of the various products can be obtained, like the scale\_factor, add\_offset, Fill, Missing Value or NoData Value. Also note the unit of the product! The 'Band\_n' is indicating the days of the month of the product downloaded!

## Importing data

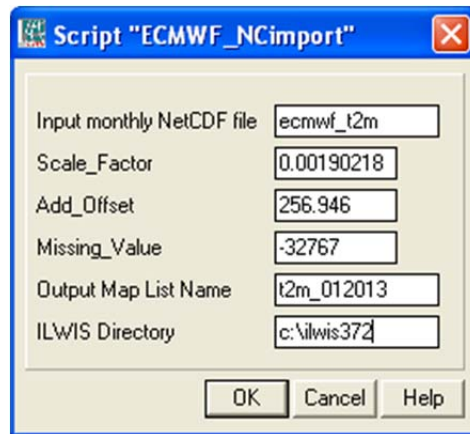
To import and calibrate the data, which is containing the daily layers double click with the mouse on the script “ECMWF\_NCimport”, press the “Run” icon and specify the calibration information (using copy and paste) as well as the ILWIS directory and the output map list name, see also figure 4.

For calibration the following formula is applied:

$$Y = \text{scale\_factor} * X + \text{add\_offset}$$

where: Y=newly calibrated output pixel and X=input pixel

**Figure 4: Settings used to import the monthly NetCDF file**



The ILWIS is calling a number of batch routines and these are conducting the multi temporal import (using a looping routine), the batch file with the suffix ‘start’ is calling the other batch files which are actually conducting the pre-processing and data-calibration according to the parameters specified in the import pop-up window. Given the fact that the western and eastern hemispheres have to be interchanged, the processing for the whole month takes some time, the progress is indicated in the MS-DOS command line window, indicating which time-step is currently processed.

Upon completion of the import select from the ILWIS main menu the options “File” >> “Create” >> “MapList” and as Map List name enter a suitable name, here “t2m\_012013”, is used. Select all “t2m\_012013\_day\_01” to “t2m\_012013\_day\_31” maps (here 31 in total as the month of January is processed) in the left hand maplist window (selected maps are indicated by a blue colour), press the “>” sign to add them to the right hand Create MapList window and press “OK” to save the new maplist. Double click with the mouse the newly created Maplist “t2m\_012013”. In the MapList window select as display option “Open as Slide Show”, as Representation select “Pseudo” and press “OK” twice, add the country boundaries<sup>(1)</sup> (no Info, boundaries only, using a black line colour ) and using the mouse with the left button pressed inspect the map values. Note that here the unit is Kelvin, see also figure 5 for the 1<sup>st</sup> of January-2013.

<sup>(1)</sup> Some vector format base maps can be obtained from [ftp://ftp.itc.nl/pub/52n/ilwis\\_basemaps/](ftp://ftp.itc.nl/pub/52n/ilwis_basemaps/).

Figure 5: T2m of the 1<sup>st</sup> of January 2013, using a pseudo representation

