

netCDF

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NetCDF

[NetCDF](#) is a scientific file format for array-based data. The latest technical developments were summarized for the netCDF workshop Aug 2009 by [Unidata](#) ([ppt](#)).

It has the following pros:

- Any amount of **meta-data** (Attributes) can be appended.
- It can handle **large datasets** (file size > 4GB allowed with in 64-bit offset mode).
 - It is fully scaleable for future applications.
- It is **open source**.
- It is **simple** yet **robust**.

Following examination by 20 reviewers, NASA's Earth Science Data Systems Standards Process Group has concluded that netCDF classic should be adopted as a recommended standard.

*A major strength of netCDF classic, according to the reviewers, was that it has fostered data interoperability and exchange through its self-describing file format, platform independent architecture, and robust access methods. Additionally, its overall file format and metadata attributes were **simple enough** to be easily understood and applied yet **robust enough** to describe and store multidimensional data of different types in the same file (source: [Unidata news](#))*

- netCDF data storage and retrieval is very **fast** (direct access binary).
- netCDF data storage is **small** due to its storage efficiency (binary is small, and it can be zipped internally too).
- There are **two independent** open source implementations of the NetCDF interface (C & Java).
 - reliable
 - redundant
- It is generally used, so there are always someone who can offer **help available**.
- netCDF is the de facto **standard** for coastal ocean circulation models (GOTM, ROMS, ECOM-SED and in the near future also Delft3D-FLOW).
- There are lots of **simple** tools out there on the web that operate on NetCDF files ([list](#)):
 - [ncBrowse](#) (recommended!)
 - [ToolsUI](#)
 - [Panoply](#)
 - [ncview](#) (linux)
 - [NCO](#) (command line)
 - [ncview](#) (linux)
 - [Delft3D-QuickPlot](#) (licensed)
- There are lots of interfaces to **sophisticated** scientific data manipulation languages ([list](#)):
 - Matlab
 - [mexcdf interface](#) on C-interface ([code](#)) .
 - [mexcdf interface](#) on java-interface ([code](#)) .
 - [Netcdf-Java Toolbox for Matlab \(njTBX\)](#) on java-interface.
 - [native matlab interface](#) (since release 2008b)
 - [Python](#)
 - [IDL](#)
- The latest netCDF interfaces contain the **OPeNDAP**-interface, which allows you to handle an *.nc file on the web as if it were on your PC.
- There are additional, widely accepted **conventions** for NetCDF that are implemented in the main NetCDF viewers. Following [Unidata](#), the maker of netCDF, we very stringly recommend to adhere to:
 - [CF meta data convention](#). See also: [Best practices for writing netCDF files](#).