

What is netCDF?

Unidata's Network Common Data Form (netCDF) is a set of software libraries and machine-independent data formats that support the creation, access, and sharing of array-oriented scientific data. It is also a community standard for sharing scientific data. Data in netCDF format is:

- ❖ **Self-Describing.** A netCDF file includes information about the data it contains.
- ❖ **Portable.** A netCDF file can be accessed by computers with different ways of storing integers, characters, and floating-point numbers.
- ❖ **Scalable.** Small subsets of large datasets in various formats may be accessed efficiently through netCDF interfaces, even from remote servers.
- ❖ **Appendable.** Data may be appended to a properly structured netCDF file without copying the dataset or redefining its structure.
- ❖ **Sharable.** One writer and multiple readers may simultaneously access the same netCDF file.
- ❖ **Archivable.** Access to all earlier forms of netCDF data will be supported by current and future versions of the software.

Languages

The Unidata Program Center supports and maintains netCDF programming interfaces for C, Java, and Fortran. Programming interfaces are also available for Python, IDL, MATLAB, R, C++, Ruby, and Perl.

Active Maintenance

NetCDF is actively developed and maintained. Recent developments include:

- ❖ The netCDF-Java library, Java software for writing and reading netCDF data, and for reading data in other forms through a netCDF interface.
- ❖ The netCDF C and Fortran libraries provide a simple netCDF interface to data stored using the Hierarchical Data Format version 5 and bring some advanced HDF5 features to netCDF users.
- ❖ A CMake-based build process that allows for easier builds on a variety of platforms.
- ❖ Ongoing improvements to DAP remote access mechanisms.

Platforms

NetCDF is tested on Linux, OSX, Windows, and various other platforms.

Documentation

Unidata maintains online documentation for netCDF in several forms:

- ❖ Users Guides for C, Fortran, Java, and C++ interfaces to netCDF data
- ❖ Reference documentation for netCDF libraries and utilities
- ❖ Tutorial documentation for new users
- ❖ Workshop materials for learning netCDF
- ❖ Program examples

Read netCDF documentation online at:

<http://www.unidata.ucar.edu/software/netcdf/docs/>

CF Conventions

The conventions for CF (Climate and Forecast) metadata are designed to promote the processing and sharing of files created with the NetCDF API. The CF conventions are increasingly gaining acceptance and have been adopted by a number of projects and groups as a primary standard. The conventions define metadata that provide a definitive description of what the data in each variable represents, and the spatial and temporal properties of the data. This enables users of data from different sources to decide which quantities are comparable, and

facilitates building applications with powerful extraction, regridding, and display capabilities.

For more information, visit:

<http://cfconventions.org/>

Standards Body Endorsements

Numerous portions of the netCDF format have been endorsed by standards bodies including:

- ❖ NASA Earth Science Data Systems (ESDS) Standards Process Group
- ❖ Integrated Ocean Observing System (IOOS) Data Management and Communications (DMAC) Subsystem
- ❖ Steering Committee of the Federal Geographic Data Committee (FGDC)
- ❖ Open Geospatial Consortium (OGC)

For more information, visit:

<http://www.unidata.ucar.edu/software/netcdf/docs/standards.html>

Where is netCDF Used?

For a list of educational, research, and government sites that use netCDF, visit:

<http://www.unidata.ucar.edu/software/netcdf/usage.html>



Want to Get Started?

Visit: <http://www.unidata.ucar.edu/netcdf>

<http://www.unidata.ucar.edu/netcdf/docs/>

<http://www.unidata.ucar.edu/netcdf/docs/faq.html>