
Subject: scientific data format

Posted by [Vincent Fournier-Sicre](#) on Thu, 14 Jan 1999 08:00:00 GMT

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I am still undecided whether I should use NetCDF, CDF or HDF format to store data. Could somebody tell me what the pros/cons are for each one of these formats? Is there a document available somewhere that compares those formats?

By advance thanks,

Vincent

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Subject: Re: scientific data format

Posted by [David McClain](#) on Fri, 15 Jan 1999 08:00:00 GMT

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My own experience with NetCDF (quite extensive for the past 4 years) is mixed:

1. You should definitely get the source code and fix it up. There are numerous bugs in the code. It was written in a fairly crude manner in pre-ANSI C.
2. It is a 32-bit implementation that places a limit of around 2 GBytes to the largest file.
3. It is being supplanted by HDF as the premier file format. However, if NetCDF appears complicated, then HDF is even more so.

I have developed a universal interface to scientific data repositories called SciDS. NetCDF is only one of its available formats. We also use it to attach to live hardware. The advantage is that the application code needs only to understand SciDS (very simple, even compared with NetCDF), and the data source can be attached at runtime to whatever SciDS data source you have, be it NetCDF, Excel CSV, live hardware, or whatever. The application can't tell the difference.

I plan to incorporate HDF into the SciDS system also, as much to control the

complexity of the interface, as for any other reason.

CDF Appears to be an ancient NASA standard that was supplanted by NetCDF.

Hope this helps...

- DM
David McClain
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-----Original Message-----

From: Vincent Fournier-Sicre <vfs@acri.fr>
Newsgroups: comp.lang.idl-pvwave
Date: Thursday, January 14, 1999 05:16
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Subject: Re: scientific data format
Posted by [Liam Gumley](#) on Tue, 26 Jan 1999 08:00:00 GMT
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raph@phy.ornl.gov wrote:

> Vincent Fournier-Sicre <vfs@acri.fr> wrote:
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> I asked the same question to the consultants at NERSC about 6 months
> ago. Their response was to go with HDF since it was a little better
> supported (both at NERSC and in general), a little faster evolving, and
> accessible by more tools (though there are a fair number of tools which
> can access netCDF and not HDF). There are in fact efforts under way to
> make HDF and netCDF interoperable, check out
> <http://www.unidata.ucar.edu/packages/netcdf/faq.html#hdf>

Faster evolution is not necessarily a good thing. For example, the latest version of HDF (HDF5) is to my knowledge completely incompatible with HDF4, and NCSA has no plans to include a backwards compatible API (to read HDF4 and HDF3) in HDF5.

As an example, HDF files written with HDF3.3r1 (1993 vintage) that contain SDS objects cannot be read correctly by HDF4.1r2 (the current release). Thus I have HDF files that were created in 1993 which cannot be read with the current version of HDF.

In contrast netCDF V3 is completely compatible with netCDF V2 (see <http://www.unidata.ucar.edu/packages/netcdf/release-notes-3.3.html>)

The data model offered by netCDF is also much more straightforward than the data model offered by HDF4 (I don't know about HDF5). This is a big plus in my opinion, since it means the API is much simpler. Yet the netCDF data model is flexible enough to allow users to be very creative in how they structure datasets.

Anyway, I've used both netCDF and HDF since 1991, and my personal preference is for netCDF.

Cheers,
Liam.

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Raph

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