
Subject: NetCDF and empty variables

Posted by [renaud.dussurget](#) on Fri, 17 Apr 2009 13:18:11 GMT

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Hi,

I've been trying reading a NC file with David Fanning's (very handy!) NCDF_DATA object, and it failed reading a file while parsing it. After trying to understand where it was crashing, I've realised that this variable was empty (though it is supposed to have 3 dimensions) and that IDL NCDF_VARGET function was not able to deal with this problem...

An example :

```
IDL>ncid = NCDF_OPEN('myFile.nc')
IDL>varId = NCDF_VARID(ncid,'HISTORY_INSTITUTION')
IDL>out=NCDF_VARINQ(ncid, VarId)
IDL>help, out, /str
** Structure <a9c098>, 5 tags, length=56, data length=52, refs=1:
  NAME      STRING  'HISTORY_INSTITUTION'
  DATATYPE   STRING  'CHAR'
  NDIMS      LONG    3
  NATTS      LONG    3
  DIM        LONG    Array[3]
```

```
IDL>print, out.dim
      6      8     12
```

```
IDL>NCDF_VARGET, ncid, varId, data, COUNT=cnt
% Array dimensions must be greater than 0.
```

I have found a simple way to deal with this, however I don't really like it...

```
IDL>cmd = 'NCDF_VarGet, ncid, varId, data'
IDL>res= EXECUTE(cmd)
% Array dimensions must be greater than 0.
```

And then in the code, write something like this
IF (res EQ 0) THEN data = -1

Does anyone has a better solution???

Thanks
Bye

Subject: Re: NetCDF and empty variables

Posted by [renaud.dussurget](#) on Tue, 21 Apr 2009 15:49:38 GMT

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On 21 avr, 02:11, Mark <mark.h...@gmail.com> wrote:

> On Apr 21, 12:18 am, renaud.dussur...@gmail.com wrote:

>

>> NCDF_INQUIRE and NCDF_DIMINQ just give what the

>> properties of the variable should be, and not what

>> it really is in the file (i.e. no

>> data)

>

> To misquote a very wise man who wasn't talking about NetCDF files,

> what is is, what isn't isn't, there is no should.

>

> Perhaps you could put a copy of the file on an FTP server, so we could

> look at it. Or if it's small, maybe you could convert it to CDL (text)

> format and post that on the group.

I've posted the a link to the original file on the other post:

ftp://ftp.ifremer.fr/ifremer/argo/dac/coriolis/69003/69003_p_rof.nc

Renaud

Subject: Re: NetCDF and empty variables

Posted by [David Fanning](#) on Tue, 21 Apr 2009 18:38:23 GMT

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renaud.dussurget@gmail.com writes:

> I've posted the a link to the original file on the other post:

>

> ftp://ftp.ifremer.fr/ifremer/argo/dac/coriolis/69003/69003_p_rof.nc

Pretty weird. NONE of the HISTORY_* variables were populated in this file. I've modified my nCDF_Browser routine to handle this strange state of affairs.

Download this new file:

http://www.dfanning.com/programs/ncdf_data__define.pro

Cheers,

David

--

David Fanning, Ph.D.

Coyote's Guide to IDL Programming (www.dfanning.com)

Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: NetCDF and empty variables
Posted by [Mark\[1\]](#) on Wed, 22 Apr 2009 03:48:24 GMT
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On Apr 22, 6:38 am, David Fanning <n...@dfanning.com> wrote:
> renaud.dussur...@gmail.com writes:
>> I've posted the a link to the original file on the other post:
>
>> ftp://ftp.ifremer.fr/ifremer/argo/dac/coriolis/69003/69003_p rof.nc
>
> Pretty weird. NONE of the HISTORY_* variables were
> populated in this file. I've modified my nCDF_Browser
> routine to handle this strange state of affairs.
> Download this new file:
>
> http://www.dfanning.com/programs/ncdf_data__define.pro
>
> Cheers,
>
> David
> --
> David Fanning, Ph.D.
> Coyote's Guide to IDL Programming (www.dfanning.com)
> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

First, please accept apologies for starting a new thread (I don't know how that happened) and for not reading the other thread thoroughly enough to see that the file had already been posted.

That said, there's nothing weird about this file except that it has an unlimited dimension (N_HISTORY) with size zero. And that's not really very weird at all.

The ncdump utility shows this:

```
$ ncdump -v HISTORY_PARAMETER 69003_prof.nc
netcdf \69003_prof {
dimensions:
    DATE_TIME = 14 ;
    STRING256 = 256 ;
    STRING64 = 64 ;
    STRING32 = 32 ;
    STRING16 = 16 ;
    STRING8 = 8 ;
    STRING4 = 4 ;
```

```
STRING2 = 2 ;
N_PROF = 16 ;
N_PARAM = 2 ;
N_LEVELS = 94 ;
N_CALIB = 1 ;
N_HISTORY = UNLIMITED ; // (0 currently)
```

variables:

...etc

and so does IDL

```
IDL> id = ncdf_open('C:\Temp\69003_prof.nc')
IDL> inq = ncdf_inquire(id)
IDL> ncdf_diminq, id, inq.recdim, name, size
IDL> print, name, size
N_HISTORY      0
IDL> ncdf_close, id
```

And this is what I said in the first post of the current thread.

Subject: Re: NetCDF and empty variables

Posted by [David Fanning](#) on Wed, 22 Apr 2009 04:03:48 GMT

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Mark writes:

```
> That said, there's nothing weird about this file except that it has an
> unlimited dimension (N_HISTORY) with size zero. And that's not really
> very weird at all.
>
> The ncdump utility shows this:
>
> $ ncdump -v HISTORY_PARAMETER 69003_prof.nc
> netcdf \69003_prof {
> dimensions:
>   DATE_TIME =3D 14 ;
>   STRING256 =3D 256 ;
>   STRING64 =3D 64 ;
>   STRING32 =3D 32 ;
>   STRING16 =3D 16 ;
>   STRING8 =3D 8 ;
>   STRING4 =3D 4 ;
>   STRING2 =3D 2 ;
>   N_PROF =3D 16 ;
>   N_PARAM =3D 2 ;
>   N_LEVELS =3D 94 ;
>   N_CALIB =3D 1 ;
```

```
> N_HISTORY = 3D UNLIMITED ; // (0 currently)
> variables:
> ...etc
>
> and so does IDL
>
> IDL> id = 3D ncd_f_open('C:\Temp\69003_prof.nc')
> IDL> inq = 3D ncd_f_inquire(id)
> IDL> ncd_f_diminq, id, inq.recdim, name, size
> IDL> print, name, size
> N_HISTORY      0
> IDL> ncd_f_close, id
```

Yeah, so what does that mean that it has an unlimited dimension. Why would someone do that? :-)

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

Coyote's Guide to IDL Programming: <http://www.dfanning.com/>

Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: NetCDF and empty variables

Posted by [David Fanning](#) on Wed, 22 Apr 2009 14:30:01 GMT

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Mark writes:

```
> That said, there's nothing weird about this file except that it has an
> unlimited dimension (N_HISTORY) with size zero. And that's not really
> very weird at all.
```

OK, I understand that I can't read any variable that has this unlimited dimension set to zero. So, how do I determine ahead of time (that is, before I read the variable) whether that variable is using this dimension?

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

Coyote's Guide to IDL Programming: <http://www.dfanning.com/>

Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: NetCDF and empty variables

Posted by [David Fanning](#) on Wed, 22 Apr 2009 15:29:59 GMT

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David Fanning writes:

> OK, I understand that I can't read any variable that has
> this unlimited dimension set to zero. So, how do I determine
> ahead of time (that is, before I read the variable) whether
> that variable is using this dimension?

Never mind, I figured out that NCDF_VARINQ can return me the IDs of all of the dimensions of the variable. If I have a dimension with a length of zero, I save its ID and later compare it to the dimension IDs returned from the function listed above. If there is a match, I don't read the variable and do something else.

The nCDF_Browser has been updated appropriately:

http://www.dfanning.com/ncdf_browser.zip

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.

Coyote's Guide to IDL Programming: <http://www.dfanning.com/>

Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: NetCDF and empty variables

Posted by [Mark\[1\]](#) on Thu, 23 Apr 2009 00:29:38 GMT

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On Apr 22, 4:03 pm, David Fanning <n...@dfanning.com> wrote:

> Yeah, so what does that mean that it has an unlimited
> dimension. Why would someone do that? :-)

Say you have an ocean model with a rectangular grid. For your output netCDF files you would probably have fixed dimensions (x, y and z) for the three spatial dimensions of the model and you would have an unlimited dimension (t) correspond to simulated time. Your model grid

variables would depend on the fixed dimensions in various combinations and you would write this info at the beginning of the model run. Your model state variables (temperature, salinity, velocity components) would depend on x, y, z AND t, and you would write snapshots of these as the model runs, stepping along the t dimension each time. By making the t dimension unlimited you don't have to know how many snapshots you're going to write in advance. If the model hasn't written any snapshots yet--perhaps it crashed before it could--then the size of the time dimension is 0.
