Subject: Re: on reading NCDF files
Posted by Paul Van Delst[1] on Tue, 20 Jan 2004 18:07:32 GMT
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Sangwoo wrote:
>
> Hi everyone!
>
> I'm gonna read a NCDF file. It may contain several variables within
> itself. When I extract a variable named "image", the procedure is as
> follows:
>
> cid=ncdf_open('test.nc')
> vid=ncdf_varid(cid,'image')
> ncdf_varget,cid,vid,image
>
> But suppose I don't know the name of each variable unfortunately. Is
> there any way to figure out the details of the included
> variables(name, dimension, etc.)? The second command fails when I put
> a wrong variable. And is there any way to read the included variables
> all at once? (something like /all keyword)
>
> I wonder if there's any way to figure out all details of the included
> variables from an NCDF file directly.

Yes, there is. For me at least, that's the point of netCDF.

I have a simple-minded read_ncdf() function that may do what you want. You can read all the variable data by default:

```
IDL> error_status=read_ncdf('sndr_g12.EmisCoeff.nc',x,/quiet)
% Compiled module: READ_NCDF.
% Compiled module: IS_NCDF.
% Loaded DLM: NCDF.
IDL> help, x, /struct
** Structure <82417b4>, 10 tags, length=37856, data length=37856, refs=1:
   RELEASE         LONG                 2
   VERSION         LONG                 2
   THETA_OFFSET    DOUBLE         0.10000000
   THETA_MAX       DOUBLE          65.100000
   NCEP_SENSOR_ID  LONG      Array[18]
   WMO_SATELLITE_ID
                   LONG      Array[18]
   WMO_SENSOR_ID   LONG      Array[18]
   SENSOR_CHANNEL  LONG      Array[18]
   WIND_SPEED      DOUBLE    Array[13]
   EMIS_COEFFICIENTS
                   DOUBLE    Array[4, 5, 18, 13]
```

Or just the data you want:

```
IDL>  error_status=read_ncdf('sndr_g12.EmisCoeff.nc',x,variable_li st=['Wind_Speed'],/quiet)
IDL> help, x, /struct
** Structure <82468d4>, 1 tags, length=104, data length=104, refs=1:
   WIND_SPEED      DOUBLE    Array[13]
```

Or just the global attributes:

```
IDL>  error_status=read_ncdf('sndr_g12.EmisCoeff.nc',x,/global_att ributes,/quiet)
IDL> help, x, /struct
** Structure <8240f34>, 7 tags, length=84, data length=84, refs=1:
   WRITE_MODULE_HISTORY
                  STRING    '$Id: write_emiscoeff_netcdf.pro,v 2.0 2003/06'...
   CREATION_DATE_AND_TIME
                  STRING    'Tue Sep 16 16:53:38 2003'
   TITLE          STRING    'Emissivity fit coefficients for GOES-12 SOUND'...
   HISTORY        STRING    '$Id: compute_emissivity_coefficients.pro,v 2.'...
   SENSOR_NAME    STRING    'SOUNDER'
   PLATFORM_NAME  STRING    'GOES-12'
   COMMENT        STRING    'Sensor emissivity created by Convolution:Spec'...
```

or all the variables and their attributes:

```
IDL>  error_status=read_ncdf('sndr_g12.EmisCoeff.nc',x,/variable_a ttributes,/quiet)
IDL> help, x, /struct
** Structure <8241f2c>, 10 tags, length=38024, data length=38024, refs=1:
   RELEASE        STRUCT    -> <Anonymous> Array[1]
   VERSION        STRUCT    -> <Anonymous> Array[1]
   THETA_OFFSET   STRUCT    -> <Anonymous> Array[1]
   THETA_MAX      STRUCT    -> <Anonymous> Array[1]
   NCEP_SENSOR_ID  STRUCT    -> <Anonymous> Array[1]
   WMO_SATELLITE_ID
                  STRUCT    -> <Anonymous> Array[1]
   WMO_SENSOR_ID  STRUCT    -> <Anonymous> Array[1]
   SENSOR_CHANNEL  STRUCT    -> <Anonymous> Array[1]
   WIND_SPEED     STRUCT    -> <Anonymous> Array[1]
   EMIS_COEFFICIENTS
                  STRUCT    -> <Anonymous> Array[1]
IDL> help, x.emis_coefficients, /struct
** Structure <8240f3c>, 3 tags, length=37464, data length=37464, refs=2:
   DATA           DOUBLE    Array[4, 5, 18, 13]
   LONG_NAME      STRING    'Emissivity model fit coefficients.'
   UNITS          STRING    'None.'
```

And you can use the tag_names routine to act on just the variables.

cheers,

paulv

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