Subject: netCDF tools?
Posted by Martin Schultz on Mon, 03 Apr 2000 07:00:00 GMT
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Hi,

before I sit down and start writing my own stuff, I'd like to ask you whether anyone
has created some suite of tools for netCDF files which allow for batch processing
and possibly some interactive use. What I am especially interested in is something
to extract a suite of variables from a series of netCDF files and combine them into a new file (or append to an existing file).
Background: I need to create time series from model output which is stored in huge one-file-contains-it-all files each covering only a limited amount of time.

Any help appreciated,
Martin

PS: needn't necessarily be IDL, could also be some Unix tool, a C or FORTRAN program, or a perl script.

--
[[
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[[

Subject: Re: NetCDF tools
Posted by Kenneth P. Bowman on Thu, 31 Mar 2011 18:48:48 GMT
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In article
<ff693c57-2325-432f-bb05-705bd303932a@q12g2000prb.googlegroups.com>,
Ed Hyer <ejhyer@gmail.com> wrote:

> Hi guys,
>
> I'm migrating some ugly FORTRAN binary blobs used by some applications
> into shiny new NetCDF files, and I realize I've never worked with

> NetCDF in IDL before.
> My first stop, as usual, was at Coyote, and it looks like the Coyote
> NetCDF object can be used to build whatever edifice I need.
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> But before I get to building, I wanted to inquire of the assembled: is
> there a NetCDF equivalent to Liam Gumley's fantastic SDS_READ program
> for HDF files?
> If the answer is no, I may just be tempted to port that program to
> NetCDF, because I have become so used to it.
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> What would be absolutely fantastic is a file that vacuums up all the
> attributes and data in a NetCDF file and returns a structure with
> everything, but I don't think that could be done without lots of
> EXECUTE(), which makes the baby Cthulhu cry.
>
> --Edward H.

This function will read a variable and its attributes and return
a data structure.

It is slightly specialized for my use. I like to include the
number of elements in the 'n' field, but that can potentially
conflict with an existing attribute name.

To get all the variables in a file you would need to make a
wrapper function that will get the list of variables and
loop over them.

I have never had much use for a completely general-purpose
routine that reads an entire file, because, among other things,
the files are often larger than system memory. Adding the
capability to read just parts of a file will make the program
much more complex. At that point I find it easier to just
write the code to get what I want.

Ken Bowman

```
FUNCTION NCDF_READ_VAR, id, name, _EXTRA = extra

;+
; Name:
;    NCDF_READ_VAR
; Purpose:
;    This function reads a variable and all of its attributes from an open
;    netCDF file and returns the variable values and attributes in a structure.
; Category:
```

```
;     NCDF utility.
; Calling sequence:
;     data = NCDF_READ_VAR(id, name)
; Input:
;     id   : netCDF file id of the input file.  The file must already be open.
;     name : variable id or name of the variable to be read.  The variable must
;            exist in the file.
; Output:
;     Structure containing requested variable values and all attributes.
; Keywords:
;     If present, the keywords COUNT, OFFSET, and STRIDE are passed to NCDF_VARGET.
; Author:
;     K. Bowman.  2004-05-22.
;-

COMPILE_OPT IDL2                                        ;Set compile options

IF (N_PARAMS() NE 2) THEN $                             ;Check parameters
  MESSAGE, 'You must specify a file id and variable id or name.'

var_info = NCDF_VARINQ(id, name)                        ;Get variable info

NCDF_VARGET, id, name, values, _EXTRA = extra           ;Read data
IF (var_info.datatype EQ 'CHAR') THEN values = STRING(values)       ;If CHAR, convert to
STRING

IF (var_info.natts GT 0) THEN BEGIN                     ;Read attributes

  att_name = NCDF_ATTNAME(id, var_info.name, 0)         ;Get first attribute name
  att_info = NCDF_ATTINQ(id, var_info.name, att_name)   ;Get first attribute info
  NCDF_ATTGET, id, name, att_name, att                  ;Read first attribute value
  IF (att_info.datatype EQ 'CHAR') THEN att = STRING(att)       ;Convert CHAR to STRING
  atts = CREATE_STRUCT(att_name, att)                   ;Create attribute structure

  FOR i = 1, var_info.natts - 1 DO BEGIN                ;For each attribute
    att_name = NCDF_ATTNAME(id, var_info.name, i)       ;Get attribute name
    att_info = NCDF_ATTINQ(id, var_info.name, att_name) ;Get attribute info
    NCDF_ATTGET, id, name, att_name, att                ;Read attribute value
    IF (att_info.datatype EQ 'CHAR') THEN att = STRING(att)     ;Convert CHAR to STRING
    IF (att_name NE 'n') THEN atts = CREATE_STRUCT(atts, att_name, att)  ;Add attribute to
structure, skip attributes named 'n'
  ENDFOR

  data = CREATE_STRUCT('name',   var_info.name,     $          ;Create structure
                       'values', values,            $
                       'n',      N_ELEMENTS(values), $
                       atts)
```

```
ENDIF ELSE BEGIN

  data = CREATE_STRUCT('name',   var_info.name, $                    ;Create structure
                       'values', values, $
                       'n',      N_ELEMENTS(values))

ENDELSE

RETURN, data                                          ;Return data structure

END
```

Subject: Re: NetCDF tools
Posted by David Fanning on Thu, 31 Mar 2011 18:59:44 GMT
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Ed Hyer writes:

> I'm migrating some ugly FORTRAN binary blobs used by some applications
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> EXECUTE(), which makes the baby Cthulhu cry.

Well, there are no EXECUTEs, but that's more or less what
the ncdf_data object does. It is usually accessed via the
NCDF_BROWSER. The "Read Entire File" button is the one you
want. It just calls the Read_File method and returns a
structure will all the file information in it. :-)

Cheers,

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: NetCDF tools
Posted by Michael Galloy on Thu, 31 Mar 2011 21:17:48 GMT
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On 3/31/11 12:48 PM, Kenneth P. Bowman wrote:
> I have never had much use for a completely general-purpose
> routine that reads an entire file, because, among other things,
> the files are often larger than system memory. Adding the
> capability to read just parts of a file will make the program
> much more complex. At that point I find it easier to just
> write the code to get what I want.

I have a program that you can read just parts of a netCDF file, since
that is usually what I have to do. This works like:

```
IDL> im = tx_nc_getdata(sample_filename, '/image')
```

or even,

```
IDL> plot, tx_nc_getdata(sample_filename, '/image[*, 256]')
```

You can read attributes too:

```
title = tx_nc_getdata(sample_filename, '/image.TITLE')
```

I have a TX_NC_DUMP routine that prints a listing of the contents of a
file and a TX_NC_BROWSER that is like H5_BROWSER.

Mike
--
www.michaelgalloy.com
Research Mathematician
Tech-X Corporation

Subject: Re: NetCDF tools
Posted by penteado on Thu, 31 Mar 2011 21:25:21 GMT
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On Mar 31, 3:34 pm, Ed Hyer <ejh...@gmail.com> wrote:
> What would be absolutely fantastic is a file that vacuums up all the

> attributes and data in a NetCDF file and returns a structure with
> everything, but I don't think that could be done without lots of
> EXECUTE(), which makes the baby Cthulhu cry.

I have some old code that did it, with no execute, which I started to migrate to a class, so that besides reading the whole file, variables could be retrieved with the brackets.

If there is interest, I could dig those out and make them presentable.

Subject: Re: NetCDF tools
Posted by R.Bauer on Mon, 04 Apr 2011 13:43:52 GMT
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Am 31.03.2011 20:34, schrieb Ed Hyer:
> Hi guys,
>
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> into shiny new NetCDF files, and I realize I've never worked with
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> EXECUTE(), which makes the baby Cthulhu cry.

How much data is it? I guess my read_ncdf does this.

Can you provide an example file for downloading. I like to try it out.

cheers
Reimar

>
> --Edward H.