
Subject: Re: Add a new variable to netCDF file?

Posted by [Paul Van Delst\[1\]](#) on Tue, 25 Oct 2011 13:37:55 GMT

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Hello,

Ashley Berg wrote:

> So, I know how to overwrite a variable in a netCDF file, but how do I
> add a new one?
>
> I have a netCDF file with about 30 variables and I want to add two new
> ones. It would be a pain to have to copy over all 30 vars plus the
> new ones into a new file, so is there a way to add variables using the
> netCDF operators? I've been experimenting but haven't been able to
> find a way to do it (when I try to write a new variable to the file,
> it complains that it can't find the variable, which implies it's
> looking to overwrite an existing one rather than tack on the new one).

0) Open the existing file for writing (NCDF_OPEN)
1) Put the netcdf file in DEFINE mode (NCDF_CONTROL)
2) If required, define new dimensions (NCDF_DIMDEF)
3) Define the new variable (NCDF_VARDEF)
4) Repeat 2-3 as necessary for multiple dimensions/variables.
5) Put the netcdf in DATA mode (NCDF_CONTROL)
6) Write the new variable data to the file (NCDF_VARPUT)
7) Repeat 7 as necessary for multiple variables.
8) Close the file (NCDF_CLOSE)

cheers,

paulv

>
> Thanks!

Subject: Re: Add a new variable to netCDF file?

Posted by [Kenneth P. Bowman](#) on Tue, 25 Oct 2011 13:49:39 GMT

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In article <j86e3h\$5of\$1@speranza.aioe.org>,
Paul van Delst <paul.vandelst@noaa.gov> wrote:

> Hello,
>
> Ashley Berg wrote:
>> So, I know how to overwrite a variable in a netCDF file, but how do I
>> add a new one?

>
> 0) Open the existing file for writing (NCDF_OPEN)
> .
> .
> .
> 8) Close the file (NCDF_CLOSE)
>
> cheers,
>
> paulv

And, by the way, this usually requires creating a new file and copying the contents of the original file. So, it may not be very efficient, and you probably want to operate on a *copy* of your input file in case something goes wrong during the process.

Cheers, Ken Bowman

Subject: Re: Add a new variable to netCDF file?
Posted by [David Fanning](#) on Tue, 25 Oct 2011 13:53:58 GMT
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Paul van Delst writes:

> 0) Open the existing file for writing (NCDF_OPEN)
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> 6) Write the new variable data to the file (NCDF_VARPUT)
> 7) Repeat 7 as necessary for multiple variables.
> 8) Close the file (NCDF_CLOSE)

My memory is shaking on this topic, but I thought it was not possible to add a variable to a netCDF file. Although I seem to remember some provision for this in the latest version of netCDF. My memory is so fuzzy, I have no confidence in it, but I recall this being an issue with *some* version of the scientific data sets.

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: Add a new variable to netCDF file?
Posted by [Paul Van Delst\[1\]](#) on Tue, 25 Oct 2011 15:02:31 GMT
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hello,

Kenneth P. Bowman wrote:

```
> In article <j86e3h$5of$1@speranza.aioe.org>,
> Paul van Delst <paul.vandelst@noaa.gov> wrote:
>
>> Hello,
>>
>> Ashley Berg wrote:
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> .
> .
>> 8) Close the file (NCDF_CLOSE)
>>
>> cheers,
>>
>> paulv
>
> And, by the way, this usually requires creating a new file and
> copying the contents of the original file. So, it may not be very
> efficient, and you probably want to operate on a *copy* of your input
> file in case something goes wrong during the process.
```

Huh. I have never encountered this.

From the "Adding new dimensions, variables, and attributes" section of the "netCDF Fortran90 interface guide":

<quote>

An existing netCDF dataset can be extensively altered. New dimensions, variables, and attributes can be added and existing ones renamed, and existing attributes can be deleted.

</quote>

Also, from the "Variables" section of the same document:

<quote>

Variables for a netCDF dataset are defined when the dataset is created, while the netCDF dataset is in define mode.

Other variables may be added later by reentering define mode.

</quote>

Seems quite clear to me. I've been doing it in v3.x of netCDF for years now. I would consider *any* failure of an API to do this correctly as a critical bug.

I will second Ken's comment about efficiency: adding a new dimension, or a variable attribute, or a global attribute, to a large existing netCDF dataset can be quite slow since all of the following data has to be "pushed down" to make way for it. At least, that's my perception of the process for netcdf v3.x. NetCDF 4.x may be supa-efficient regardless.

cheers,

paulv
