
Subject: Re: NCDF_ATTPUT _FillValue problem for string arrays?

Posted by [Paul Van Delst\[1\]](#) on Mon, 06 Jul 2009 20:41:20 GMT

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Fiç½LDY Lajos wrote:

>

>

> On Mon, 6 Jul 2009, Paul van Delst wrote:

>

>> Hello,

>>

>> I've encountered a strange problem with some netCDF output using IDL.

>>

>> I define a character string array variable in my output netCDF file

>> like so:

>>

>> VarId = NCDF_VARDEF(fid, 'Absorber_Units_Name',

>> [32,n_Absorbers_DimId], /CHAR)

>>

>> where the "32" is the maximum string length.

>>

>> Now if I try to set a fill value attribute for that variable, like so

>>

>> NCDF_ATTPUT, fid, VarId, '_FillValue', ''

>> or

>> NCDF_ATTPUT, fid, VarId, '_FillValue', 0B

>>

>> when I run the code I get the following error when I take the file out

>> of define mode:

>>

>> % NCDF_CONTROL: Attempt to take the file out of define mode (ENDEF)

>> failed. (NC_ERROR=-45)

>>

>> If I simply comment out the call to NCDF_ATTPUT for these character

>> variables, there's no problem.

>>

>> I do this sort of thing (i.e. _FillValue of " " for character string

>> variables) all the time using the Fortran90 API to netCDF so I assume

>> an empty space is a valid fill value.

>>

>> Has anyone else encountered this behaviour in IDL? I.e. is this a

>> known bug in the IDL netCDF interface, or do I need to do something

>> special with character fill values?

>>

>> Thanks for any info.

>>

>> cheers,

>>

```
>> paulv
>>
>>
>
> NCDF_VARDEF needs dimension ID, not dimension size. The following code
> works for me:
```

Yeah, I fat-fingered my code when I typed the message. Cutting-and-pasting directly from my script I have:

```
; ...Define dimensions
n_Levels_DimId  = NCDF_DIMDEF(fid, LEVEL_DIMNAME      , self.n_Levels)
n_Layers_DimId  = NCDF_DIMDEF(fid, LAYER_DIMNAME      , self.n_Layers)
n_Absorbers_DimId = NCDF_DIMDEF(fid, ABSORBER_DIMNAME  , self.n_Absorbers)
pdsI_DimId      = NCDF_DIMDEF(fid, DESCRIPTION_DIMNAME , PDSL)
aunsl_DimId      = NCDF_DIMDEF(fid, ABSORBER_UNITS_DIMNAME, AUNSL)
n_Profiles_DimId = NCDF_DIMDEF(fid, PROFILE_DIMNAME   , /UNLIMITED)

; Define variables
VarId = NCDF_VARDEF( fid, DESCRIPTION_VARNAME, [pdsI_DimId,n_Profiles_DimId],
/CHAR)
NCDF_ATTPUT, fid, VarId, LONGNAME_ATTNAME , DESCRIPTION_LONGNAME
NCDF_ATTPUT, fid, VarId, DESCRIPTION_ATTNAME, DESCRIPTION_DESCRIPTION
NCDF_ATTPUT, fid, VarId, UNITS_ATTNAME    , DESCRIPTION_UNITS
; NCDF_ATTPUT, fid, VarId, FILLVALUE_ATTNAME , DESCRIPTION_FILLVALUE
```

where I have a parameters include file containing:

```
LONGNAME_ATTNAME  = 'long_name'
DESCRIPTION_ATTNAME = 'description'
UNITS_ATTNAME     = 'units'
FILLVALUE_ATTNAME = '_FillValue'

DESCRIPTION_LONGNAME  = 'Profile Description'
DESCRIPTION_DESCRIPTION = 'Description of atmospheric profile and modification'
DESCRIPTION_UNITS     = 'N/A'
DESCRIPTION_FILLVALUE = ''
```

....etc for other variables

Your example code works for me too. Hmmm....

```
>
> ncid=ncdf_create('test.nc', /clobber)
> dim32=ncdf_dimdef(ncid, 'dim1', 32)
> n_absorbers_dimid=ncdf_dimdef(ncid, 'dim2', 9)
> varid = ncdf_vardef( ncid, 'absorber_units_name',
```

```
> [dim32,n_absorbers_dimid], /char)
> ncdf_attput, ncid, varid, '_fillvalue', ''
> ncdf_control, ncid, /endef
> ncdf_close, ncid
```

AHA!!!

When I change your above test code to use the conventional fill value attribute name as specified in the netCDF Interface Guide, "_FillValue", I get the following:

```
ncid=ncdf_create('test.nc', /clobber)
dim32=ncdf_dimdef(ncid, 'dim1', 32)
n_absorbers_dimid=ncdf_dimdef(ncid, 'dim2', 9)
varid = ncdf_vardef( ncid, 'absorber_units_name', [dim32,n_absorbers_dimid], /char)
ncdf_attput, ncid, varid, '_FillValue', '' ; <---**** Note the attribute name
ncdf_control, ncid, /endef
ncdf_close, ncid
```

```
IDL> .run blah
% Compiled module: $MAIN$.
% NCDF_CONTROL: Attempt to take the file out of define mode (ENDEF) failed.
(NC_ERROR=-45)
% Execution halted at: $MAIN$          6 scratch/blah.pro
```

So:

- if I use "_fillvalue" for the attribute name, the code works fine.
- if I use "_FillValue" for the attribute name, the code crashes.

Given that netCDF attribute, dimension, and variable names are case-sensitive, this would appear to be a bug....somehow.

Thanks for writing the little test case. I never would have figured it out otherwise.

cheers,

paulv

```
>
> and 'ncdump test.nc' produces:
>
> netcdf test {
> dimensions:
>   dim1 = 32 ;
>   dim2 = 9 ;
> variables:
>   char absorber_units_name(dim2, dim1) ;
>   absorber_units_name:_fillvalue = " " ;
```

```
> data:
>
> absorber_units_name =
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
>   "",
> }
>
> NCDF_VARDEF does not print an error message, it returns -1 on failure :-(
>
> regards,
> lajos
```
