Subject: Re: HDF SDS data attributes

Posted by Liam E. Gumley on Tue, 19 Sep 2000 07:00:00 GMT

View Forum Message <> Reply to Message

William B. Clodius < wclodius@lanl.gov> wrote in message news:39C7A0A6.F610F1DE@lanl.gov...

- >> Let me see if I understand your problem. You have a dimension named
- >> 'Band_Number', which is used for image SDS arrays. However you'd also like
- >> to record the actual band numbers which correspond to the 'Band Number' >> dimension.

- Not quite, we would like to record the band names, which for historical
- > reasons are not always in a logical sequence. In explanation, most of
- > the names are single characters in alphabetical order increasing with
- > wavelength, A (blue), B (green), C (red), ..., but one (low signal) band
- > is duplicated twice as a means of improving S/N (a form of time delayed
- > integration) and after much of the design work was done and publicized
- > an additional band was added at an intermediate wavelength without
- > renaming the other bands. As a result various users of our data
- > currently get confused as to whether the data are stored in alphabetical
- > or wavelength order. This confusion was made worse by the implementors
- > providing wrapper routines that by default returns the data in a
- > different order from how they are actually stored. (If I remember
- > correctly, this was sort of the fault of the rest of the team that
- > decided how data was to be stored and accessed at different meetings
- > without checking as to whether they were being consistent.) Soon we may
- > have the question as to whether both versions of the duplicated band are
- > present or only one combined image.

>

- > It would also be useful for our users if the data included the center
- > wavelengths and band widths for each band and directly associated that
- > with the array dimension.

It seems to me you need several SDS arrays for this purpose. Let's say you have 10 bands:

```
dimensions:
```

Band Number = 10

variables:

long Band_Number(Band_Number) float Band_Center(Band_Number) float Band_Width(Band_Number) char Band Name

data:

Band Number = 1, 2, 3, 3, 4, 5, 6, 7, 8, 9

long_name: 'Band Numerical Identifier' Band_Center = 0.40, 0.45, 0.50, 0.50, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85 long_name: 'Band Central Wavelength' units: 'microns' Band_Width = 0.05, 0.05, 0.05, 0.05, 0.05, 0.02, 0.02, 0.02, 0.05, 0.05 long_name: 'Band Width' units: 'microns' Band_Name = 'A, B, C, C, D, E, F, G, H, I'

Band Name is a comma-delimited string because I don't believe HDF supports arrays of strings.

As you said, you can only have one coordinate variable (aka dimension scale) per dimension. I prefer the multiple-array approach over having multiple non-standard attributes for a single coordinate variable (i.e. Band_Number with attributes Band_Center, Band_Width, Band_Name).

Cheers, Liam. http://cimss.ssec.wisc.edu/~gumley