CERES Systems Engineering Committee

Members: Tammy Ayers, SAIC
Denise Cooper, SAIC
Vertley Hopson, ASDC
Lisa Link, ASDC
Sandy Nolan, SAIC
Joe Stassi , SAIC

Charter: Serve as a forum for resolving issues which affect more than one working group. Report to CERES Data Management Team.

May 10 2004 1:00 pm
Lisa Link was not present. The following people joined the SEC for this meeting.:
Pete Spence, Kam-Pui Lee, Dale Walikainen, Walt Miller, Aaron Hoppe, Lisa Coleman, Tom Caldwell, Raja Raju, Ed Kizer and Linda Hunt.

Mike Little asked the SEC to examine alternate strategies for implementing HDF5 in CERES and to present him with a plan in 4-6 weeks (May 19-June 2).

As a first step to accomplish this, the SEC met with the CERES Subsystems leads and representatives from ASDC User Services. Pete presented an overview of the differences between HDF4 and HDF5. Kam-Pui, who has experience using both HDF4 and HDF5, gave additional information and explained that HDF5 was much more versatile, but is more complicated and requires more lines of code. Many of the functions that were taken care of internally in HDF4 now have to be specified or programmed by the user in HDF5.

Joe asked if wrappers could be written using HDF5 that would mimic the HDF4 calls being used by CERES. Kam-Pui said that he thought that this could be done. The one area that might cause problems was CERES code that relied on HDF4 SDS indexing, which is not available in HDF5. Sandy and Raja reported that their code used SSF indexing. Kam-Pui said that the HDF5 code could use path names instead of SDS indexing, but this would require a restructuring of the current code and could not be completely taken care of by wrappers.

There was discussion on the future possibility that HDF4 would no longer be available from NCSA to users. Linda Hunt, who has extensive experience dealing with NCSA, felt that because of the large number of EOS HDF4 users (including MODIS), that HDF4 would be available for at least 10 years. She also said that if at some future time NCSA no longer distributed HDF4, then the ASDC could provide CERES data product users with HDF4 software and libraries. The ASDC already distributes the required version of HDF4 software/libraries to users with view_hdf orders.

There was a general consensus that it would be best not to force CERES data product users to use both HDF4 and HDF5 to read different versions of the same CERES data product. It was noted that GERB products will be in HDF5 and users wishing to compare CERES and GERB data may have to use both HDF versions.

The group discussed the following options for the conversion of the CERES products from HDF4

to HDF5:

1. Continue to produce CERES Edition 2 data products in HDF4 and wait until CERES Edition3 and then produce all CERES data products in HDF5.

2. Create Fortran 90 wrappers for the HDF5 code and leave the CERES code for writing HDF4 products as unchanged as possible. The wrappers would be completed during the Edition2 processing phase and could be linked with the current CERES code at any time. Instrument currently uses the C version of HDF calls and would not be able to use the F90 wrappers.

3. Convert some or all CERES HDF products to HDF5 during Edition2 and provide ASDC User Services with HDF5 to HDF4 conversion /subsetting for each data product.

4. Continue to produce CERES HDF4 data products indefinitely and provide ASDC User Services with HDF4 to HDF5 conversion /subsetting for each data product. The user could request either HDF4 or HDF5 versions or subsets of the products.

The possibility of having an HDF5 expert convert all existing HDF4 software to HDF5, with as little impact on Subsystems as possible, was discussed. This approach would probably not work for BDS, SRBAVG and yearly validation site SSF software which do not create an intermediate binary product. All other subsystems use stand-alone programs for converting binary products to HDF. Although there was consensus that one or two HDF experts would be needed, most subsystems leads would prefer to also have some level of HDF5 training for themselves and their group, and some would like to be more involved in the conversion process. Attending HDF-EOS workshops for training was discussed, but those who have attended these workshops suggested that having extensive training by NCSA would be more beneficial.

Each subsystem was asked for their preferences and comments on the HDF5 conversion process, which are summarized below:

Instrument

Denise reported that she would prefer to start this process by converting the IES product to HDF5. The IES is not available to the public and is only read by Convolution. For the BDS, she would prefer to produce the data product in HDF5 and provide ASDC User Services with HDF5 to HDF4 conversion /subsetting software. She would like some formal HDF5 training.

ERBE-like

Dale deferred to Ed Kizer's experience with HDF and the ERBE-like products. Ed suggested that having an HDF5 expert convert the ERBE-like HDF software to HDF5 should be the preferred option. Conversion software for converting from HDF4 ERBE-like to HDF5 should be available to users. The ES-8 is not subsetted for users at the ASDC.

Inversion

Sandy reported that in addition to the SSF binary to HDF conversion software there was a large amount of code for reading and comparing SSF HDF products that would need to be converted to HDF5. Inversion would like some formal HDF5 training. Before attempting the

conversion, it would prefer that an HDF5 expert first create HDF5 conversion models or examples for the HDF4 functions that are common between most of the CERES products. Conversion software for converting existing HDF4 SSF products to HDF5 should be made available to the ASDC.

SARB

Lisa deferred to Tom who is more familiar with HDF4. In addition to the SARB HDF products, Tom is responsible for the MOA software which reads DAO HDF4 products. Tom was very interested in having HDF5 training and having the SARB Subsystem handle the SARB conversion. Early training would be especially beneficial to Tom, since DAO could decide to switch to HDF5 products at any time.

TISA

Raja reported that TISA would prefer having an HDF5 expert convert or help to convert the TISA HDF4 software to HDF5.

It was decided that most subsystem leads will need more information before determining the level of effort that it will take for the conversion. Ed, who has had experience with many of the CERES HDF products, suggested that it would take a minimum of 2-3 months for an ERBE-like conversion to HDF5.

The meeting adjourned at 2:20 pm. skn