

MODIS TECHNICAL TEAM MEETING

April 14, 1995

The MODIS Technical Team Meeting was chaired by Vince Salomonson. Present were David Herring, Dorothy Hall, Harry Montgomery, Bruce Guenther, Joann Harnden, Wayne Esaias, Rosemary Vail, Al Fleig, Locke Stuart, Dick Weber, Steve Ungar, and John Bauernschub.

1.0 SCHEDULE OF EVENTS

April 15	Quarterly Reports Due to Barbara Conboy
April 18-19	Science Software Integration and Test Workshop
April 28	Level 2 Software Integration Review
April 30 - May 1	CEOS Meeting -- Best Western Hotel, Lanham, MD
May 2	MODIS Calibration Working Group -- Greenbelt Marriott
May 3 - 5	MODIS Science Team Meeting -- Greenbelt Marriott

2.0 MINUTES OF THE MEETING

2.1 MODIS Project Reports

Weber reported that SBRC completed ambient testing of the MODIS Engineering Model (EM). SBRC also conducted spectral band pass measurements of 35 of MODIS' bands and measured the co-registration on all four focal planes. Weber told the Team that SBRC will begin evaluating those data next week, and will report its findings to GSFC as soon as possible.

Weber reported that SBRC also measured the linearity gain offset using its spherical integrating source and blackbody calibrating source. Now, preparations are underway for conducting thermal vacuum tests. He noted that SBRC found a gas leak in its thermal vacuum chamber and is now working to correct that problem.

2.2 MCST Reports

Guenther showed viewgraphs illustrating SBRC's spectral response test data for MODIS EM bands 20 through 25 (see Attachment 1). The graphs show a comparison between nominal performance (the normalized transmittance that would be seen if each band's filters performed exactly according to specifications) versus expected performance (the actual measured normalized transmittance for each band's filters on the EM). Guenther explained that the expected performance shown on these graphs does not match nominal performance. Because of the uniformity of the shift in filter transmission to longer wavelengths for each filter, he is concerned that MCST may not properly understand the labels on the charts. Guenther stated that MCST will continue

evaluating these test data and report their findings when their questions are answered.

Salomonson asked if the planned bilinear gains for MODIS bands 31 and 32 were changed to linear gains. Weber responded affirmatively, stating that SBRC concluded that proper radiometric response could be obtained using a linear slope.

2.2.1 MODIS Calibration Working Group

Guenther announced that the agenda for the May 2 MODIS Calibration Working Group Meeting is complete (see Attachment 2).

2.2.2 Vicarious Instrument Calibration Workshop

Regarding vicarious calibration, Guenther stated that different principal investigators use different methods for constructing their error budgets. Moreover, when looking at the error budgets in each vicarious calibration strategy, MCST is finding inconsistencies. MCST must have a consistent approach to the error budgets for the Onboard Calibrators and the vicarious calibrations in order to understand how to use them together in its algorithm. Consequently, MCST is considering holding a workshop at which each investigator interested in providing to MCST vicarious calibration data can brief MCST on their experiments and discuss their philosophy of error budgets.

2.2.3 Beta 3 Delivery

Guenther announced that MCST is holding a review of its Beta 3 software on Monday, April 17--two weeks prior to delivery. This meeting is open; an SDST representative was invited to attend, as well as the person to whom the code will be delivered.

2.3 SDST Reports

Fleig reported that he is working on a response to Pier Sellers', EOS AM Program Scientist, questions on validation. Fleig stated that the original purpose of the action item was not to have a Validation Plan, but to have cooperative field measurement campaigns to ascertain what activities make sense in a validation context.

2.3.1 MODLAND Workshop Summary

Fleig reported that SDST had a successful meeting last week with MODLAND--all investigators were well represented. Fleig stated that discussion focused on Beta delivery commitments; as well as data interchange from one principal investigator to the next. MODLAND plans to deliver Beta code by the end of July 1995. MODLAND recognized that they must begin writing code now, and not solely focus on improving their science.

2.3.2 MODLAND Level 2 Binning

Fleig told the Team that Eric Vermote proposed placing Level 2 land data into bins so that the data may be linked to other inputs. Fleig feels that this operation may be non-trivial. Harnden is reviewing the possibility further and will report her findings to the Technical Team.

Harnden added that she is meeting with SDST on Monday to review binning options. She explained that MODLAND scientists believe they would find binned Level 2 data more useful than swath-based Level 2 data due to the bowtie effect in MODIS.

Harnden stated that difference between gridding and binning is that gridding implies resampling, so that the data value stored in a grid cell actually represents that place on the ground, while binning is choosing one grid cell in which to put data values with geolocation data and without resampling. She pointed out that you cannot have a bin without a grid--binning simply means no resampling. If there are more grid cells than data elements, gridding implies a data value is placed into each grid cell whereas binning implies there will be empty grid cells.

Harnden stated that binning the data will increase the storage requirements, so the option is being considered to bin data as an intermediate step to producing Level 3 products and keep the swath-based data as the archived Level 2 product format.

2.4 Alaskan Snow Campaigns

Hall announced that she is participating in a successful campaign in Alaska now to gather remote sensing data of snow and sea ice. She reported that four flights were made using the MODIS Airborne Simulator (MAS), and that three more are planned.

2.5 Ocean Group Reports

Esaias reported that Tuesday at NASA HQ, Nancy Maynard convened a meeting of all ocean program managers and spent the day discussing their scientific programs. That meeting was attended by Chuck McClain, Robert Frouin, and Esaias. He feels that there are a lot of good linkages now between ocean field campaigns.

Esaias reminded the Team that there has been considerable turnover over the past 18 months at NASA HQ, so ocean scientists have been updating the new personnel on the concepts and ideas behind their science.

2.6 ISCCP Grid Revisited

Ungar reported that the topic of discussion at the GSFC DAAC meeting this month was the gridding of Level 3 products. According to Ungar, the GSFC DAAC feels that the ISCCP Grid is not the best method for gridding data. One concern is that the ISCCP Grid does not offer not the best means of preserving

data. Another concern held by the DAAC is that there are many different opinions as to the definition of the ISCCP Grid.

Harnden responded that for MODIS' purposes the ISCCP Grid is meant to refer to a process for gridding the Earth in which you pick a nominal cell size, or a number of rows of cells between the Earth's poles. The gridding process gives you something similar to an equal area grid for storing data.

Ungar stated that when you nest, you get displacement between the rows of grid cells; i.e., they do not line up cleanly going north/south. This means that the nested subgrids have substantial discontinuities at the ISCCP row boundaries. Integrating ISCCP Gridded data can become tricky because it is not truly equal area, nor is it truly nested. Salomonson asked Ungar if the GSFC DAAC is prepared to offer a better solution. Ungar responded that options are being reviewed and that the DAAC is trying to arrive at a consensus.

Harnden pointed out that the international remote sensing community wants a latitude-longitude grid, and that the instrument managers have convinced Piers Sellers that an equal area grid is needed for archival purposes. Ungar responded that the reason the instrument managers want an equal area grid is that historically it was the best grid for preserving data. But for MODIS, it is not the best grid for preserving data because MODIS has a bowtie effect and because the MODIS pixels vary in area by a factor of 10.

It was agreed by attendees to review options and revisit this topic at subsequent Technical Team Meetings.

3.0 ACTION ITEMS

3.1 Action Items Carried Forward

1. *Dave Diner & Ed Masuoka*: MODIS and MISR need to settle on a protocol(s) to deal with Level 1 and Level 2 data sets to be passed between the two teams to produce joint products. Report at the next SWAMP Meeting.
2. *Guenther*: Report the modeled results of the 1,000K source for SBRC's integration and alignment collimator to the Technical Team. [These data are forthcoming.]
3. *Fleig and Ungar*: Interact with the group leaders to develop a MODIS data simulation plan for review at the next Science Team Meeting. [Work on this item is still in progress. Simulated data are now available via FTP, and a white paper is forthcoming from Fleig.]

4.0 ATTACHMENTS

NOTE: All attachments referenced below are maintained in MODARCH and are available for distribution upon request. Please contact David Herring,

MAST Technical Manager, at (301) 286-9515, Code 920, NASA/Goddard Space Flight Center, Greenbelt, MD 20771 if you desire copies of any attachments.

1. Viewgraphs on Spectral Response of MODIS Engineering Model Bands 20 - 25, by Ed Knight
2. Calibration Working Group Meeting Agenda, by Bruce Guenther