

MODIS TECHNICAL TEAM MEETING

Building 33, Room E125

August 10, 2000

Vince Salomonson chaired the MODIS Technical Team Meeting. Present were Bruce Guenther, Eric Vermote, Chris Justice, Bruce Ramsay, Harry Montgomery, Skip Reber, Ed Masuoka, Dorothy Hall, Dave Toll, Steve Kempler, Mike Roberto, and John Barker; with David Herring taking the minutes.

1.0 SCHEDULE OF EVENTS

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| • SWAMP Meeting
U. of Toronto, Canada | September 6-7 |
| • EOS/SPIE Symposium on Remote Sensing
Barcelona, Spain | September 25-29 |
| • SPIE's Remote Sensing Japan 2000
Sendai, Japan | October 9-12 |
| • VENICE-2000 (Oceans from Space)
Venice, Italy | October 9-13 |
| • Ocean Optics XV
Monaco | October 16-20 |
| • PORSEC 2000
Goa, India | December 5-8 |
| • AGU Fall Meeting
San Francisco, CA | December 15-19 |
| • Aqua Launch | December 21 |

2.0 MINUTES OF THE MEETING

2.1 MCST Reports

Guenther told the Team that on Saturday evening (Aug. 5), MODIS had an anomaly in its onboard data formatter. He said the problem could have to do with the interface between systems within the formatter. The problem appeared first around 6:30 p.m. EDT, when MODIS stopped sending data to the onboard solid state recorder. Around 11 p.m. that night, in consultation with SBRS, MCST placed the instrument into safe mode with scan power turned off. Then, MCST turned MODIS back on to, in effect, reboot the system. Then, Guenther reported, MODIS did not come back on properly. He said this may be because the systems were cold—there is some chance that when the systems get warm the sensor could come up properly.

Guenther said Mike Roberto is heading the anomaly review panel at SBRS on this issue. He acknowledged that there is some tension is to get MODIS back in operation as soon as possible to support the SAFARI campaign. However, he said, MCST must, by all means, make sure there isn't some problem on the A-Side electronics that is correctable that may also manifest itself on the B-Side if

and when the decision is made to switch to the B-Side. He added that the knowledge gained from resolving this problem could also be invaluable in optimizing the systems aboard the MODIS Flight Model-1 (that will launch on Aqua). Salomonson agreed that MCST should run tests to see if they can determine what went wrong. He advocated making the switch to the B-Side electronics before the beginning of SAFARI.

Guenther announced that MODIS processing software Version 2.4.3 will be integrated into the data system and fully functional {when??}.

2.2 MODIS Project Reports

Roberto said he spent time today talking to Richard Ho and personnel at SBRS about appropriate steps toward returning MODIS to an operational state. Roberto believes that more data from the onboard formatter is needed to help the decision-making process. He said a lot depends upon how the instrument performs this afternoon. If MODIS comes up and runs fine then it is probably okay. But if it does not, then SBRS and MCST will need to run diagnostics before returning MODIS to an operational science mode. He said there is a teleconference scheduled this afternoon to discuss all the issues.

Roberto believes the problem lies in the electronics and pointed out that a number of other satellites took "hits" on Saturday, probably from solar activity. He said MODIS exhibited electrical spikes that went quickly from 10 KeV to as high as 10 or 20 MeV. The spikes appeared intermittently. Roberto explained that the onboard data formatter has roughly 50,000 traces (lines on printed circuit boards) and 400 integrated circuits. About half of those could have failure at their pins, or even trace failures, that could cause timing resets on the instrument.

Montgomery asked, if the sun caused the problem while the A-Side was turned on and B-Side was off, could the B-Side be damaged too? Roberto said the probability of being damaged depends upon the electronic part in question; but generally, if the part is turned off it is much susceptible to damage from solar activity. Barker added that on July 14, Landsat 7 registered 14 electronic anomalies in one day. He said satellites can be sensitive to solar activity.

Roberto reported that the MODIS outgassing will be done by 3:30 p.m. today. Salomonson reminded him that SAFARI starts Monday and goes for 6 weeks. The participants in that campaign are relying upon the availability of timely MODIS data. Roberto expects his investigation to last no more than a week.

2.3 SRCA Data Analysis Update

Montgomery said the SRCA is doing fantastic. He reported MODIS' gain is stable around an orbit to within 0.2 percent. He switched over to constant current mode and that is also stable to within 0.2 percent. He noted there was one anomaly that he found when he compared SRCA data to the onboard lamp current and computed radiance variations around an orbit. He said the data match for all bands except Band 7. Something is wrong with the DN (MODIS signal) on Band 7, which is centered at 2.2 μm .

2.4 GDAAC Reports

Kempler stated that while the instrument is outgassing, the GDAAC installed the newest version of ECS software. This delivery provides functionality for Aqua, there is nothing new in it for Terra. He said if the GDAAC hadn't updated the system now, they would have had to wait until after SAFARI. He said the data system came up very well yesterday, and the GDAAC has ingested all data that it has received since. There was a problem, in starting the production process, with the Science Data Server. Two hours ago, system engineers identified the problem and so the GDAAC is now beginning to process the backlog of data.

Kempler said that in a recent PIP Meeting folks felt there is a real need to determine what is causing the "holes" in the flow of MODIS data. Kempler said the GDAAC has two tools now to help in that regard: one to determine when there are 5-minute gaps in data as it comes in, and the other ... *{is for what?}*

Justice asked if there are any different tests being planned for EDOS based on EDOS' performance to date? Reber answered, yes, several tests are planned. Richard Ho is heading up a tiger team to determine where we are and how we got here on Terra, which will also benefit Aqua. Terra and Aqua are different systems in terms of flight ops.

2.5 Data System Working Group Report

Justice said he completed the first Data System Working Group Report, which he sent around for comment. He is receiving feedback on that report and will present a summary at the upcoming SWAMP Meeting in Toronto. Justice is on the SWAMP Agenda to present details from each instrument team on the impacts of the data system on their current and planned science objectives. He hopes the presentation, and subsequent dialogue, will help clarify the current limitations of the data system.

2.6 SDST Update

Masuoka distributed a page containing thumbnails of the MODIS browse products currently available at Level 2 (see Attachment 1).

Masuoka said he is assessing the processing statistics that SDST carries on MODAPS, as well as the stats the GDAAC carries on their database. He will have that report ready for the SWAMP Meeting. Lately, he said, EDOS seems to be keeping up with the Terra data flow, although they did have some problems over weekend. Masuoka noted that EDOS is pretty close to using all of their Ampex tapes, which they recycle after the data have been copied off them into the GDAAC. He said if EDOS falls behind, it takes 210 tapes to capture one week's worth of Terra data. Fortunately, they haven't fallen behind so they are not losing any data. But if there is a big interruption in the processing system, there is some chance EDOS might run out of tapes.

Regarding the "holes" in the flow of MODIS data, the GDAAC is planning to leave them for now and go forward with processing current data. Kempler said this is because the GDAAC finds that whenever they request data to be resent

from EDOS for reprocessing, the GDAAC receives data with the same errors they originally received.

The GDAAC began testing ingest on oceans data products and, according to Masuoka, the tests went well. The GDAAC ingested about 700 files per hour. Masuoka noted that the Ocean Group wants to make some changes in the data format.

2.7 MODIS Land Group Reports

Justice announced that the first MODIS Level 3 data are now available from EDC. The products available include surface reflectance, vegetation index, leaf area index, and fraction of photosynthetically available radiation. They are available as 16-day composites. Thus far, the MODIS Land Group hasn't advertised widely that these data are available so that EDC can meet the demand as it increases gradually. MODIS 250-m resolution data are also available.

2.8 MAST Reports

Toll said Barbara Conboy and he will meet with Legal counsel soon to discuss the issue of distributing MODIS software. Salomonson said the Team will pursue the possibility of distributing MODIS code to MODIS Direct Broadcast receiving stations who want to produce their own products. The question is, can we release the source code so they can do it?

2.9 NOAA Updates

Ramsay said NOAA has processed about 25 granules of MODIS data over North America, and is now processing the remaining granules. NOAA is also working with a communications contractor to determine what is causing the slow-down in the communications link between GSFC and Suitland.

3.0 ACTION ITEMS

3.1 New Action Items

1. Masuoka and Conboy: Work with Patent Counsel, Legal, and Procurement to resolve issues concerning MODIS Science Team Member software distribution.

Open. Sched for 28th.

3.2 Action Items Carried Forward

1. Esaias: Prepare a group of charts for the next MODIS Technical Team meeting that delineates the relevant issues related to the Band 31/32 gain change and the recommendation that Tmax should be set at 340K for both bands.

Closed.

2. Guenther: Circulate recommendation to Discipline Leaders on plans to flag and fill dead detectors. Responses from Discipline Leads are needed by this time next week.

Done.

3. MODIS Science Team: Send updates on MODIS metadata terms/valids to Skip Reber (reber@skip.gsfc.nasa.gov). These are terms that enable users to search MODIS data. This is part of a request to the Terra Instrument teams to update metadata terms.

Status: This action is open. Check w/ Skip.

4. Discipline Leads: Send feedback to Murphy and Guenther on setting flags for dead (non-functional) detectors while they are set to zero. Currently, MCST would like MODIS Science users to provide feedback on which detectors are dead.

Status: This action is open.

5. Discipline Leads: Send MODIS Data Product table updates to Reber with a copy to Murphy. The MODIS Data Products table is on the Web at: http://eosdatainfo.gsfc.nasa.gov/eosdata/terra/modis/modis_dataprod.html

Status: This action is open. No input yet. Still open.

6. Masuoka: Submit an EOS-PM Data Product Update to ESDIS.

Status: This action item remains open. Have DP update. Haven't defined new values for those yet. Closed.

7. Vermote: Remove password protection from MODLAND graphic that displays gaps in MODIS data.

Status: This action items remains open. Done.

8. Masuoka: Represent MODIS concerns on data throughput to EDOS.

Status: This action items remains open. There is 2-day review forthcoming. Working group articulating impact to community.