MODIS Technical Team Meeting
Friday, February 9, 2001
3:00 PM

Vince Salomonson chaired the meeting. Present were Ed Masuoka, Eric Vermote, Steve Kempler, Bruce Ramsay, Dorothy Hall, Bruce Guenther, Wayne Esaias, Michael King, Chris Justice, Skip Reber, and Barbara Conboy, with Rebecca Lindsey taking the minutes.

1.0 Schedule of Upcoming Events

· Terra Cloud Mask Conference May 8-9, 2001
University of Wisconsin-Madison

2.0 Meeting Minutes

2.1 General Discussion

Salomonson began the meeting by announcing that Graham Stevens and Deb Vane (JPL) are interested in using MODIS to work with CloudSat. What they would like is a 5 to 10 km strip of L1B MODIS data at nadir. Salomonson asked Kempler to please look into the feasibility of doing so. Kempler asked that he be provided a written request. He indicated that if it were an easy operation, they should be able to accommodate the request, but that if it were complicated, then it would have to be turned over to ESDIS to consider. King indicated he would look into getting the request in writing.

Next Salomonson summarized some of the issues discussed at a meeting on the year-end recompetition of contracts. He indicated that most of what was discussed was along the same lines as what they heard from Jack Kaye during the science team meeting. There are details that are TBD, but one new strategy discussed was that the present plan is to do the NASA Research Announcements for both maintenance and science out of headquarters. Justice asked if there had been any specific discussion of percentages, and Salomonson said such discussion was minimal, but the percentages vary widely.

2.2 Instrument Update (Aqua MODIS)

Bruce Guenther reported that MCST had held their first instrument weekly discussion telecon, which he feels will be productive for both MCST and the science team. Among the things discussed at the telecon was the saturation for bands 1, 2, and 5 on Terra MODIS and Aqua MODIS. Unfortunately, it seems that Bands 1 and 2 will saturate at lower radiance levels on Aqua than on Terra. Aqua MODIS has missed specifications on Band 1 by a small amount, and they are down to about .85 on Band 2. Guenther isn't sure what the reasons are, but it could be a number of factors: a small CCD electronic well depth, larger optics transmission, or failure to account for spectral response. Band 5 seems to be OK, and perhaps slightly better on Aqua, compared to the instrument specifications. However, on Aqua MODIS, there is one delaminated pixel in that band,

and Band 6 has a minimum of six delaminated pixels—there may be as many as ten by launch.

Salomonson said he had asked the team whether any science algorithms would be rendered useless by the delamination problems in Band 6 on Aqua. His recollection was that the team members who responded said there is enough correlation between 5 and 6 that algorithms could be recovered; i.e., everyone should be able to produce a work around. When compared to the magnitude and complexity of the associated repairs to the instrument , this seemed at the time to be the pragmatic approach to adopt.

Guenther reported that Aqua sensor tests show that the electronic cross talk present in PFM is absent in FM. Although the system-level analysis has not been done, the subsystem test that indicated the problem on Terra has been done on Aqua, and appears to be clean. As with Terra, the bin-filling problem is better on Aqua B-side than A-side, but they do not expect any significant improvements in Aqua over Terra. Out-of band filters have been added, and edges of filters have been painted on Aqua MODIS. So the 5-µm leak should be smaller, and optical cross talk should be gone.

Next, Esaias presented some viewgraphs of the proposed Aqua orbit showing the center ground track plus or minus 45 degrees for SST measurements. Terra is taking SST measurements in descending mode during the day, and ascending at night. Aqua will be taking SST measurements in descending mode at night and ascending during daylight. The charts show that the tracks will be fully overlapped if the satellites are on complimentary tracks. However, if they are not on complimentary tracks, we will not get any repeated SST coverage near mid-track.

Esaias raised the question of whether the team is concerned about presence or absence of overlap, i.e. is there any scientific usefulness in seeing the same geometry from Terra ascending/Aqua descending (and the complementary Terra descending and Aqua ascending) for day-night comparisons for the same region with nearly the same view geometry. Are there implications from a science perspective if there is no overlap? Esaias indicated that this overlap has no impact on the Oceans Team's ability to correct sun glint, but that it would be useful for looking at day-night differences in skin temperature differences.

There was some discussion of timelines for Aqua launch, and whether Mark Domen thought the spacecraft could be purged in its shield to speed up outgassing procedures, but that doesn't appear to be possible.

Esaias asked whether the deep space maneuver is on the schedule for day 55, and Guenther indicated that it was, but there are implications of potential delays in orbit raising that might impact that schedule.

2.3 GES DAAC Update

Kempler reported that the GES DAAC has caught up with the leading edge of EDOS; i.e., they have processed all the Level 0 data available to them, which is up to January 26. All days are not complete, however, as EDOS delivery had some holes in January. Currently they are processing at about 2x, and they have been filling special requests from the Atmosphere and Land Teams, and some rapid response requests. Products that have been released recently include the Atmosphere L3 monthly product, and the Oceans Level 4 NPP.

Kempler reported that SSI&T has received the latest Terra and Aqua PGEs. The newest Terra PGE is in operations, and the Aqua one is being tested.

Reber asked whether the reason they were able to be at 2x was because they had a backlog of data to process. Kempler said yes, and that soon they would, in fact, be data starved. Guenther suggested that they could go back and reprocess if they ran out of data. There was also a discussion of whether they could use their resources to help MODAPS catch up.

2.4 MODAPS update

Masuoka provided a handout of a memo that had been prepared on what the MODIS team has done to ensure that it is making the most efficient use of data processing resources. Jon Ranson is asking the team to review it, and provide him with any last minute changes.

Salomonson asked where MODPAS stood on catching up after the disk crash that occurred during a vendor's improper installation. Masuoka reported that the disk is back up and configured. Monday they are powering up new 14 TB disk, which doubles their capacity, and another 7 TB disk will be available for V2.

With V2, they believe it should take about 12 weeks to close the gap with the GES DAAC. This will take us until May, which is right on top of the June reprocessing time line (see Section 2.8). Masuoka indicated that MODPAS was planing to skip the Aqua MOSS 2 test, and pick up the cycle again with MOSS 3.This will make the V2 transition quicker. No one objected to their skipping the test.

Masuoka indicated that they were switching over to Linux machines, and King commented that he thought some of his team were having trouble using their code in that environment. Masuoka indicated that the MODAPS team is planning to port the PGEs themselves and ask the teams to evaluate them. Masuoka said that Mike Linda had sent around a porting guide, and that he would make sure Mark Gray got a copy of that.

Finally, Masuoka reminded the team that for IT security purposes, all web sites must provide a link to the NASA/GSFC website security policy statement. The banner is not required to pop up, but there must be a link to it.

2.5 Oceans Update

Esaias reported that the Oceans team is exploring the possibility of a data processing/distribution cluster for MODIS SST products, which would be a collaborative project with the DAAC and JPL. Kempler indicated that the concept is to get the data out using non-EOSDIS sources, to make data more widely available. The JPL DAAC houses physical oceanographic data sets other than MODIS SST, including the AVHRR Pathfinder SST.

Esaias said that Miami is reprocessing critical days in order to meet the June 2001 reprocessing target. Dennis Clark is looking at December match ups of MODIS and MOBY data, and they appear to be good. He also indicated that Jack Kaye had asked for a press release on the case study in which MODIS data was used to show that an Omani oil tanker was not responsible for a marine event that killed large numbers of fish in the Gulf of Oman. David Herring and the Earth Observatory team are developing the press release.

Esaias said that all Oceans products have been released in beta versions, but indicated that he was uncomfortable with the part of that definition that says users are to be discouraged from using the products scientifically. The team wants users to look at and evaluate the products, and feels that the negative language will dissuade users from typical preliminary investigations. He suggested more neutral language.

There was a discussion of how different product levels would be archived, and the current thinking is that only code will be preserved from the beta and provisional products, but not the data themselves. While this is not ideal, it is the only feasible solution at this time.

2.6 Cryosphere Update

Salomonson and Hall discussed the possibility of building on the Land team's 5-km global browse to make snow and ice data available to climate modelers. Currently, the browse defines snow by looking at the center pixel in the grid box, and if it is snow, then the entire grid box is labeled as snow. Salomonson indicated that this would be insufficient for modelers; they would need some statistics as well. Hall indicated that the modelers would prefer 5-km resolution, with all the 500-m data in it. But they would accept quarter-degree resolution because they will be able to use the high-resolution data in a few years.

On a related issue, Salomonson said that Franco Einaudi (Code 900 Director at Goddard) has become interested in what MODIS data will actually be used in models. He was aware that snow cover would, but he wondered about the other disciplines. Esaias said that some ocean models are using MODIS data; Vermote and King were uncertain about Land and Atmosphere applications.

2.7 NOAA/NESDIS Update

Bruce Ramsay reported that the installation of the 10 Mbps data communications line between GSFC and NOAA's facility in Suitland is on track for this summer. He also indicated that the Office of Research and Applications, NOAA/NESDIS, successfully pulled their first near real-time granules from the Direct Broadcast station at the Space Science and Engineering Center, University of Wisconsin-Madison. Finally, Ramsay reported that they had made their first AVHRR/3 snow map using the 1.6 μm band on Channel 3A in anticipation of the operational status of NOAA-16 later this month. Making these maps will help them prepare for using MODIS data in a similar way.

2.8 Reprocessing Summary

Esaias and Masuoka gave a summary of the draft reprocessing plan being developed through the PIP meetings. The plan is to produce one year of consistently processed data beginning on June 1, 2001, with the best algorithms available at that time. The year will be November 1, 2000, to October 31, 2001. The consistent year is targeted for availability by November 15, 2001. This amounts to 5 months of forward processing and 7 months of actual reprocessing. Depending on resources, some products may have to be sacrificed in order to complete the year.

PGEs will be frozen for the period, and one risk is that the instrument will change such that a L1B code update is essential. Guenther pointed out that it might be a better idea begin the historical data processing (the actual reprocessing component) with the May data, and work backward toward November. That way, if instrument changes necessitate L1 B code changes after June 2001, we would be assured of at least a partial year of contiguous data consistently processed. Alternatively, they might begin with important climate months. Masuoka indicated that there could be difficulties in picking and choosing months, but that they would look into the options.

Esaias indicated that they are still trying to work in a prototyping reprocessing between now and the major reprocessing; however it may be difficult to get a whole month done while simultaneously getting MODAPS caught up.

3.0 Action Items

Action Items Carried Forward

3.1 Masuoka to update a chart that has quantifiable information about how much processing resources are being used for current production. (King requested actual FLOPS).

Status: Open.

3.2 Salomonson to ask the NSIDC and EDC DAAC to bring posters similar to those presented by Leptoukh to the MST Meeting.

Status: Closed.

3.3 Kempler to provide a hardware upgrade schedule, including direction on processing power.

Status: Closed.

3.4 Discipline leads to meet to resolve the issue of beta-release code and science-quality code, and what we need to say about it.

Status: Open.

<u>New Action Items</u>

3.5 King to inquire about a written request from Graham Stevens about what MODIS data they would like to have for their project.

3.6 Masuoka to send Mark Gray a copy of the code porting guide for MODAPS transition to Linux.