

response to a question from Murphy on the status of the Ocean ESDT's, Linda said that they are defined and registered and that the bulk of the work is done; a master list is what is needed.

2.3 L1 At-launch Version Plans/Schedule (Masuoka, Guenther, DAAC's)

Masuoka presented information on Level 1 at-launch PGE's (Attachment 3). He reviewed L1 PGE versions and readiness, and the rationale and schedule for joint testing. Level 1 PGE's for MOSS2 are done. Vermote is reviewing the lookup table for an update to Level 1B (PGE02) version 2.1.6; it needs a minor fix. PGE03 has been promoted to Ops. The DAAC plans to promote the remaining Level 1 at-launch PGEs by August 24. Masuoka reviewed some reasons that there should be a joint production test. So far there has been a fairly limited volume for testing. Murphy asked whether we have a schedule for handling the problems that have limited the volume of products. Regarding the GDAAC-identified ECS problems, Leptoukh said that the distribution server is stable and ECS has committed to fixing the problem with DPREP not handling gaps well.

ECS Drop 5A will be installed at the DAAC's in July and 5A should be tested in production; typically it takes a month or more to test in production. MOSS2 is scheduled to end on July 28, so another joint production test will take place after MOSS2. The production test requires a final delivery promoted to Ops and this can take 2 to 8 weeks. The L 1B in particular is quite sensitive and we will need synthetic data that matches the L1 PGE's.

Masuoka reviewed a schedule based on an October 4 launch date. GDAAC would need about a week to clean-out databases for production at the DAAC. Then it takes a few weeks to install and then shake out ECS 5A to Ops. By around August 6 a suite of PGEs is needed that could be used for testing. Guenther asked whether Masuoka had discussed this schedule with the DAAC and whether they are in agreement. Masuoka said he had discussed it and that it depends on how good Drop 5A is for promotion to Ops by August 24. He also spoke with Berriman and agreed the timing could be worked out with the DAAC. Masuoka would like to figure out this timing before the Operations Readiness Review (ORR) on August 10.

A brief discussion followed. Masuoka said that to get 8 days data to run in 8 days of full production would take a while because some other tests are also scheduled at the GDAAC. Fleig said the DAAC was not sure when 5A would be done. Jones asked whether there were plans for 6 weeks of testing and Masuoka replied that its a function of ECS readiness. Seventeen days of data are being produced for Y-day and 1997 data will be used for MOSS2 and 1999 data for the Y-day test.

2.4 SSTG Plans

Mike Linda presented an overview of SSTG Plans (Attachment 4). He said the main push is to finish the current versions of PGEs and that a lot of test data is needed for testing the data driver. He reported on at-launch PGE status from a SSTG perspective, reviewed plans for Level 1 software, and summarized SSTG progress for Oceans, Atmosphere, and Land. Highlights for L1 software included that PGE02, version 2.2.0 was done on June 1, version 2.2.1 is now being used, and the at-launch, improved physics version should be done by the end of August. For Oceans plans, changes between now and September and later have to do with accelerated code. For Atmosphere plans, they are in the midst of validating metadata configuration files (MCF's) and integrating ECS-validated MCF's. The redesign of PGE06 may happen pre-launch in about August or September. For Land, they are resolving some residual issues with PGE16 and PGE26 has long-term schedule. Level 2 and Level 2G have been running, but need to be running reliably. There are a range of integration issues, including incompatibilities, bugs in the code, production rules, performance, and system tuning. Linda said that production rules are in place, but need to be reviewed.

Ridgway asked what products would look like during joint testing and whether a lot of work is left to make inserts work. Masuoka replied that a lot of work is to be done.

2.5 MODAPS Development Status

Mike Teague reviewed MODAPS Loader Status (Attachment 5). He said that Gang Ye has enough information to proceed on developing CMG loaders. MEBDOS runs fine; all requests have been resolved and the plan to add more features is an internal issue. Teague encourages users to review it and send him feedback on it. Regarding the Product Report Status, status will be assessed at a meeting later this week. A preliminary version of the Web page for Operation Reports is available. The structure is done, but the content needs to be developed; they are currently working on that. By the next PIP meeting in September, Teague should be able to show the group the Web site. Evans said he would like to see how statistics are changing over time and Masuoka said that they could work with him to develop a report that would be useful to him.

Teague said that they are making a reasonable amount of progress on MODAPS production and are through Level 3 weeklies for Atmosphere, 8-days for Land, but not yet at 8-day Oceans. Wolfe asked for the status of MODAPS Version 2 development and Masuoka said he would send a summary around targeting a February timeframe for an October launch and present the status at the September PIP meeting.

2.6 Insert Status of Products for DAAC's

Mike Jones reviewed MODIS ESDT Status (Attachment 6). This is a very detailed status report that tracks for MCF match, insert attempts, insert report, fixes, and clean insert. The process is not complete until a product can be successfully ordered from the DAAC. Some of the ESDT's are semi-compatible but will allow insert tests to be done. More than half of the Land and Atmosphere ESDT's use the same MCF file as the baseline. Level 2 Oceans ESDT's are all using compatible MCF's. Jones said that some products have successfully inserted and they are closer to resolving MCF matches. Leptoukh said that the fix for problems with G-rings is supposed to be part of Drop 5B and Jones said that they will have workarounds to deal with those. Fleig asked if there was confirmation that ECS would make needed changes and a schedule for those changes. Linda said that any changes sent to ECS are done, but not very quickly. Masuoka said we need to track those that need to be done by ECS and get dates.

Murphy asked how many of the ESDT inserts would be done and orderable by October 1999. Masuoka said that Jones updates the chart every week and the orders are based on the metadata valids that are being attacked by the DAAC's. Murphy said he would like an overview rather than a detail-level answer to understand the big picture. He requested a brief status report at a MODIS Technical Team meeting. Masuoka agreed to report on the schedule at an upcoming Tech Team meeting.

2.7 X-day Test Results (Masuoka, Teague)

Masuoka reviewed the fever chart (Attachment 7) and the X-day test results (Attachment 8). From a perfect Level 0 running forward the system structure is running fairly well. However, we need to bring two terrabytes online and that will affect the disk space problem.

Murphy mentioned an apparent misregistration between the warm and cold focal planes that would necessitate additional geolocation for the EOS-PM launch.

2.8 Eight-day Product Starting Point(s)

The Land strategy for producing 8-day land products is to begin product sequencing at the beginning of the year. For 8-day products there is a 3-day overlap with the following year and for 16- and 32-day products there is somewhat more of an overlap. This is similar to how some of the heritage products are produced, e.g., AVHRR heritage 10-day products.

Guenther asked whether the Land group was planning to institute this numbering convention for 1999 regardless of when we turn on the instrument. The answer was yes, if the instrument is turned on at the third day of an 8-day cycle that is where they would begin, and the product would only contain 6 days of data. Wolfe commented that then they can compare the same days of different calendar years. Fleig asked whether this would create different 8-day processing for Land, Oceans, and Atmosphere groups. Ridgway said the Atmosphere plan is to start at an absolute starting date and then use continuous 8-day cycles and not have the 3- to 4-day glitch at the end of each year. He said that their months are calendar month, monthly averages. Murphy asked what the Oceans group uses for an 8-day product starting point. Evans said that they had discussed all of these different approaches and it was still under consideration.

Ridgway asked what the main concern was about similar timing for the disciplines. Masuoka said we need to let people who use the data know the starting points. Murphy commented that it would be more user friendly and science useful to coordinate the starting points. He was asked whether this issue would get resolved at the discipline leader level. Murphy requested that representatives of each discipline send him e-mail about the technical and scientific relevance of the various approaches. Guenther asked whether it was late in the process to be discussing this issue and Fleig replied that it was not because this is production related. Murphy added that he also needs the starting point specified for Atmospheres for PM. He asked whether there was a different 8-day period for PM.

The Oceans group needs to verify what they are doing regarding this issue and give feedback to Wayne Esaias about that. Murphy said he thought that Land and Atmosphere are fairly coordinatable. Guenther asked whether he was going to institute consistency. Murphy said that he would discuss this issue with the discipline leads.

2.9 Versioning Breakout Session (Wolfe)

Robert Wolfe chaired the breakout session on product versioning. Present were Ken Alexander (EDC DAAC via teleconference), Steve Berrick, Bruce Guenther, Mike Jones, Siri Jodha Singh Khalsa (NSIDC via teleconference), Greg Leptoukh, Mike Linda, Bob Murphy, Shirley Read, Bill Ridgway, Greg Scharfen (NSIDC DAAC), and Eric Vermote.

Wolfe began the session by reviewing where versioning is used and a versioning summary (see Attachment 9). Versioning for a PGE process would be communicated by the developers. When there is one process per PGE the version numbers are in sync, but where a PGE contains more than one process version numbers are not in sync. For lookup tables, some information is in the

product rather than in the version number. The product version number is similar to the process version number. For more detail about how version numbers change and who drives those changes see Attachment 9. Linda said that MCST came up with an idea about handling lookup tables in the versioning scheme that was to add a fourth digit to the process and product version. Guenther commented that it would be a good idea to have version numbering relate in a coherent way to what is going on in the code. The second digit in the index might indicate physics changes; the fourth digit might indicate changes in the lookup table. So, we might have a 4-digit code with the first two digits being more essential or important and the third and fourth digits less important. Wolfe said that regarding lookup tables, we may have as frequent as daily changes in the lookup table. Also, when the MCF is changed, there are several things that can affect the metadata.

Wolfe suggested that major reprocessing milestones might be reflected by the major version numbers and could give a sense of which milestones the PGE had gone through. In such a versioning scheme, the first digit would be a coherent common code that would indicate some compatibility with other code. Linda asked what the version numbers should convey. He stated that trying to convey certain detailed qualities could get quickly out of hand.

Guenther commented that he was talking about a PGE versioning number and it seemed that others were talking about a process number. Linda added that a process number may be different. Guenther said that the MCST programmers may have a sense of the difference, he did not. Wolfe explained that for MCST, the PGEs have only one process. However, Linda commented, they all carry a production rule. Guenther asked whether MCST was responsible for the process or the PGE. Wolfe said that changing the production rule could change the science. When the second digit represents the minor version it could indicate a significant change in the science algorithm. Linda said that for an example like that, the third digit would change in the process and PGE version; the process number may not change and the PGE number may change.

Ridgway asked whether we want to have the option of running a previous version. Linda replied that as products are made and you go downstream through the process, there should be an upstream history. Ridgway asked how he anticipates implementing such an approach and whether the disciplines would need to make some changes. Linda replied that we could have loops to exclude redundancy (see Product History String, Attachment 9); the versioning summary product number is independent and would change with science changes. Wolfe added that for many PGE's the process and product number may be the same. Murphy said that the versioning system is implicitly evolutionary. Ridgway commented that in a real environment when some versions are in production and some are in test mode, the test mode version

might be an earlier version. Jones said that as part of the CM system that we control, we could run an earlier version. Wolfe added that for a product version, the middle digit is significantly different scientifically and it tells users to find out why the second number is different because it may impact the science.

Murphy mentioned time dependent lookup tables and suggested specifically time-tagged versions. Guenther asked about discreet changes of the lookup tables where a change in the degradation of the instrument characteristic would change the lookup table. Murphy said that is when we would need a different version for different time periods. Wolfe said he would still want the product number to reflect such a change.

Murphy stated that versioning is not just internal, there is also NOAA doing bentpipe (and maybe DoD) and direct broadcast, so even Level 1 products would be affected. Guenther suggested working out a versioning system within the group and then coordinating with external groups/users. Guenther said he could see the logic in adding a fourth character in the process version number but not in the product number. Wolfe said the PGE level is more for internal processing and used for tracking Level 1B. Guenther said that at the MODIS Technical Team meetings we look at PGE identification for science changes; maybe that needs to be a process change. Jones gave an example of a version running in the DAAC that needed a PGE number change while the version running in MODAPS did not need a number change. Linda suggested using the process or the product number in science circles, but in other circle use both. He reiterated that we would never have enough digits in the number to indicate all changes. Guenther said that when he gets a product he needs to know about the EDST, etc. and the history file needs to have the information on the other precursors. Ridgway asked about ancillary data sets and said that now it is optional, which degrades the product quality.

Wolfe said that for lookup tables the producer of a product should indicate within a product what ancillary data was used. Ridgway commented that it may be available for some granules and not for others. Wolfe said it should be in the metadata and Ridgway said that we will have to make a greater effort to get it into the Metadata. Wolfe said that we have an action to deal with the lookup tables.

Next, Wolfe reviewed a summary of Versioning Implementation Steps and Status (see Attachment 9). He said that we are using a common PCF number for PGE numbers and that it would be useful to set up a Web page to show these versions. Guenther asked what would come out of this session as action items. Wolfe said that for the Web page (item #3) some of this has been started. Implementing mechanisms in our CM (item #9) is visible to the developers and to the production area. Some progress has been made on collapsing the

ClearCase VOB directory structure so that we do not have a unique directory path for each version of each process or file specification (#10). For revising the information distribution mechanism (#11), some progress has been made. Now each message carries the 3-digit version number. For the redesigning of build procedures for MODAPS to take advantage of versioning (#14) some progress has been made related to CM. For versioning MCF's and ESDT's (#15), there is no formal method yet. However, there has been some discussion with ECS. Linda said that they have defined an equivalent thing in the archive data area and have a formal method for that. Berrick said that we need that across all ESDT's and Linda said that was his plan. Wolfe added item #16 for a lookup table field in the process version, #17 to address ancillary data, and #18 for a file format version. Linda added that for the leftmost version number, we are still not quite in sync with MCST; currently the leftmost number is defined as project milestones.

Guenther suggested a team meeting to discuss the general degree of satisfaction with validation products when the activation and evaluation phase is done in the first 6 months. He said that MCST would then have a better understanding of what they want to do regarding validation and at that time might like a revision in the file format. He said this would not be done casually and it would be done at a major milestone in the project. He added that the group has had between little and no discussion on reprocessing. Wolfe said that he thought that they were in agreement, the major process number is not for reprocessing only but for when the Science Team decides to change them. After validation would be a good time to look at and change the major process number.

Guenther suggested that now that the group thinks that we are close on versioning, what about discussing the difference between AM and PM version numbers. He said that one way to handle the difference between the AM and PM algorithm may be a different project name. Jones said that they may have a different ESDT number or internal MCF change. Guenther said that he wanted to introduce the topic, but does not think we need to set versioning for PM now.

2.10 DAAC's Status

Greg Scharfen reviewed progress for the NSIDC DAAC (Attachment 10). He said that they have submitted some browse requirements to Mike Jones, come up with some Web pages, and begun weekly teleconferences with Mike Moore, Glenn Iona, and others. The NSIDC DAAC Web page is located at <http://www-nsidc.colorado.edu/NASA/MODIS>. The MOSS2 test at NSIDC falls at about the same time that ECS 5A Epsilon version will be out, so they will have the Drop 4PY Keuka (SIPS interface patch).

Greg Leptoukh, Goddard DAAC, said that they plan on using Drop 5A Epsilon. He reviewed a schedule for the MOSS2 at Goddard (Attachment 11). Fleig asked a question about conducting MOSS2 testing with version 4PY.07 and installing 5A later. He asked whether there would be formal operational testing to see if 5A works as well as 4PY. He also asked what would be done in 5a if there were 10 open actions against 4PY. Leptoukh replied that they would check those open actions in 5A.

Jim Lacasse and Ken Allender, EDC DAAC, reviewed MODIS Sample Product Inserts at the EDAAC. They said they would send an EDAAC schedule for MOSS2 to Wolfe. The EDAAC is scheduled to have the SIPS interface patch in the next few weeks and would like to coordinate the automated transfer of products, ingest, and QA support.

2.11 MOSS2 Status and Plans

Aslam reviewed the MOSS2 status and plans (Attachment 12). The MOSS2 Dry Run 1 began on July 1 rather than June 29. MODAPS ingested a number of products but did not process them, the GDAAC generated products but did not send them, so not all products were received by MODAPS. There were some DAAC startup and staging problems and security breaches that hindered their progress. However, they did a workaround for that. The ECS-PDR server worked well. The major problem was with the test data itself, with data gaps in the test data for day 226 resolved yesterday. The MOSS2 Dry Run retest is in progress; following the retest we may use the data coming out of it in the SIPS Delivery Test with VATC. The full MOSS2 Formal test is scheduled to end July 28, with an added phase through August 4-5. Murphy asked if this means it needs more time for the test or it was delayed. Masuoka said more time was added to test different elements. Aslam took an action to find out what the extension to Aug. 4-5 signifies. Wolfe thinks it means the other DAAC's will be testing then, but not the GDAAC. Regarding issues and problems, the ECS FTP server issue has been resolved and the EDOS data processing problems need to be corrected on the EDOS side. Wolfe asked whether there is enough coordination with the DAAC in working these problems, especially with Level 1 and Level 0, and Aslam replied yes. Masuoka said that it is a matter of coordinating schedules.

2.12 Contingency Plan for L1 Generation

Masuoka presented an overview of the contingency plan for Level 1 generation (Attachment 13). He said that they are looking at a rationale for a contingency plan for producing Level 1 products. Regarding backups we need to determine whether there is an essential amount of Level 1 production below which a backup plan is required. Also, we need to determine the importance of gaps in

the data such as missing granules and when this needs to be resolved. Finally, should it be a purely emergency backup of 10% GDAAC can do that. Murphy commented that these are the right questions and Vermote agreed that we need a backup system. He suggested the 10% option. Read and Jones took an action to scope out the level of effort to do a backup.

2.13 Reduced Production Plans

Masuoka reviewed reduced production plans. He said that at the SWAMP meeting they would like to do everything on a global basis. Oceans is under the baseline and they are doing better than baseline in many respects. Regarding benchmarks for elapsed time versus processor time, Masuoka said the benchmarks is 100%. Vermote asked whether he wants to do 100% of 250 meters. Masuoka said the plan is to ramp up to 80 processors and go to 500 meters. Then it would be a lot simpler for us not to do subsampling or to do one day on and one day off.

2.14 Y-day Test Plans

Teague reviewed the MOSS2 and Y-day test schedules (Attachment 14). He said that they have three good production analysts and plan to add another three analysts. He said they should go on with continuous testing with GDAAC. Masuoka asked about the schedule for the Y-day test with it ending in September. Teague said that prior to going into the second dry run of MOSS2 that he would like to have some internal testing done to make sure that there were no internal problems. The first problem is coming up with synthetic data for 1999. They are running into some problems with the test generator and hope to get some additional data from MCST and then continue making synthetic data. Also, they can not coordinate with the GDAAC until after September 1. What that means to the individual production analysts is that through July they will virtually be running on a continuous basis, which they are able to do.

3.0 ACTION ITEMS

3.1 New Action Items

1. Wolfe/Broder: Assess the need for a MODIS working group on networks and consider including DAO and outside agencies. Also, look at establishing clear lines of communication (an assigned/available point of contact) with the DAAC's on this issue.
2. Masuoka: Present at next PI Processing meeting in September a summary of the status of MODAPS Version 2 development. Masuoka is targeting a February 2000 date if the launch occurs in October 1999.

3. Masuoka: Prepare an overview report on how many products will be done (insert status of products for DAAC's) and orderable by October. Present a brief report on the status to the MODIS Technical Team within the next 3 weeks.

4. Murphy/Discipline Representatives: Representatives of each discipline send Murphy an e-mail about the technical and scientific relevance of the various approaches to the 8-day product starting point(s). Murphy will then discuss the issue with the discipline leads.

3.2 Action Items Carried Forward

1. Linda: Prepare table to show comparisons of lists of Ocean ESDT's and present at next PI Processing meeting in July.

Status: This item remains open. Linda will report on progress in September.

2. Wolfe: Look at what operational tests are needed after the Y-date test to determine how well the entire production system (MODAPS, DAACs, and network) performs when problems are encountered.

Status: This item remains open; it is a long-term action item.

3. Chen/Teague: List Oceans products on the granule status page.

Status: This item remains open. Teague has begun work on this item; it is in progress.

4. Chen/Teague: Extend the production status page to include the days for which products are available.

Status: This item remains open. Teague has begun work on this item; it is in progress.

5. Esaias: Assign an Oceans coordinator for production planning.

Status: This item is to be completed later today, July 13.

6. SDDT leads: Confirm/revise the discipline 50% production plan and send to Teague as soon as possible.

Status: This item remains open for the Oceans and Atmosphere discipline groups. The Land plan is complete.

7. Linda/Read/Aslam/and Masuoka: Make a single master list of all the products for Ocean ESDT's that includes status of Ocean ESDT's for the DAAC and SDST.

Status: This item remains open. Linda said the number of Ocean ESDT's has been reduced; the ESDT's are defined and registered so the bulk of the work is done.

8. Jones/Ridgway: Work up an agreement for MODAPS to push some fraction of Atmosphere products.

Status: This action item remains open. Ridgway gave Jones a proposal that is to be reviewed.

9. Hucek: Where does the clear sky radiance process run, DAAC or MODAPS? Report at next PIP meeting.

Status: This item remains open.

10. Jones: Work ephemeris and attitude issues for MOSS2 and Y-Day Tests.

Status: This action item is still open for the Y-day test. See closed action item 2, below, regarding the MOSS2 test.

11. Jones: Find out when machine-to-machine ordering interface will be available in the ECS system.

Status: This action item is closed. The reprocessing gateway will be part of ECS Drop 6A. The scheduled date for Drop 6A is later than July 2000 (the old schedule date). The actual date for Drop 6A is being negotiated with Raytheon at this time. Jones received this information from Stan Scott in the ESDIS Project office.

12. EDAAC/Broder: Work network transfer issues for MODAPS to EDAAC.

Status: This action item remains open. EDC to measure and analyze the network transfer rates.

13. All Discipline Leaders/Murphy: Product release policy, mechanism needed. Bob Murphy to collect.

Status: This action item remains open. It is on the agenda for the Discipline Leaders meeting on July 29.

14. Masuoka: Determine if more tapes are needed to save data before SIPS interface is ready at GDAAC?

Status: This action item remains open.

15. Fleig/Murphy: Develop timeline for early images, publicity images.

Status: This action item remains open. The focus has changed to include images appropriate for press conferences. Murphy and Fleig will work on external communications. Fleig will continue to work the schedule.

16. Masuoka: Update baseline for larger Ocean products volume.

Status: This item remains open; it is an ongoing action. Masuoka would like assistance from the Oceans group, including definitive information from Esaias and Evans before he updates the baseline.

3.3 Closed Action Items

1. Kempler: Check on timing of the availability of the PDR server with the goal of using the ECS PDR server for the MOSS2 test.

Status: This item is closed. The DAAC tested the PDR server in sending data to MODAPS during MOSS2. The PDR server is available now.

2. Aslam/Jones: Make sure that appropriate DPREP data is available for producing Oceans data in MOSS2.

Status: This item is closed. A workaround will be used rather than using DPREP data for Oceans data in MOSS2.

3. Wolfe: Schedule a meeting before the next PI Processing meeting for those interested in a discussion regarding labeling of multiple versions of ESDT's.

Status: This item is closed. This topic will be discussed today at the breakout session on MODIS Science Software and Product Versioning.

4. SDDT/SDST: Develop a process for promoting algorithm changes.

Status: This action item is closed. The process is described in the MODAPS Operations Concept Document. Try out the process as part of normal operations. If flawed, then submit CCR against document.

5. Masuoka/EDC and NSIDC DAAC's/ECS: Develop a contingency plan for a SIPS patch to 4PY if the drop 5A schedule slips for EDC or NSIDC.

Status: This action item is closed. Drop 5A is progressing on schedule.