

January 2009 - CERES Processing Update

MODAPS is currently sending only Collection 005 Terra and Aqua data. According to ASDC's spreadsheets received 07/07/08, ASDC is no longer missing the Terra or Aqua 005 data (MOD02 and MOD03) identified in previous months' reports.

The Terra Spacecraft experienced an anomaly with the Science Formatter Equipment (SFE) on December 20, 2008 at 04:49z. No Terra Science data were available via Direct Broadcast or Solid State Recorder. The anomaly looked a little different than the last 11 events and required more investigation. After a thorough evaluation, the Flight Operations Team turned on the Science Formatter Equipment (SFE)-A successfully at 21:25Z on 12/22/08. The FOT monitored the spacecraft until 16:00Z (11:00 a.m. EST) on 12/23/08 to ensure that the temperatures reached operating levels. At 16:02Z, the FOT resumed SFE recovery operations and successfully returned Terra to nominal science operations mode.

An intermittent problem with reprocessed MOD02 and MOD03 Terra granules was identified. It was found that if one of the 5-minute granules of the pair was redelivered, the other of the pair was not necessarily also redelivered. This resulted in mismatched geolocation and radiance data for the affected 5-minute time period. As the CERES Clouds Team initially identified this problem while conducting tests using March 2007 data, MODAPS plans to reprocess MOD02/MOD03 pairs from DOY 045 through the end of 2007. The reprocessed pairs are expected to arrive early in 2009. The MOD02 and MOD03 files already at the ASDC for July 27, 2007 through August 31, 2007, dates for which production processing through the Clouds Subsystem was put on hold, were staged and verified, thus allowing the resumption of SSF Terra Edition2F processing for that time period. For the years reviewed to date, 2006 and 2007, ASDC received 3007 mismatched Terra files, which equates to roughly half a month of data. The number of Aqua mismatches for the same time period is less. A review of Aqua files for 2004 and 2005 indicated no mismatched files. It is known that if mismatched files are used as input, the SSF product will be negatively affected. It is not known, however, how many mismatched files were actually used in production processing. The Clouds Subsystem software to be delivered for processing Edition3 data and Edition2 data beyond 2007 will include logic to check for mismatched files and handle any occurrences appropriately.

Starting with 08/21/2006, the Aqua Aerosol LUT correction was implemented in the forward data stream. The Aqua-corrected reprocessing, which includes the deep blue algorithm and a LUT correction, began on 03/09/2007. The Terra MOD04 data files are expected to be reprocessed to include the deep blue algorithm beginning in late February 2009. The Terra and Aqua files that include the deep blue algorithm are identified as Collection 051. Collection 004 Terra data were received through July 2006. Collection 004 Aqua data were received through April 2006. The most recently obtained information regarding Collection 006 was provided on November 14 and indicated that the earliest Collection 006 production runs are not expected to occur prior to mid-2009. Details regarding the continuation of Collection 005 are not yet known to the CERES Team.

The CERES team agreed to accept the latest version of the G5-CERES meteorological data provided by GMAO. These data will be used by the CERES Team for at least Edition2 processing of 2008 data. Corrections to the 2009 GMAO data to be used by CERES may be required. GMAO requested via email on January 29, 2009 that CERES not use the G5-CERES data from April 2008 and forward. A QC related problem with the SSMI data was identified, and GMAO plans to reprocess those data. The schedule for this is not yet known. CERES has not processed the affected data, thus there is no impact to CERES products due to these data.

An evaluation of the sample 1/16 snow mesh data received by the ASDC from the provider has indicated that the data are satisfactory for CERES use. The ASDC will continue to receive the 1/8 data through at least the end of 2008. Production of the 1/8 snow mesh data is expected to be discontinued early in 2009. (Remember that the 1/16 data will be in meters, not inches.) The Clouds Subsystem is preparing a delivery, due January 30, 2009, of the software to process the

1/16 data. It is anticipated that once promoted to production, this software will process the 1/16 data beginning with January 2009 for CERES use.

Production Updates

(Processing status was verified 1/29/09.)

BDS/ERBE-like:

Terra Baseline1-QC BDS and ES8 processing is complete through 1/26/2009.

Aqua Baseline1-QC DBS and ES8 processing is complete through 1/26/2009.

Terra Edition1-CV Instrument/ERBE-like processing is complete through 12/2008.

Aqua-FM3 Edition1-CV Instrument/ERBE-like processing is complete for 06/18/2002 - 12/2008.

Aqua-FM4 Edition1-CV Instrument/ERBE-like processing is complete for 06/18/2002 - 03/2005.

Aqua-FM4 Ed1-CV-NoSW Instrument/ERBE-like processing is complete for 04/2005 - 12/2008.

Aqua-FM4 AnomOps-Ed1-CV BDS/ERBE-like processing is complete for 07/19/2005 - 08/30/2005.

Terra Edition2 BDS and ERBE-like processing is complete through 9/1/2007.

Aqua-FM3 Edition2 BDS/ERBE-like processing is complete through 9/1/2007.

Aqua-FM4 Edition2 BDS/ES8 processing is complete through 03/2005.

Aqua-FM4 Ed2-NoSW BDS/ERBE-like processing is complete for 04/2005 - 06/2005 and 09/2005 - 9/1/2007.

Combined Terra/Aqua cross-track instrument for FM1+FM3 and FM2+FM3 is complete for 07/2002 - 08/2007. FM1+FM4 is complete for 08/2002 - 03/2005.

All Instrument/ERBE-like Edition1 processing is halted.

Terra Edition1 BDS and ERBE-like processing is complete through 10/2005.

Aqua-FM4 Edition1 BDS and ERBE-like processing is complete through 03/2005.

Aqua-FM4 Ed1-NoSW BDS and ES8 for 04/2005 - 07/18/2005 and 08/31/2005 - 10/31/2005 processing is complete. (No Ed1-NoSW BDS or ES8 for 7/19/2005 - 08/30/2005 due to temperature variations.)

Aqua-FM4 Ed1-NoSW ES4 and ES9 for 04/2005 - 06/2005, 09/2005, and 10/2005 processing is complete. (There will be no ES4 or ES9 files for 07/2005 - 08/2005.)

Aqua-FM3 Edition1 BDS and ERBE-like processing is complete through 10/2005.

TRMM Edition1-CV BDS and ERBE-like processing is complete for 01/1998 - 08/1998 and 03/2000.

TRMM Ed1-CV-TransOps BDS and ES8 processing is complete for 1999.

SSF:

Terra Clouds Beta1-Ed3 (PR 12-08) is complete through 10/2003. Processing of the remaining months listed in the production request are canceled due to processing failures for 1/9/04 and 1/10/04 that require an unidentified correction to the source code. As the correction is expected to be in the source code and will require a full delivery of the PGE, the resulting data set will be named Beta2-Ed3. The subsequent Beta1-Ed3 processing through the Inversion/SOFA software (PR 14-08) is canceled.

Both the Aqua Clouds and Inversion/SOFA Beta1-Ed3 processing (PRs 11-08 and 13-08) are canceled.

Terra Edition2F SSF processing (MOD 005 input) is complete for 01/2006 and 04/30/2006 - 07/26/2007 (PRs 57-08 and 56-08).

Terra Edition2B SSF processing is complete through 08/01/2006. No additional processing is expected. (No more MODIS collection 004 data available.)

Aqua Edition2C SSF processing (MOD 005 input) is complete for 01/2006 and 05/2006 through 08/2007 (PRs 62-08 and 61-08).

Aqua Edition2B and Ed2B-NoSW SSF processing is complete for 07/03/2002 through 05/01/2006, except 07/19/2005 - 08/30/2005 are missing for Ed2B-NoSW. During this period diagnostics were performed in an attempt to recover FM4's shortwave channel. To help ensure that the resulting data from the front-end subsystems did not inadvertently become available to the public, the Production Strategy was set as "AnomOps-Ed1-CV".

Aqua-FM4 Edition2A SSF processing is complete through 03/29/2005. No additional data will be processed.

Aqua-FM3 Edition2A SSF processing is complete through 01/01/2006. No additional data will be processed.

Aqua-FM4 Ed2A-NoSW SSF processing is complete through 01/01/2006. No additional data will be processed.

Aqua Edition1B SSF processing is complete for 07/2002 - 03/2005. No additional data will be processed.

Aqua-FM3 and Aqua-FM4 Ed2C-MOD-C4-Land-IGBP processing is complete through 20040930. (PRs 63-08 and 64-08)

MOA:

MOA ECMWF-GEOS4 complete through 09/2003. No more ECMWF data are expected.

MOA GEOS4 complete for 12/15/1997 - 01/01/2008. No more GEOS4 data are expected; instead GMAO will provide the G5-CERES data set.

MOA G5-CERES overlap data for 9/30/07 through 12/31/07, using the GMAO forward processing stream, are complete (PR 92-08). MOA G5re-CERES data for October 2007 data from the GMAO reprocessed stream were also processed (PR 90-08).

PMOA GEOS4 complete for 12/1997, 1998, 2000 - 12/2007; overlap should be included for every month.

CRS:

Terra Edition2B CRS complete for 03/01/2000 - 06/2006. No additional processing is expected.

Terra Edition2F CRS is complete from 05/01/2006 - 12/31/2006 (PR 2-08). Processing of 2007 data is complete through 06/30/2007 (PR 54-08). Processing beyond 6/30/2007 will occur once the full months of corresponding SSF data are available.

Aqua Beta1 CRS is complete for 07/02/2002 - 12/31/2004. No additional Beta1 processing will be requested.

Aqua Edition2A CRS complete through 12/31/2005. No additional processing is expected.

Aqua Edition2B CRS complete for 07/02/2002 - 05/01/2006. No additional processing is expected.

Aqua (FM3) Edition2C CRS was completed for 05/01/2006 - 08/31/2007 (PR 59-08).

Synoptic SARB:

TRMM Beta3 SYNI processing for 03/2000 is complete. No other processing is planned.

Terra Beta2 SYNI processing for March 2000, and January, April, July and October 2001 is complete. No other processing is planned.

Terra Beta3 SYNI completed for 03/2000 through 10/2005, but 10/2004 - 10/2005 are known to have problems with limited data due to toolkit issues on *magneto*. The toolkit issues were resolved, but there is no plan to reprocess the last 13 months. Requested that 11/2004 - 10/2005 be removed from the archive and that 10/2004 have only LaRC access - not available to public or science team.

Terra Beta4 SYNI 04/2000 through 10/2005 seasonal months processing is complete through 10/2005 (PR 128-07). The April months were reprocessed in the SIT environment with the Production strategy and configuration code in the output filenames defined as "GGEO-val_800800." The year of 2001 and the month of February 2004 were processed as Beta5 (PR 70-08).

Aqua Beta4 SYNI 07/2002 through 10/2005 seasonal months processing is complete through 10/2005 (PR 126-07). The April months were reprocessed as Beta5 (PR 69-08).

Terra Edition2C SYNI processing (PR 5-09) is complete through 08/2000.

Aqua Edition2B SYNI processing for the first post-launch year will begin processing as soon as TSI inputs are available.

TISA Gridding:

Aqua Edition1B SFC processing for 07/2002 through 02/2005 is complete. No additional processing is expected.

Aqua Edition2A and Ed2A-NoSW SFC processing is complete through 12/2005. No additional processing is expected.

Aqua Edition2B and Ed2B-NoSW SFC processing for 07/2002 through 04/2006 is complete. No additional processing is expected.

Aqua Edition2C SFC has been processed for all available dates through 2006 (01/2006 and 05-12/2006), and through August 2007 (PR 60-08).

Terra Edition2B SFC processing is complete through 10/2003. No additional processing is expected.

Terra Edition2C SFC processing for 03/2000 through 07/2006 is complete. No additional processing is expected.

Terra Edition2F SFC processing is complete for 01/2006 and 05/2006 through 06/2007 (PR 55-08).

Terra Edition2B FSW was deleted from the archive.

Terra Edition2C FSW processing is complete through 06/2006. No additional processing is expected.

Terra Edition2F FSW processing is complete for 05/2006 through 03/2007 (PRs 1-08 and 53-08). Hourly processing is complete through 06/30/2007. Processing beyond 6/30/2007 will occur once the corresponding CRS data are available.

Aqua Edition2A FSW complete through 12/2005. No additional processing is expected.

Aqua Edition2B FSW processing is complete for 07/2002 through 04/2006. No additional processing is expected.

Aqua Edition2C FSW processing is complete for 05/2006 through 08/2007 (PRs 4-08 and 60-08).

TISA Averaging:

Edition2A GGEO/GGEOw processing is complete for 03/2000 - 10/2005.

Beta9 GGEO processing is complete for 06/2004 - 12/2005.

The Terra ISCCP-D2like-Day/Nit processing to match the SSF Terra data record (PR 84-08) is complete through 06/2007.

The Aqua ISCCP-D2like-Day/Nit processing is complete through 08/2007 (PR 83-08)

The ISCCP-D2like-GEO Beta1 processing for 07/02, 10/02, 01/03, and 04/03 is complete (PR 73-08). The data record for the ISCCP-D2like-GEO product will be extended to match the current SRBAVG Terra data record before the end of 2008.

Terra Beta4 TSI for 04/2000 - 10/2005 seasonal months processing is complete through 10/2005 (PR 129-07). The April months were reprocessed in the SIT environment with the Production strategy and configuration code in the output filenames defined as "GGEO-val_800800." The year of 2001 and the month of February 2004 were processed as Beta5.

Terra Edition2 TSI processing (PR 6-09) is complete through 10/2003.

Aqua Beta4 TSI for 07/2002 - 10/2005 seasonal months processing is complete through 10/2005 (PR 127-07). The April months were reprocessed as Beta5 (PR 71-08).

Terra Edition2C SRBAVG processing is complete for 03/2000 - 02/2003. No additional processing is expected.

Terra Edition2D SRBAVG processing complete for 03/2000 - 10/2005. No additional processing expected.

Terra Beta1 SRBAVG-Daily1/2 and SRBAVG-ISCCP-D2like1/2 were processed for 03/2000 through 02/2003.

Terra Beta2 SYN/AVG/ZAVG complete for March 2000, and January, April, July, and October 2001. No additional processing is planned.

Terra Beta3 SYN/AVG/ZAVG processing for 03/2000 - 10/2005 is complete. Data months 10/2004 - 10/2005 are known to have problems (see Synoptic SARB SYNI above).

Terra Beta4 SYN/AVG/ZAVG processing for the 2000-2005 seasonal months (without the April months) is complete (PRs 66-08). Due to a software error and the need to rapidly distribute the data, these months were reprocessed in the SCF environment.

Terra Beta5 SYN/AVG/ZAVG processing for 2001 is complete. Due to the need to rapidly distribute the data, these months were processed in the SCF environment.

Terra Beta6 SYN/AVG/ZAVG processing (PR 86-08) for 2001 is complete. No additional processing is expected.

Terra Edition2 SYN/AVG/ZAVG processing (PR 4-09) is complete through 05/2000.

Aqua Beta6 SYN/AVG/ZAVG processing for four seasonal months beginning with July 2002 (PR 85-08) is complete. No additional processing is expected.

Aqua Beta4 SYN/AVG/ZAVG processing for 7/2002 - 10/2005 seasonal months (without the April months are completed (PRs 65-08). Due to a software error and the rapidly approaching CERES Science Team meeting need to rapidly distribute the data, these months were reprocessed in the SCF environment.

The Aqua Edition2B SRBAVG requests (PRs 108-07 and 109-07) for 07/2002 - 10/2005 were closed pending a software delivery. Aqua Edition2A for FM3; for FM4 07/2002 - 03/2005 has been completed (PRs 124-07 and 12-07). No additional processing is expected.

Software and Coefficients Delivery Updates:

TRMM:

The Instrument delivery to bring back simulated TRMM IES data is on hold due to other higher priorities requiring personnel and computing resources. The software to be delivered has successfully tested on the SCF SGI platforms.

The deliveries of the versions of the Clouds and Inversion Subsystems that will use the simulated TRMM IES data as input are also on hold.

Terra:

All MATCH files necessary for processing of the Instantaneous SARB Subsystem (SS5) have been delivered through December 2007.

The gains and spectral response function coefficients for September through December 2007 are expected to be delivered by the end of January 2009. Coefficients for additional months in 2008 may also be included in the January delivery.

The TISA-Gridding PMOA subsystem that incorporates GMAO G5-CERES data was also promoted to full production processing.

The Instantaneous SARB Subsystem Main-Processor and Post-Processor to process Terra Edition2 CRS in the *magneto* IBM P4 Linux environment were delivered to CM and is in pre-operational testing at the ASDC.

The TISA Gridding Subsystems to produce Terra and Aqua Edition2 FSW and SFC in the *magneto* IBM P4 Linux environment were delivered to CM and are undergoing pre-operational testing at the ASDC.

The Inversion/SOFA Subsystem to produce Terra and Aqua Edition2 SSF in the *magneto* IBM P4 Linux environment was delivered to CM.

The following subsystems are expected to deliver to the *magneto* IBM P4 Linux environment as follows:

ERBE-like Edition2 in February 2009.

Clouds and Convolution Edition2 for Terra and Aqua in January 2009

GGEO to process Beta10 in late spring 2009.

Regrid MOA for Edition3 in February 2009

The TISA-Averaging for Terra Edition2E and Aqua Edition2B SRBAVG in early summer 2009

Clouds and Convolution Beta2-Edition3 for Terra and Aqua in late spring 2009

Inversion/SOFA Beta2-Edition3 for Terra and Aqua in late spring 2009

The Instrument Subsystem is expected to deliver the Ada language version of the main-processor that can also ingest FM5 data in March 2009 to the *magneto* IBM X86 environment.

Aqua:

Aqua software delivery updates are included with the Terra updates.

Documentation Updates

Need resolution on whether the Aqua-FM4 -NoSW data sets should be made publicly available or not. Ed2A-NoSW SSF is already public and has been since it was processed. No -NoSW BDS, ERBE-like, or SFC data sets have been publicly released. To do so would require an update to their respective, already written and released Data Quality Summaries (DQSs).

TRMM:

Need DQS for TRMM Transient-Ops2 BDS data set if it is to be made public. (ERBE-like went public in 12/2000).

If Edition1-CV is to be publicly released, need Edition1-CV and Ed1-CV-TransOps BDS/ES8/ES4/ES9 DQS, or add these to an existing DQS.

Terra:

The CERES Terra Revision_1 Table referenced by the DQS for many of the CERES Edition2 archival products has been extended through 12/2007.

Aqua:

Product-specific cautions pertaining to an erroneous 3 channel bridge balance memory patch for FM4 that was uploaded on September 30, 2004 and unloaded on October 12, 2004 were provided to the ASDC for inclusion in the DQSs for both instantaneous and averaged CERES Aqua datasets. The incorporation of these updates was completed.

If Aqua AnomOps-Ed1-CV and Ed1-CV-NoSW BDS/ES8/ES4/ES9 are to be made public, need DQS or add these to an existing DQS.

If Aqua-FM4 Ed1-NoSW and Ed2-NoSW BDS and ERBE-like data files are to be made publicly available, DQSs must be created or the Edition1 and Edition2 summaries must be expanded to include this data set.

The CERES Aqua Revision_1 Table referenced by the DQS for many of the CERES Edition2 archival products has been extended through 12/2007.

GEO:

No updates.