Clouds and the Earth's Radiant Energy System

(CERES)

Data Management System

CERES Time Interpolation and Spatial Averaging (TISA)

(Subsystems 7.1, 8.0, & 10.0)

Test Plan

Release 5

Version 21

**Primary Authors**

*Cathy Nguyen, Dennis Keyes, Raja Raju*

Science Systems and Applications, Inc. (SSAI)

One Enterprise Parkway, Suite 200

Hampton, VA 23666

NASA Langley Research Center

Climate Science Branch

Science Directorate

21 Langley Boulevard

Hampton, VA 23681-2199

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Document Revision Record

The Document Revision Record contains information pertaining to approved document changes. The table lists the date the Software Configuration Change Request (SCCR) was approved, the Release and Version Number, the SCCR number, a short description of the revision, and the revised sections. The document authors are listed on the cover. The Head of the CERES Data Management Team approves or disapproves the requested changes based on recommendations of the Configuration Control Board.

| Document Revision Record | | | | |
| --- | --- | --- | --- | --- |
| SCCR Approval Date | Release/ Version  Number | SCCR  Number | Description of Revision | Section(s) Affected |
| 06/28/01 | R3V3 | 276 | Updated the SCCR number. | Sec. 2.1 |
|  |  |  | Updated filenames and compilation commands. | Sec. 2.2 |
|  |  |  | Corrected the PGE execution command and updated gif filenames. | Sec. 3.1.1.2 |
|  |  |  | Added instructions for executing the cleanup script. | Sec. 3.1.3 |
|  |  |  | Updated format to comply with standards. | All |
| 04/01/02 | R3V4 | 334 | Updated the SCCR number. Added one tar file. | Sec. 2.1 |
|  |  |  | Updated filenames and compilation commands. | Sec. 2.2 |
|  |  |  | Added SRBAVG3 file. Took out two .gif files. | Sec. 3.1.1.2 |
|  |  |  | Changed the total run time, memory and required disk space. | Sec. 3.1.1.4 |
|  |  |  | Updated format to comply with standards. | All |
| 06/17/02 | R3V5 | 368 | Updated the SCCR number. | Sec. 2.1 |
|  |  |  | Updated to mention the source environment file. | Sec. 3.1.1.1 |
|  |  |  | Changed the total run time, memory and required disk space. | Sec. 3.1.1.4 |
|  |  |  | Added the locations of the compared data files. | Sec. 3.1.2.3 |
|  |  |  | Updated format to comply with standards. | All |
| 09/03/02 | R3V6 | 386 | Updated the SCCR number. | Sec. 2.1 |
|  |  |  | Changed the total run time, memory and required disk space. | Sec. 3.1.1.4 |
|  |  |  | Updated format to comply with standards. | All |
| 01/07/03 | R3V7 | 415 | Updated the SCCR number. | Sec. 2.1 |
|  |  |  | Changed the instrument ID from 1 to 3 in the output file names since FM2 is used. | Sec. 3.1.1.2 |
|  |  |  | Changed the total run time, memory and required disk space. | Sec. 3.1.1.4 |
|  |  |  | Updated format to comply with standards. | All |
| 01/22/03 | R3V8 | 418 | Updated Document Overview to add Subsystem 7.1. | Sec. 1.1 |
|  |  |  | Updated Subsystem Overview to add Subsystem 7.1. | Sec. 1.2 |
|  |  |  | Added Subsystem 7.1. | Sec. 2.0 |
|  |  |  | Updated the SCCR number and added Subsystem 7.1. | Sec. 2.1 |
|  |  |  | Added Subsystem 7.1 and updated Subsystem 10. | Sec. 2.2 |
|  |  |  | Added Subsystem 7.1 Main Processor. | Sec. 3.1 |
|  |  |  | Changed the instrument ID from 1 to 3 in the output file names since FM2 is used. | Sec. 3.1.1.2 |
|  |  |  | Changed the total run time, memory and required disk space. | Sec. 3.2.1.4 |
|  |  |  | Updated format to comply with standards. | All |
| 04/08/03 | R3V9 | 433 | Updated to change the SCCR numbers to XXX. | Sec. 2.1 |
|  |  |  | Updated to change the month. | Sec. 3.1.1.1 |
|  |  |  | Changed the file range to the test case. | Sec. 3.1.1.2 |
|  |  |  | Changed the main processor summary. | Sec. 3.1.1.4 |
|  |  |  | Updated format to comply with standards. | All |
| 05/29/03 | R3V10 | 440 | Updated to change the month. | Sec. 3.1.1.1 |
|  |  |  | Changed the year and month to variables. | Sec. 3.1.1.2 |
|  |  |  | Changed the main processor summary. | Sec. 3.1.1.4 |
|  |  |  | Updated format to comply with standards. | All |
| 08/25/03 | R3V11 | 462 | Updated to add subsystem overview for Subsystem 8. | Secs. 1.2.2 & 1.2.3 |
|  |  |  | Added in the installation for Subsystem 8. | Sec. 2.1 |
|  |  |  | Updated to add Subsystem 8 in the compilation. | Sec. 2.2 |
|  |  |  | Added the main processor for Subsystem 8. | Sec. 3.2 |
|  |  |  | Changed the compilation command for Subsystems 7.1, 8 and 10. | Sec. 2.2 |
|  |  |  | Corrected the number of files delivered in out\_exp and changed the “diff” command to “cmp” command. | Sec. 3.1.2.3 |
|  |  |  | Updated format to comply with standards. | All |
| 05/21/04 | R3V12 | 527 | Added the removal of the ancillary directory. | Sec. 2.1 |
|  |  |  | Updated to change the month. | Sec. 3.1.1.1 |
|  |  |  | Changed the year and month to variables. | Sec. 3.1.1.2 |
|  |  |  | Changed the main processor summary. | Sec. 3.1.1.4 |
|  |  |  | Updated format to comply with standards. | All |
| 08/20/04 | R3V13 | 554 | Changed the name of the tar file. | Sec. 2.1 |
|  |  |  | Updated to change the month and the file name. | Sec. 3.2.1.1 |
|  |  |  | Changed run time and memory. | Sec. 3.2.1.4 |
|  |  |  | Changed the month for Subsystem 10. | Sec. 3.3.1.1 |
|  |  |  | Updated format to comply with standards. | All |
| 09/15/04 | R4V1 | 516 | Added more commands to remove the old directories. Deleted one file. | Sec. 2.1 |
|  |  |  | Changed the directory name. | Sec. 2.2 |
|  |  |  | Updated to change the month and the file name. | Sec. 3.3.1.1 |
| 09/15/04 | R4V1 | 516 | Changed run time and memory. | Sec. 3.3.1.4 |
| (Cont’d) |  |  | Changed the script name. | Sec. 3.3.2.3 |
|  |  |  | Added Test Procedures for Aqua. | Sec. 3.3.4 |
|  |  |  | Updated format to comply with standards. | All |
| 04/20/05 | R4V2 | 583 | Added phase one of SRBAVG run. | Sec. 1.2.4 |
|  |  |  | Changed file name. Added to remover directories. | Sec. 2.1 |
|  |  |  | Updated to change the file name and added one more compilation process for phase one. | Sec. 2.2 |
|  |  |  | Changed year, month, file name, and changed the script name. | Sec. 3.3.1.1 |
|  |  |  | Added one output file. | Sec. 3.3.1.2 |
|  |  |  | Added one more file to compare. | Sec. 3.3.2.3 |
|  |  |  | Changed the total run time. | Sec. 3.3.1.4 |
|  |  |  | Added test case for Terra FM2. | Sec. 3.3.4 |
|  |  |  | Added comparison for the output file for Aqua. | Sec. 3.3.7.2 |
|  |  |  | Added test case for Aqua FM4. | Sec. 3.3.10 |
|  |  |  | Added a new processor. | Sec. 3.4 |
|  |  |  | Updated format to comply with standards. | All |
| 04/24/06 | R4V3 | 624 | Updated to add descriptions of the daily means and the cloud in ISCCP format. | Sec. 1.2 |
|  |  |  | Added more files. | Sec. 2.1 |
|  |  |  | Added the PGE name for verification. | Sec. 2.2 |
|  |  |  | Added the new PGE CER10.1P3. | Sec. 3.5 |
|  |  |  | Updated format to comply with standards. | All |
| 06/21/06 | R4V4 | 629 | Updated to delete the new installation part. | Sec. 2.1 |
|  |  |  | Updated the clean-up scripts for Subsystem 10. | Secs. 3.3, 3.4, & 3.5 |
|  |  |  | Updated format to comply with standards. | All |
| 07/10/06 | R4V5 | 631 | Updated to delete the new installation part. | Sec. 2.1 |
|  |  |  | Updated to add tests for Aqua and Terra. | Sec. 3.1 |
|  |  |  | Updated format to comply with standards. | All |
| 10/04/06 | R4V6 | 637 | Added more tar files. | Sec. 2.1 |
|  |  |  | Added compilation for PGE CER10.1P4. | Sec. 2.2 |
|  |  |  | Removed Aqua FM3 and FM4 Test Procedure for CER10.1P1. | Secs. 3.3.7 & 3.3.8 |
|  |  |  | Removed Aqua FM3 and FM4 Test Procedure for CER10.1P2. | Secs. 3.4.7 & 3.4.8 |
|  |  |  | Added CER10.1P4 Main Processor. | Sec. 3.6 |
|  |  |  | Added CER10.1P5 Phase One Processor. | Sec. 3.7 |
| 11/15/06 | R4V7 | 639 | Updated to delete the new installation part. Added installation part for the new PGE. | Sec. 2.1 |
|  |  |  | Updated stand alone test for Terra FM1 and Terra FM2. | Sec. 3.2 |
|  |  |  | Added new PGE CER8.2P1. | Sec. 3.3 |
|  |  |  | Deleted “SAIC” and added “SSAI” to Acronym List. | App. A |
| 10/11/07 | R4V8 | 660 | Updated stand alone test for Terra FM2 and Aqua FM3 and FM4. | Secs. 3.1.4.1, 3.1.7.1, 3.1.10.1 |
|  |  |  | Document was converted from FrameMaker to Word. | All |
| 02/08/08 | R4V9 | 667 | Updated stand alone test for Terra FM2. | Sec. 3.2.4 |
|  |  |  | Added stand alone tests for Aqua FM3 and FM4. | Secs. 3.2.5 & 3.2.6 |
|  |  |  | Deleted PGE CER8.2P1. | Secs. 3.2.5 & 3.2.6 |
|  |  |  | Merge PGE CER8.2P1 with CER8.1P1. | Sec. 3.2 |
| 07/18/08 | R5V1 | 677 | Updated to change the new directory structure and the stand alone tests for FM1, FM2 and FM4. | Sec. 3.1 |
| 11/12/08 | R5V2 | 689 | Updated to change the new directory structure for PGE CER8.1P1 and the stand alone tests. | Secs. 2.1, 2.2, 3.2 |
| 10/30/09 | R5V3 | 650 | Disabled PGE CER10.1P1. | Sec. 3.3 |
|  |  |  | Disabled PGE CER10.1P2. | Sec. 3.4 |
|  |  |  | Disabled PGE CER10.1P3. | Sec. 3.5 |
|  |  |  | Disabled PGE CER10.1P4. | Sec. 3.6 |
|  |  |  | Disabled PGE CER10.1P5. | Sec. 3.7 |
|  |  |  | Added new PGE CER10.0P1. | Sec. 3.8 |
|  |  |  | Added new PGE CER10.0P2. | Sec. 3.9 |
| 07/19/10 | R5V4 | 796 | Updated to add the installation of the new PGEs CER7.3.1P1 and CER10.0P3. | Sec. 2.1 |
|  |  |  | Updated to add the compilation parts of PGEs CER7.3.1P1 and CER10.0P3. | Sec. 2.2 |
|  |  |  | Added PGE CER7.3.1P1. | Sec. 3.2 |
| 08/11/10 07/19/10 | R5V5 R5V6 | 801 795 | *AMI* version of the TISA Averaging Test Plan. |  |
| 02/17/11 | R5V7 | 833 | Updated to change the year and month of the test data for CER7.3.1P1. | Sec. 3.2.1.1 |
|  |  |  | Updated to change the test date for CER10.0P3. | Sec. 3.11.1.1 |
|  |  |  | $CERESHOME/tisa\_avg/data/data\_10/ out\_comp was changed to read $CERESHOME/tisa\_avg/data/data\_7/ out\_comp. (05/11/2011) | Sec. 3.2.2.2 |
| 08/11/10 | R5V8 | 801 | *AMI* version of the TISA Averaging Test Plan. | Sec. 2.2 |
|  |  |  | Added compilation for *P6* platform. | Sec. 3.2 |
|  |  |  | Specify *P4* platform for CER7.3.1P1. | Sec. 3.3 |
|  |  |  | Added CER7.3.1P1 tests. | Sec. 3.12.1 |
|  |  |  | Specify *P4* platform for CER10.0P3. | Sec. 3.12.4, |
|  |  |  | Added CER10.0P3 tests. | Sec. 3.12.6 |
| 10/05/12 | R5V9 | 934 | Added PGE 10.0P4. | Sec. 3.13 |
| 06/14/14 | R5V10 | 1016 | Added a note to the SGE testing instructions. | Sec. 3.12.6.2 |
|  |  |  | Removed reference to testing on the *x86* platform for PGEs CER7.3.1P1, CER10.0P3, and CER10.0P4. | Secs. 3.3, 3.3.1, 3.3.3, 3.12.4, 3.12.6, 3.13.1, & 3.13.4 |
| 06/23/14 | R5V11 | 1023 | Added new PGE CER10.0P5 to produce Edition4 SSF1deg. | Sec. 3.14 |
|  |  |  | Added compilation instructions for PGE CER10.0P5. | Sec. 2.2 |
| 06/23/14 | R5V12 | 1024 | Added 3 new PGEs CER7.3.1P2, CER7.3.1P3, and CER7.3.1P4 for Edition4 TSI. | Secs. 3.4, 3.5, & 3.6 |
|  |  |  | Added compilation instructions for PGEs CER7.3.1P2, CER7.3.1P3, CER7.3.1P4. | Secs. 2.1 & 2.2 |
| 6/23/14 | R5V13 | 1025 | Added new PGE CER8.1P2 to produce Edition4 SYN1deg products. | Sec. 3.8 |
|  |  |  | Added compilation instructions for PGE CER8.1P2. | Secs. 2.1 & 2.2 |
|  |  |  | Deleted PGEs 10.1P1, CER10.1P2, CER10.1P3, CER10.1P4, CER10.1P5, CER7.1.1P1, CER10.0P1, and CER10.0P2. | Secs. 3.1, 3.8, 3.9, 3.10, 3.11, 3.12, 3.13, & 3.14 |
|  |  |  | Deleted references to PGE CER10.1P1 and deleted table pertaining to PGE CER10.1P1. | Tables C.1-1 & C.5-1 |
| 04/16/15 | R5V14 | 1069 | Changed the command untar. | Sec. 2.1 |
|  |  |  | Updated CER10.0P4 Processor for Edition3 SSF1deg. | Secs. 3.9 |
|  |  |  | Removed incorrect description of the 10.0P4 comparisoon software. (6/11/15) | Secs. 3.9.2.3 & 3.9.5.3 |
| 06/03/15 | R5V15 | 1075 | Minor changes to CER10.0P5 for readability and easier testing. Removed incorrect description of the comparison software. Added -clean option to the SGE\_Driver commands. Changed Terra and Aqua DATADATE values. | Secs. 3.10.1.1, 3.10.2.3, 3.10.4.1, 3.10.4.3, 3.10.5.3,  3.10.7.1, 3.10.7.3, & 3.10.8.3 |
| 06/03/15  (Cont'd) | R5V15 | 1075 | Removed sections pertaining to P4 platform testing of 7.3.1P1 and 10.0P3. | Secs. 3.1, & 3.8.1 - 3.8.3 |
|  |  |  | Reorganized entire compilation section. Removed all P4 instructions, fixed filenames, removed x86 from 7.3.1P1 compilation. | Sec. 2.2 |
| 11/18/15 | R5V16 | 1097 | 8.1P2: List of output files put into separate file to simplify verification of successul run. | Secs. 3.6.1.1, 3.6.4.1 |
|  |  |  | Updated exit code for failed run to match the expected standards. | Secs. 3.6.1.2, 3.6.4.2 |
|  |  |  | Increased runtime for test case. | Secs. 3.6.1.3, 3.6.4.3 |
|  |  |  | Expanded the comparison section to test PCF, logs, and met files. Simplified the comparison evaluation method. | Secs. 3.6.2.1, 3.6.5.1 |
|  |  |  | Added commands to the solutions section for cleaning previous output. | Secs. 3.6.3, 3.6.6 |
| 07/19/10 | R5V6 | 795 | Restored CER8.1P1 changes from R5V6 that were previously lost. | Sec. 3.5 |
| 03/21/16 | R5V17 | ~~1134~~  1121 | Updated the source environment for Terra/Aqua for PGEs 7.3.1P3 and 7.3.1P4. | Secs. 3.3.1.1 & 3.4.1.1 |
|  |  |  | Added merged Terra/NPP for PGEs 7.3.1P3 and 7.3.1P4. | Secs. 3.3.7 & 3.4.7 |
|  |  |  | SCCR 1134 was disapproved and its related updates were merged into SCCR 1121. |  |
| 09/21/16 | R5V18 | 1177 | Added NPP test case. (SCCR 1121) | Secs. 3.3.7.1 & 3.4.7.1 |
|  |  |  | Removed “FM5” from NPP filenames and environment variables. | Sec. 3.9.7.1 |
| 04/11/17 | R5V19 | 1249 | Updated environment and comparison script names. (SCCR 1122) | Secs. 3.6.1.1, 3.6.2.1, 3.6.3, 3.6.4.1, 3.6.5.1, & 3.6.6 |
|  |  |  | Added a Terra+NPP test case. (SCCR 1122) | Secs. 3.6.7, 3.6.8, & 3.6.9 |
|  |  |  | Changed the test month. | Secs. 3.7.1.1 & 3.7.1.2 |
| 04/15/17 | R5V20 | 1177 | Platform modifications were made. | Secs. 2.2, 3.9.1, 3.9.1.1, 3.9.4, 3.9.4.1, 3.9.7, & 3.9.7.1 |
|  |  |  | Corrected locations where exact filenames can be found during test evaluations. (SCCR 1121) (07/05/2017) | Secs. 3.2.2, 3.3.2, 3.3.5, 3.3.8, 3.4.2, 3.4.5, & 3.4.8 |
| 08/15/18 | R5V21 | 1410 | Provided new names for the delivered tar files. | Sec. 2.1 |
|  |  |  | Per the delivery, new environment variable setup scripts and test\_suite scripts were provided. | Sec. 3.6 |
|  |  |  | Removed PGEs and any references to the following PGEs CER7.3.1P1, CER8.1P1, CER10.0P3, and CER10.0P4. (03/07/2019) | All |
|  |  |  | Removed Appendices B and C as they were no longer relevant. (03/07/2019) | Apps. B & C |
|  |  |  | Modified the numbering system of the document. Somehow a section was misnumbered. (05/09/2019) | Sec. 3.4 |

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# Introduction

CERES is a key component of EOS and NPP. The first CERES instrument (PFM) flew on TRMM, four instruments are currently operating on the EOS Terra (FM1 and FM2) and Aqua (FM3 and FM4) platforms, and NPP (FM5) platform. CERES measures radiances in three broadband channels: a shortwave channel (0.3 - 5 m), a total channel (0.3 - 200 m), and an infrared window channel (8 - 12 m). The last data processed from the PFM instrument aboard TRMM was March 2000; no additional data are expected. Until June 2005, one instrument on each EOS platform operated in a fixed azimuth scanning mode and the other operated in a rotating azimuth scanning mode; now all are typically operating in the fixed azimuth scanning mode. The NPP platform carries the FM5 instrument, which operates in the fixed azimuth scanning mode though it has the capability to operate in a rotating azimuth scanning mode.

CERES climate data records involve an unprecedented level of data fusion: CERES measurements are combined with imager data (e.g., MODIS on Terra and Aqua, VIIRS on NPP), 4-D weather assimilation data, microwave sea-ice observations, and measurements from five geostationary satellites to produce climate-quality radiative fluxes at the top-of-atmosphere, within the atmosphere and at the surface, together with the associated cloud and aerosol properties.

The CERES project management and implementation responsibility is at NASA Langley. The CERES Science Team is responsible for the instrument design and the derivation and validation of the scientific algorithms used to produce the data products distributed to the atmospheric sciences community. The CERES DMT is responsible for the development and maintenance of the software that implements the science team’s algorithms in the production environment to produce CERES data products. The Langley ASDC is responsible for the production environment, data ingest, and the processing, archival, and distribution of the CERES data products.

## Document Overview

This document, the CERES Release 4 Test Plan for the Time Interpolation and Averaging Subsystems 7.3 and Subsystem 10.0, Version 1, provides a description of the CERES Time Interpolation and Spatial Averaging Release 3 software and supporting data files and explains the procedures for installing, executing, and testing the software. A section is also included on validating the results of executing the software. A description of acronyms and abbreviations is provided in Appendix A.

The document is organized as follows.

Section 1.0 - Introduction

Section 2.0 - Software and Data File Installation Procedures

Section 3.0 - Test and Evaluation Procedures

Appendix A - Acronyms and Abbreviations

## Subsystem Overview

### CERES Time Space Interpolation (TSI) Subsystem 7.1 Main Processor

The time interpolation process (7.1), one of the two key parts of Subsystem 7.0, temporally interpolates CERES data and produces global synoptic maps of top-of-the-atmosphere (TOA) fluxes and cloud properties on a 1.0-degree equal-area grid. Another key part of Subsystem 7.0, the Synoptic Surface and Atmospheric Radiation Budget (SARB), Subsystem 7.2, produces the Intermediate Synoptic Radiative Fluxes and Clouds (SYNI), which contains the vertical structure of atmospheric and surface flux using the interpolated data as input and boundary conditions.

The main input to the time interpolation process is the Hourly Gridded Single Satellite Fluxes and Clouds (FSW) product, produced by Atmospheric Gridding and Spatial Averaging, Subsystem 6.0. The gridded shortwave (SW) and longwave (LW) TOA fluxes and cloud information are the key items to be interpolated. The radiative profile will be recalculated in the SARB part of Subsystem 7.0 using the interpolated fluxes as constraints. This process produces the internal product, Time Space Interpolate (TSI). These files contain nested grid region data which is the input to Subsystem 7.2.

The time interpolation process produces global maps of TOA total-sky LW and SW flux, TOA clear-sky LW and SW flux, TOA window radiances, and cloud properties at Universal Time (UT) for every day of the month. The process of producing synoptic maps involves:

1. Cloud properties from the CERES times of observation are interpolated for every hour of the month.
2. The CERES TOA LW and SW fluxes are interpolated for every hour using geostationary data to assist in modeling meteorological variations between times of observations.

### Compute Regional, Zonal, and Global Averages Subsystem 8.0 Main Processor

The Monthly Regional, Zonal, and Global Radiation Fluxes and Cloud Properties Subsystem 8.0 produces regional, zonal and global monthly and monthly-hourly means. These means are calculated from one month of synoptic maps on a regional basis and then combined to produce zonal and global averages.

The main input to this Subsystem is the Surface and Atmospheric Radiation Budget (SARB) product, produced by Subsystem 7.2, SYNI. This product contains one month of 3-hourly synoptic maps of top-of-atmosphere (TOA) LW and SW fluxes, TOA window fluxes, upwelling and downwelling SW and LW fluxes at each standard CERES pressure level, and numerous cloud parameters for each region of the CERES global 1.0-degree equal-area grid. The flux parameters include both total-sky and clear-sky.

The three archival products output from this Subsystem are the Monthly Regional Radiative Fluxes and Clouds (AVG) product (HDF format) which contains regional monthly and monthly-hourly means of fluxes and cloud parameters, the Monthly Zonal and Global Radiative Fluxes, Clouds (ZAVG) product (HDF format) which contains the zonal and global monthly and cloud

parameters, and the Synoptic Radiative Fluxes and Clouds (SYN) product (HDF format) which contains regional synoptic hourly means of fluxes and cloud parameters.

The main steps involved in the averaging process are:

1. Read the synoptically ordered data.
2. Average the flux data to produce regional synoptic hourly, monthly and monthly-hourly means.
3. Average the cloud properties using the specified weighting schemes to produce regional synoptic hourly, monthly and monthly-hourly means.
4. Average the regional means to produce zonal means.
5. Average the zonal means to produce global means.

### Compute Monthly and Regional TOA and SRB Averages Subsystem 10.0 Main Processor

The Monthly Regional TOA and SRB Averages Subsystem (10.0) computes averages of TOA longwave (LW) and shortwave (SW) fluxes, surface fluxes, and cloud properties on regional, zonal, and global spatial scales. The main input to Subsystem 10.0 is the Hourly Gridded Single Satellite TOA and Surface Fluxes and Clouds (SFC) product produced by Surface Gridding and Spatial Averaging Subsystem (9). SFC contains hourly single satellite flux and cloud properties averaged over 1.0-degree regions. Subsystem 10.0 produces the Monthly Regional TOA and SRB Averages (SRBAVG) product (HDF-EOS format). Two methods are used to compute the regional TOA total-sky flux averages. TOA flux estimates from both of the two methods are used to produce estimates of surface flux at all temporal and spatial scales using the TOA-to-surface flux parameterization schemes for shortwave and longwave.

The process of producing the means stored in SRBAVG involves:

1. The TOA clear-sky flux data, surface flux data, and the cloud property data are linearly interpolated.
2. Monthly and monthly-hourly means are calculated from the interpolated fluxes and cloud properties on regional, zonal, and global scales.

### Compute Monthly Hourly CERES Clear-sky Albedo, CERES Clear-sky Map and Monthly Regional Snow/Ice Map

The Clear-sky Map, the Monthly Hourly CERES clear-sky Albedo and Monthly Regional Snow/Ice Map are required for inputs into Subsystem 10.0. The main inputs are the Hourly Gridded Single Satellite TOA and Surface Fluxes and Clouds (SFC) product from Subsystem 9.

The process of producing the Monthly Hourly CERES clear-sky Albedo, the Clear-sky map and the Monthly Snow/Ice map involved:

1. The TOA clear-sky flux data and the cloud property data are linearly interpolated.
2. Monthly and monthly-hourly means are calculated from the interpolated fluxes and cloud properties on regional.
3. The CERES clear-sky albedos were computed and the adjusted depending on the regional surface type to create the proper clear-sky map.
4. From the surface input data from gridding, the snow and ice data are averaged for each region.

### Compute Monthly and Daily Regional TOA Averages Subsystem 10.0 Main Processor

The Monthly Regional TOA Averages Subsystem (10.0) computes averages of TOA longwave (LW) and shortwave (SW) fluxes, and cloud properties on regional, zonal, and global spatial scales. The main input to Subsystem 10.0 is the Hourly Gridded Single Satellite TOA and Surface Fluxes and Clouds (SFC) product produced by Surface Gridding and Spatial Averaging Subsystem (9). SFC contains hourly single satellite flux and cloud properties averaged over 1.0-degree regions. Subsystem 10.0 produces the Monthly Regional, Zonal and Global TOA fluxes and Cloud property Averages (SSF1deg-Month) and Daily Regional Averages (SSF1deg-Day) products (HDF-EOS format) in GMT time.

The process of producing the means stored in SSF1Deg involves:

1. The TOA clear-sky and all-sky flux and the cloud property data are linearly interpolated in GMT time.
2. Monthly means are calculated from the interpolated fluxes and cloud properties on regional, zonal, and global scales.
3. Daily means are calculated from the interpolated fluxes and cloud properties only on regional scales.

# Software and Data File Installation Procedures

This section describes how to install Time Interpolation and Space Averaging (TISA) Averaging Subsystems 7.1, 8.0, and 10.0 software in preparation for making the necessary test runs at the Langley Atmospheric Science Data Center (ASDC). The installation procedures include instructions for uncompressing and untarring the delivered tar files, properly defining environmental variables, and compiling the TISA Averaging source code.

## Installation

Software/Delta File Install Procedure:

1. The scripts, Makefile, and Process Control Files in Subsystems 7.1 and Subsystem 10.0 expect the CERES environment variable, **$CERESENV**, to point to a file which sets the following environment variables:

**PGSDIR** Directory for **Toolkit** libraries

**F90** Pointer to the SGI F90 64-bit compiler

**CERESHOME** Top Directory for CERES software

**CERESLIB** Directory for CERESlib

**F90COMP, FCOMP** SGI 64-bit Fortran 90 compile flags

**F90LOAD** SGI 64-bit Fortran 90 load flags

**PGSMSG** Directory which contains **Toolkit and CERES**

Status Message Files

**PGSINC** Pointer to the PGS include file directory

**HDFDIR** Pointer to the HDF home directory

**HDFEOSDIR** Pointer to the HDF-EOS home directory

1. Change directory to the directory where you plan to install the TISA Averaging Subsystem. The following instructions assume that the directory will be **$CERESHOME**.
2. For **Subsystem 7.1**, uncompress and untar the tar files by replacing **XXX** with the appropriate SCCR number and typing the following commands:

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/data/data\_7**

**cd $CERESHOME**

**PGE CER7.3.1P2**

**unzip TISAavg\_src\_7\_2\_R5-XXX.tar.gz**

**tar xvf TISAavg\_src\_7\_2\_R5-XXX. tar**

**unzip TISAavg\_data7\_2\_R5-XXX.tar.Z**

**tar xvf TISAavg\_data7\_2\_R5-XXX.tar**

**unzip TISAavg\_anc\_7\_2\_R5-XXX.tar.Z**

**tar xvf TISAavg\_anc7\_2\_R5-XXX.tar**

**PGE CER7.3.1P3**

**unzip TISAavg\_src\_7\_3\_R5-XXX.tar.gz**

**tar xvf TISAavg\_src\_7\_3\_R5-XXX. tar**

**unzip TISAavg\_data7\_3\_R5-XXX.tar.Z**

**tar xvf TISAavg\_data7\_3\_R5-XXX.tar**

**PGE CER7.3.1P4**

**unzip TISAavg\_src\_7\_4\_R5-XXX.tar.gz**

**tar xvf TISAavg\_src\_7\_4\_R5-XXX. tar**

**unzip TISAavg\_data7\_4\_R5-XXX.tar.Z**

**tar xvf TISAavg\_data7\_4\_R5-XXX.tar**

1. For **Subsystem 8**, uncompress and untar the tar files by replacing **XXX** with the appropriate SCCR number and typing the following commands:

**PGE CER8.1P2**

**gunzip TISAavg\_anc\_R5-1410.tar.gz**

**tar -xf TISAavg\_anc\_R5-1410.tar**

**gunzip TISAavg\_data\_R5-1410.tar.gz**

**tar -xf TISAavg\_data\_R5-1410.tar**

**gunzip TISAavg\_src\_R5-1410.tar.gz**

**tar -xf TISAavg\_src\_R5-1410.tar**

1. For **Subsystem 10**, uncompress and untar the tar files by replacing **XXXX** with the appropriate SCCR number and typing the following commands:

**PGE CER10.0P5**

**source $CERESENV**

**cd $CERESHOME**

**uncompress TISAavg\_src\_P5\_R5-XXXX.tar.Z**

**tar xvf TISAavg\_src\_P5\_R5-XXXX.tar**

**uncompress TISAavg\_data10\_P5\_R5-XXXX.tar.Z**

**tar xvf TISAavg\_data10\_P5\_R5-XXX.tar**

## Compilation

1. For **Subsystem 7.1, Subsystem 8**, and **Subsystem 10** create the message files and message include files:

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/smf**

**$CERESLIB/bin/smfcompile\_all.csh**

The **smfcompile\_all.csh** will send a message to the screen at completion to indicate whether or not the compile was successful. ASDC personnel may have an alternate procedure for compiling these message files. Any alternate procedure should copy all message include files to the $PGSINC directory and all message files to the $PGSMSG directory.

1. For the Edition4 **Subsystem 7. 1, CER7.3.1P2** Pre-Processor 1,the executable is not provided in the tar file. To create the executable on the x86 platform, type the following commands:

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P2/rcf**

**./compile\_7.3.1P2.csh**

This will create the following executable:

**$CERESHOME/tisa\_avg/CER7.3.1P2/bin/PGE\_CER7.3.1P2\_x86\_64.exe**

The following commands will create the executable for the comparison software.

**cd $CERESHOME/tisa\_avg/CER7.3.1P2/test\_suites/src**

**make clean**

**make**

This will create the following executable:

**$CERESHOME/tisa\_avg/CER7.3.1P2/test\_suites/bin/compare\_x86\_64.exe**

1. For the Edition4 **Subsystem 7. 1, CER7.3.1P3** Pre-Processor 2,the executable is not provided in the tar file. To create the executable on the x86 platform, type the following commands:

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P3/rcf**

**./compile\_7.3.1P3.csh**

This will create the following executable:

**$CERESHOME/tisa\_avg/CER7.3.1P3/bin/PGE\_CER7.3.1P3\_x86\_64.exe**

The following commands will create the executable for the comparison software.

**cd $CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/src**

**make clean**

**make**

This will create the following executable:

**$CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/bin/compare\_phase1\_x86\_64.exe**

1. For the Edition4 **Subsystem 7. 1, CER7.3.1P4** Main Processor,the executable is not provided in the tar file. To create the executable on the x86 platform, type the following commands:

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P4/rcf**

**./compile\_7.3.1P4.csh**

This will create the following executable:

**$CERESHOME/tisa\_avg/CER7.3.1P4/bin/PGE\_CER7.3.1P4\_x86\_64.exe**

The following commands will create the executable for the comparison software.

**cd $CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/src**

**make clean**

**make**

This will create the following executable:

**$CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/bin/compare\_tsi\_x86\_64.exe**

1. Compilation Instructions for **CER8.1P2** on the *x86* Platform:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**./compile\_8.1P2.csh**

This will create an executable which can be found using this command:

**ls -l $CERESHOME/tisa\_avg/CER8.1P2/bin/CER8.1P2\_x86\_64.exe**

To create the executable for the comparison software, type the following commands on the *x86* platform:

**cd $CERESHOME/tisa\_avg/CER8.1P2/test\_suites/src**

**make clean**

**make**

This will create an executable which can be found using the this command:

**ls -l $CERESHOME/tisa\_avg/CER8.1P2/test\_suites/bin/compare\_syn1deg\_x86\_64.exe**

1. **Compilation Instructions for PGE CER10.0P5 on the *x86* Platform**

The compilation of this PGE requires that **$CERESHOME** environmental variable be set correctly, as through sourcing the **ceres-env.csh**. Once it is set, execute the following commands:

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER10.0P5/rcf/**

**source CER10.0P5\_compile-env.csh**

**./compile\_10.0P5.csh**

will create the executable:

**$CERESHOME/tisa\_avg/CER10.0P5/bin/CER10.0P5\_$CPUTYPE.exe**

The compilation of the comparison of expected output and test run out for this PGE is required:

**cd $CERESHOME/tisa\_avg/CER10.0P5/test\_suites/src/**

**make clean**

**make**

will create the executable:

**$CERESHOME/tisa\_avg/CER10.0P5/test\_suites/bin/compare\_ssf\_$CPUTYPE.exe**

# Test and Evaluation Procedures

This section provides general information on how to execute Subsystem 7.1 and provides an overview of the test and evaluation procedures. It includes a description of what is being tested and the order in which the tests should be performed.

## CER7.3.1P2 Pre Processor

**NOTE: RUN CER7.3.1P2 BEFORE CER7.3.1P3**

### Stand-alone Test Procedures for on the *x86* Platform

These test procedures should be run on an x86 platform.

#### Execution

1. Generate the ASCII input file for the test case:

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P2/rcf**

**setenv year 2013**

**setenv month 04**

**source $CERESHOME/tisa\_avg/CER7.3.1P2/test\_suites/rcf/setupenv\_ssit.csh $year$month**

**setenv DATADATE 201304**

**setenv INSTANCE Aqua-MODIS\_TestSuite\_999999.$DATADATE**

**setenv INSTANCE1 Aqua-MODIS\_TestSuite**

**To run on x86:**

**./CER7.3.1P2-SGE\_Driver.pl -date $DATADATE -clean -platform x86**

The Pre Processor, Product Generation Executive (PGE) CER7.3.1P2, will be executed and will create the following files in **$CERESHOME/tisa\_avg/data/TSI-nb2bb-coeff/Aqua-MODIS\_TestSuite/$year/$month**:

**CER\_LW-lnd-day\_$INSTANCE**

**CER\_LW-lnd-nit\_$INSTANCE**

**CER\_LW-ocn-day\_$INSTANCE**

**CER\_LW-ocn-nit\_$INSTANCE**

**CER\_LW-sno-day\_$INSTANCE**

**CER\_LW-sno-nit\_$INSTANCE**

**CER\_WN-lnd-day\_$INSTANCE**

**CER\_WN-lnd-nit\_$INSTANCE**

**CER\_WN-ocn-day\_$INSTANCE**

**CER\_WN-ocn-nit\_$INSTANCE**

**CER\_WN-sno-day\_$INSTANCE**

**CER\_WN-sno-nit\_$INSTANCE**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 30 minutes

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in

**$CERESHOME/tisa\_avg/data\_exp/TSI-nb2bb-coeff/Aqua-MODIS\_TestSuite/2013/04/**

#### Log and Status File Results

The Error and Status Log File, **CER7.3.1P2\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER7.3.1P2**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER7.3.1P2 has been executed. Metadata files are written to directory, **$CERESHOME/tisa\_avg/data/TSI-nb2bb-coeff/Aqua-MODIS\_TestSuite**.

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp/TSI-nb2bb-coeff**  and new input files from the execution are in **$CERESHOME/tisa\_avg/data/TSI-nb2bb-coeff**. These input files are accessed from those areas for the comparison.

Since the output files are ascii files, the evaluation software for CER7.3.1P2 does a diff on the files in **data\_exp** and the file created during processing:

**cd $CERESHOME/tisa\_avg/CER7.3.1P2/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER7.3.1P2/rcf**. To clean up the files for **CER7.3.1P2**:

**$CERESHOME/tisa\_avg/CER7.3.1P2/rcf/CleanOutput.pl $year $month**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

## CER7.3.1P3 Pre Processor

**NOTE: RUN CER7.3.1P2 BEFORE CER7.3.1P3**

### Stand-alone Test Procedures for Merged Terra-Aqua on x86 Platform

These test procedures should be run on an x86 platform.

#### Execution

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P3/rcf**

**setenv year 2013**

**setenv month 04**

**setenv satellites merge\_terra\_aqua**

**source $CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf/setupenv\_ssit.csh $year$month $satellites**

**setenv DATADATE $year$month**

**setenv INSTANCE1 Terra-Aqua-MODIS\_TestSuite**

**setenv INSTANCE Terra-Aqua-MODIS\_TestSuite\_999999.$DATADATE**

**To run on x86:**

**./CER7.3.1P3-SGE\_Driver.pl -date $DATADATE** -**test Y -satellites terra aqua ggeo -clean -platform x86**

The Pre Processor, Product Generation Executive (PGE) CER7.3.1P3, will be executed and will create the following files in **$CERESHOME/tisa\_avg/data**:

**TSI-SNOW-PCT/Terra-Aqua-MODIS\_TestSuite/$year/$month/CER\_TSI-SNOW-PCT\_$INSTANCE**

**TSI-mhr-csalb/Terra-Aqua-MODIS\_TestSuite/$year/$month/CER\_TSI-mhr-csalb\_$INSTANCE**

**TSI-csalb0-intrp2s/Terra-Aqua-MODIS\_TestSuite/$year/$month/CER\_TSI-csalb0-intrp2s\_$INSTANCE**

**TSI-xglb/Terra-Aqua-MODIS\_TestSuite/$year/$month/CER\_TSI-LWxglb\_$INSTANCE**

**TSI-xglb/Terra-Aqua-MODIS\_TestSuite/$year/$month/CER\_TSI-SWxglb\_$INSTANCE**

**TSI-xglb/Terra-Aqua-MODIS\_TestSuite/$year/$month/CER\_TSI-WNxglb\_$INSTANCE**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 1 hour

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in the following directories:

**$CERESHOME/tisa\_avg/data\_exp/TSI-csalb0-intrp2s/Terra-Aqua-MODIS\_TestSuite/2013/04/**

**$CERESHOME/tisa\_avg/data\_exp/TSI-mhr-csalb/Terra-Aqua-MODIS\_TestSuite/2013/04/**

**$CERESHOME/tisa\_avg/data\_exp/TSI-SNOW-PCT/Terra-Aqua-MODIS\_TestSuite/2013/04/**

**$CERESHOME/tisa\_avg/data\_exp/TSI-xglb** **/Terra-Aqua-MODIS\_TestSuite/2013/04/**

#### Log and Status File Results

The Error and Status Log File, **CER7.3.1P3\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER7.3.1P3**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER7.3.1P3 has been executed. Metadata files are written to directory, **$CERESHOME/tisa\_avg/data/TSI-mhr-csalb, TSI-csalb0-intrp2s, TSI-SNOW-PCT, TSI-xglb**.

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp** and new input files from the execution are in **$CERESHOME/tisa\_avg/data/ TSI-mhr-csalb, TSI-csalb0-intrp2s, TSI-SNOW-PCT, TSI-xglb**. These input files are accessed from those areas for the comparison.

Since the output files are binary and ascii files, the evaluation software for CER7.3.1P3 does a diff on the files in **data\_exp** and the file created during processing:

and

**cd $CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf**. To clean up the files for **CER7.3.1P3**:

**$CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf/CleanOutput.pl $year $month**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

### Stand-alone Test Procedures for Terra on x86 Platform

These test procedures should be run on an x86 platform.

#### Execution

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P3/rcf**

**setenv year 2001**

**setenv month 10**

**setenv satellites terra**

**source $CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf/setupenv\_ssit.csh $year$month $satellites**

**setenv DATADATE $year$month**

**setenv INSTANCE1 Terra-MODIS\_TestSuite**

**setenv INSTANCE Terra-MODIS\_TestSuite\_999999.$DATADATE**

**To run on x86:**

**./CER7.3.1P3-SGE\_Driver.pl -date $DATADATE -test Y -satellites terra ggeo -clean -platform x86**

The Pre Processor, Product Generation Executive (PGE) CER7.3.1P3, will be executed and will create the following files in **$CERESHOME/tisa\_avg/data**:

**TSI-SNOW-PCT/Terra-MODIS\_TestSuite/$year/$month/CER\_TSI-SNOW-PCT\_$INSTANCE**

**TSI-mhr-csalb/Terra-MODIS\_TestSuite/$year/$month/CER\_TSI-mhr-csalb\_$INSTANCE**

**TSI-csalb0-intrp2s/Terra-MODIS\_TestSuite/$year/$month/CER\_TSI-csalb0-intrp2s\_$INSTANCE**

**TSI-xglb/Terra-MODIS\_TestSuite/$year/$month/CER\_TSI-LWxglb\_$INSTANCE**

**TSI-xglb/Terra-MODIS\_TestSuite/$year/$month/CER\_TSI-SWxglb\_$INSTANCE**

**TSI-xglb/Terra-MODIS\_TestSuite/$year/$month/CER\_TSI-WNxglb\_$INSTANCE**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 27 minutes

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in the following directories:

**$CERESHOME/tisa\_avg/data\_exp/TSI-csalb0-intrp2s/Terra-MODIS\_TestSuite/2001/10/**

**$CERESHOME/tisa\_avg/data\_exp/TSI-mhr-csalb/Terra-MODIS\_TestSuite/2001/10/**

**$CERESHOME/tisa\_avg/data\_exp/TSI-SNOW-PCT/Terra-MODIS\_TestSuite/2001/10/**

**$CERESHOME/tisa\_avg/data\_exp/TSI-xglb** **/Terra-MODIS\_TestSuite/2001/10/**

#### Log and Status File Results

The Error and Status Log File, **CER7.3.1P3\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER7.3.1P3**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER7.3.1P3 has been executed. Metadata files are written to directory, **$CERESHOME/tisa\_avg/data/TSI-mhr-csalb, TSI-csalb0-intrp2s, TSI-SNOW-PCT, TSI-xglb**.

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp** and new input files from the execution are in **$CERESHOME/tisa\_avg/data/TSI-mhr-csalb, TSI-csalb0-intrp2s, TSI-SNOW-PCT, TSI-xglb**. These input files are accessed from those areas for the comparison.

Since the output files are binary and ascii files, the evaluation software for CER7.3.1P3 does a diff on the files in **data\_exp** and the file created during processing:

**cd $CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf**. To clean up the files for **CER7.3.1P3**:

**$CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf/CleanOutput.pl $year $month**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

### Stand-alone Test Procedures for Merged Terra\_NPP on x86 Platform

These test procedures should be run on an x86 platform.

#### Execution

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P3/rcf**

**setenv year 2012**

**setenv month 04**

**setenv satellites merge\_terra\_npp**

**source $CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf/setupenv\_ssit.csh $year$month $satellites**

**setenv DATADATE $year$month**

**setenv INSTANCE1 Terra-NPP\_TestSuite**

**setenv INSTANCE Terra-NPP\_TestSuite\_999999.$DATADATE**

**To run on x86:**

**./CER7.3.1P3-SGE\_Driver.pl -date $DATADATE** -**test Y -satellites terra NPP ggeo -clean -platform x86**

The Pre Processor, Product Generation Executive (PGE) CER7.3.1P3, will be executed and will create the following files in **$CERESHOME/tisa\_avg/data**:

**TSI-SNOW-PCT/Terra-NPP\_TestSuite/$year/$month/CER\_TSI-SNOW-PCT\_$INSTANCE**

**TSI-mhr-csalb/Terra-NPP\_TestSuite/$year/$month/CER\_TSI-mhr-csalb\_$INSTANCE**

**TSI-csalb0-intrp2s/Terra-NPP\_TestSuite/$year/$month/CER\_TSI-csalb0-intrp2s\_$INSTANCE**

**TSI-xglb/Terra-NPP\_TestSuite/$year/$month/CER\_TSI-LWxglb\_$INSTANCE**

**TSI-xglb/Terra-NPP\_TestSuite/$year/$month/CER\_TSI-SWxglb\_$INSTANCE**

**TSI-xglb/Terra-NPP\_TestSuite/$year/$month/CER\_TSI-WNxglb\_$INSTANCE**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 1 hour

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in the following directories:

**$CERESHOME/tisa\_avg/data\_exp/TSI-csalb0-intrp2s/Terra-NPP\_TestSuite/2012/04/**

**$CERESHOME/tisa\_avg/data\_exp/TSI-mhr-csalb/Terra-NPP\_TestSuite/2012/04/**

**$CERESHOME/tisa\_avg/data\_exp/TSI-SNOW-PCT/Terra-NPP\_TestSuite/2012/04/**

**$CERESHOME/tisa\_avg/data\_exp/TSI-xglb** **/Terra-NPP\_TestSuite/2012/04/**

#### Log and Status File Results

The Error and Status Log File, **CER7.3.1P3\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER7.3.1P3**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER7.3.1P3 has been executed. Metadata files are written to directory, **$CERESHOME/tisa\_avg/data/TSI-mhr-csalb, TSI-csalb0-intrp2s, TSI-SNOW-PCT, TSI-xglb**.

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp** and new input files from the execution are in **$CERESHOME/tisa\_avg/data/ TSI-mhr-csalb, TSI-csalb0-intrp2s, TSI-SNOW-PCT, TSI-xglb**. These input files are accessed from those areas for the comparison.

Since the output files are binary and ascii files, the evaluation software for CER7.3.1P3 does a diff on the files in **data\_exp** and the file created during processing:

and

**cd $CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf**. To clean up the files for **CER7.3.1P3**:

**$CERESHOME/tisa\_avg/CER7.3.1P3/test\_suites/rcf/CleanOutput.pl $year $month**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

## CER7.3.1P4 Main Processor

**NOTE: RUN CER7.3.1P2 and CER7.3.1P3 BEFORE CER7.3.1P4**

### Stand-alone Test Procedures for Merged Terra-Aqua on x86 Platform

These test procedures should be run on an x86 platform.

#### Execution

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P4/rcf**

**setenv year 2013**

**setenv month 04**

**setenv satellites merge\_terra\_aqua**

**setenv DATADATE $year$month**

**setenv INSTANCE1 Terra-Aqua-MODIS\_TestSuite**

**setenv INSTANCE Terra-Aqua-MODIS\_TestSuite\_999999.$DATADATE**

**source $CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf/setupenv\_ssit.csh $year$month $satellites**

**To run on x86:**

**./CER7.3.1P4-SGE\_Driver.pl -date $DATADATE -test Y -satellites terra aqua ggeo -clean -platform x86**

The Pre Processor, Product Generation Executive (PGE) CER7.3.1P4, will be executed and will create the following files in **$CERESHOME/tisa\_avg/data/TSIB**:

**Terra-Aqua-MODIS\_TestSuite/$year/$month/CER\_TSIB\_${INSTANCE}Z052**

**Terra-Aqua-MODIS\_TestSuite/$year/$month/CER\_TSIB\_${INSTANCE}Z053**

**Terra-Aqua-MODIS\_TestSuite/$year/$month/CER\_TSIB\_${INSTANCE}Z054**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 5 minutes

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in

**$CERESHOME/tisa\_avg/data\_exp/TSIB**/**Terra-Aqua-MODIS\_TestSuite/2013/04**

#### Log and Status File Results

The Error and Status Log File, **CER7.3.1P4\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER7.3.1P4**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER7.3.1P4 has been executed. Metadata files are written to directory, **$CERESHOME/tisa\_avg/data/TSIB**

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp/TSIB** and new input files from the execution are in **$CERESHOME/tisa\_avg/data/TSIB**. These input files are accessed from those areas for the comparison.

Since the output files are binary and ascii files, the evaluation software for CER7.3.1P4 does a diff on the files in **data\_exp** and the file created during processing:

**cd $CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf**. To clean up the files for **CER7.3.1P4**:

**$CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf/CleanOutput.pl $year $month**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

### Stand-alone Test Procedures for Terra on x86 Platform

These test procedures should be run on an x86 platform.

#### Execution

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P4/rcf**

**setenv year 2001**

**setenv month 10**

**setenv satellites terra**

**setenv DATADATE $year$month**

**setenv INSTANCE1 Terra-MODIS\_TestSuite**

**setenv INSTANCE Terra-MODIS\_TestSuite\_999999.$DATADATE**

**source $CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf/setupenv\_ssit.csh $year$month $satellites**

**To run on x86:**

**./CER7.3.1P4-SGE\_Driver.pl -date $DATADATE -test Y -satellites terra ggeo -clean -platform x86**

The Pre Processor, Product Generation Executive (PGE) CER7.3.1P4, will be executed and will create the following files in **$CERESHOME/tisa\_avg/data/TSIB**:

**Terra-MODIS\_TestSuite/$year/$month/CER\_TSIB\_${INSTANCE}Z052**

**Terra-MODIS\_TestSuite/$year/$month/CER\_TSIB\_${INSTANCE}Z053**

**Terra-MODIS\_TestSuite/$year/$month/CER\_TSIB\_${INSTANCE}Z054**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 5 minutes

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in

**$CERESHOME/tisa\_avg/data\_exp/TSIB/Terra-MODIS\_TestSuite/2001/10**

#### Log and Status File Results

The Error and Status Log File, **CER7.3.1P4\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER7.3.1P4**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER7.3.1P4 has been executed. Metadata files are written to directory, **$CERESHOME/tisa\_avg/data/TSIB**

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp/TSIB** and new input files from the execution are in **$CERESHOME/tisa\_avg/data/TSIB**. These input files are accessed from those areas for the comparison.

Since the output files are binary and ascii files, the evaluation software for CER7.3.1P4 does a diff on the files in **data\_exp** and the file created during processing:

**cd $CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf**. To clean up the files for **CER7.3.1P4**:

**$CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf/CleanOutput.pl $year $month**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

### Stand-alone Test Procedures for Merged Terra-NPP on x86 Platform

These test procedures should be run on an x86 platform.

#### Execution

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER7.3.1P4/rcf**

**setenv year 2012**

**setenv month 04**

**setenv satellites merge\_terra\_npp**

**setenv DATADATE $year$month**

**setenv INSTANCE1 Terra-NPP\_TestSuite**

**setenv INSTANCE Terra-NPP\_TestSuite\_999999.$DATADATE**

**source $CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf/setupenv\_ssit.csh $year$month $satellites**

**To run on x86:**

**./CER7.3.1P4-SGE\_Driver.pl -date $DATADATE -test Y -satellites terra NPP ggeo -clean -platform x86**

The Pre Processor, Product Generation Executive (PGE) CER7.3.1P4, will be executed and will create the following files in **$CERESHOME/tisa\_avg/data/TSIB**:

**Terra-NPP\_TestSuite/$year/$month/CER\_TSIB\_${INSTANCE}Z052**

**Terra-NPP\_TestSuite/$year/$month/CER\_TSIB\_${INSTANCE}Z053**

**Terra-NPP\_TestSuite/$year/$month/CER\_TSIB\_${INSTANCE}Z054**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 5 minutes

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in

**$CERESHOME/tisa\_avg/data\_exp/TSIB/Terra-NPP\_TestSuite/2012/04**

#### Log and Status File Results

The Error and Status Log File, **CER7.3.1P4\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER7.3.1P4**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER7.3.1P4 has been executed. Metadata files are written to directory, **$CERESHOME/tisa\_avg/data/TSIB**

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp/TSIB** and new input files from the execution are in **$CERESHOME/tisa\_avg/data/TSIB**. These input files are accessed from those areas for the comparison.

Since the output files are binary and ascii files, the evaluation software for CER7.3.1P4 does a diff on the files in **data\_exp** and the file created during processing:

**cd $CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf**. To clean up the files for **CER7.3.1P4**:

**$CERESHOME/tisa\_avg/CER7.3.1P4/test\_suites/rcf/CleanOutput.pl $year $month**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

## CER8.1P2 Main Processor

**NOTE: The Terra, Terra-Aqua Merge, and Terra-NPP Merge tests can run simultaneously to reduce testing time.**

### Stand Alone Test Procedures for Terra on the *x86* Platform

#### Execution

Type the following commands to set up the environment for the test case:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**setenv year 2001**

**setenv month 10**

**setenv DATADATE $year$month**

**source $CERESHOME/tisa\_avg/CER8.1P2/rcf/setupenv.csh $DATADATE**

**setenv INSTANCE ${SS8}\_${PS8}\_${CC8}.$DATADATE**

**setenv INSTANCE1 ${SS8}\_${PS8}**

**To run on x86:**

**./CER8.1P2-SGE\_Driver.pl -date $DATADATE -clean -platform x86 -test Y**

The Main Processor, Product Generation Executive (PGE) CER8.1P2, will be executed and will create output files in subdirectories of **$CERESHOME/tisa\_avg/data.**

Type the following command to run a script that outputs a list of all 196 of the necessary output files, including the pcf, met and log files. If the grep command prints anything then there was a problem.

**cd $CERESHOME/tisa\_avg/CER8.1P2/test\_suites/rcf**

**check\_for\_output\_files.csh > test\_Terra\_filelist.txt**

**grep -i access test\_Terra\_filelist.txt**

#### Exit Codes

0 - Normal Exit,

200 - Failure Exit.

#### Main Processor Test Summary

Table 3‑1. Test Summary for PGE 8.1P2

|  |  |  |
| --- | --- | --- |
|  | *AMI-P6* | *AMI-x86* |
| Run Time | N/A | 1 hour |

### Evaluation Procedures

The evaluation software takes about 1 hour to check through all of the values in the data files.

#### Execution of Comparison Software

The delivered expected output files are in **$CERESHOME/tisa\_avg/data\_exp/CER8.1P2** and test output files from the execution are in **$CERESHOME/tisa\_avg/data/**. These files are accessed from those areas for the comparison.

**The script compare\_output.csh** is used to execute the comparison software for each output data file. The script **eval\_runtest.pl** is used to execute the comparison of (1) sge\_log files, (2) PCF files, (3) Logfiles, and (4) met files. Enter the following commands:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**setenv year 2001**

**setenv month 10**

**setenv DATADATE $year$month**

**source $CERESHOME/tisa\_avg/CER8.1P2/rcf/setupenv.csh $DATADATE**

**setenv INSTANCE ${SS8}\_${PS8}\_${CC8}.$DATADATE**

**setenv INSTANCE1 ${SS8}\_${PS8}**

**cd $CERESHOME/tisa\_avg/CER8.1P2/test\_suites/rcf**

**./eval\_runtest.pl 1**

**./eval\_runtest.pl 2**

**./eval\_runtest.pl 3**

**./eval\_runtest.pl 4**

**./compare\_output.csh > test\_Terra\_compare.txt**

**grep -i difference test\_Terra\_compare.txt**

**Comparison time: 25 min**

**Notify subsystem if the grep command above returns any lines with the word ‘difference’ as this indicates that the comparison was not successful. The only expected differences from eval\_runtest.pl are dates, times, blades, and directory paths.**

### Solutions to Possible Problems

All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE created files, CleanOutput.pl, is located in the rcf directory. To use the clean-up script for CER8.1P2, type the following commands:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**setenv year 2001**

**setenv month 10**

**setenv DATADATE $year$month**

**source $CERESHOME/tisa\_avg/CER8.1P2/rcf/setupenv.csh $DATADATE**

**setenv INSTANCE ${SS8}\_${PS8}\_${CC8}.$DATADATE**

**setenv INSTANCE1 ${SS8}\_${PS8}**

**$CERESHOME/tisa\_avg/CER8.1P2/rcf/CleanOutput.pl $year $month**

### Stand Alone Test Procedures for Terra-Aqua Merge on the *x86* Platform

#### Execution

Type the following commands to set up the environment for the test case:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**setenv year 2016**

**setenv month 07**

**setenv DATADATE $year$month**

**source $CERESHOME/tisa\_avg/CER8.1P2/rcf/setupenv.csh $DATADATE**

**setenv INSTANCE ${SS8}\_${PS8}\_${CC8}.$DATADATE**

**setenv INSTANCE1 ${SS8}\_${PS8}**

**To run on x86:**

**./CER8.1P2-SGE\_Driver.pl -date $DATADATE -clean -platform x86 -test Y**

The Main Processor, Product Generation Executive (PGE) CER8.1P2, will be executed and will create output files in subdirectories of **$CERESHOME/tisa\_avg/data.**

Type the following command to run a script that outputs a list of all 190 of the necessary output files, including the pcf, met and log files. If the grep command prints anything then there was a problem.

**cd $CERESHOME/tisa\_avg/CER8.1P2/test\_suites/rcf**

**check\_for\_output\_files.csh > test\_Merge\_filelist.txt**

**grep -i access test\_Merge\_filelist.txt**

#### Exit Codes

0 - Normal Exit,

200 - Failure Exit.

#### Main Processor Test Summary

Table 3‑2. Test Summary for PGE 8.1P2

|  |  |  |
| --- | --- | --- |
|  | *AMI-P6* | *AMI-x86* |
| Run Time | N/A | 1 hour |

### Evaluation Procedures

The evaluation software takes about 1 hour to check through all of the values in the data files.

#### Execution of Comparison Software

The delivered expected output files are in **$CERESHOME/tisa\_avg/data\_exp/CER8.1P2** and test output files from the execution are in **$CERESHOME/tisa\_avg/data/**. These files are accessed from those areas for the comparison.

**The script compare\_output.csh** is used to execute the comparison software for each output data file. The script **eval\_runtest.pl** is used to execute the comparison of (1) sge\_log files, (2) PCF files, (3) Logfiles, and (4) met files. Enter the following commands:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**setenv year 2016**

**setenv month 07**

**setenv DATADATE $year$month**

**source $CERESHOME/tisa\_avg/CER8.1P2/rcf/setupenv.csh $DATADATE**

**setenv INSTANCE ${SS8}\_${PS8}\_${CC8}.$DATADATE**

**setenv INSTANCE1 ${SS8}\_${PS8}**

**cd $CERESHOME/tisa\_avg/CER8.1P2/test\_suites/rcf**

**./eval\_runtest.pl 1**

**./eval\_runtest.pl 2**

**./eval\_runtest.pl 3**

**./eval\_runtest.pl 4**

**./compare\_output.csh > test\_Merge\_compare.txt**

**grep -i difference test\_Merge\_compare.txt**

**Comparison time: 25 min**

**Notify subsystem if the grep command above returns any lines with the word ‘difference’ as this indicates that the comparison was not successful. The only expected differences from eval\_runtest.pl are dates, times, blades, and directory paths.**

### Solutions to Possible Problems

All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE created files, CleanOutput.pl, is located in the rcf directory. To use the clean-up script for CER8.1P2, type the following commands:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**setenv year 2016**

**setenv month 07**

**setenv DATADATE $year$month**

**source $CERESHOME/tisa\_avg/CER8.1P2/rcf/setupenv.csh $DATADATE**

**setenv INSTANCE ${SS8}\_${PS8}\_${CC8}.$DATADATE**

**setenv INSTANCE1 ${SS8}\_${PS8}**

**$CERESHOME/tisa\_avg/CER8.1P2/rcf/CleanOutput.pl $year $month**

### Stand Alone Test Procedures for Merged Terra-NPP on the *x86* Platform

#### Execution

Type the following commands to set up the environment for the test case:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**setenv year 2017**

**setenv month 01**

**setenv DATADATE $year$month**

**source $CERESHOME/tisa\_avg/CER8.1P2/rcf/setupenv.csh $DATADATE**

**setenv INSTANCE ${SS8}\_${PS8}\_${CC8}.$DATADATE**

**setenv INSTANCE1 ${SS8}\_${PS8}**

**To run on x86:**

**./CER8.1P2-SGE\_Driver.pl -date $DATADATE -clean -platform x86 -test Y**

The Main Processor, Product Generation Executive (PGE) CER8.1P2, will be executed and will create output files in subdirectories of **$CERESHOME/tisa\_avg/data.**

Type the following command to run a script that outputs a list of all 190 of the necessary output files, including the pcf, met and log files. If the grep command prints anything then there was a problem.

**cd $CERESHOME/tisa\_avg/CER8.1P2/test\_suites/rcf**

**check\_for\_output\_files.csh > test\_TerraNPP\_filelist.txt**

**grep -i access test\_TerraNPP\_filelist.txt**

#### Exit Codes

0 - Normal Exit,

200 - Failure Exit.

#### Main Processor Test Summary

Table 3‑3. Test Summary for PGE 8.1P2

|  |  |  |
| --- | --- | --- |
|  | *AMI-P6* | *AMI-x86* |
| Run Time | N/A | 1 hour |

### Evaluation Procedures

The evaluation software takes about 1 hour to check through all of the values in the data files.

#### Execution of Comparison Software

The delivered expected output files are in **$CERESHOME/tisa\_avg/data\_exp/CER8.1P2** and test output files from the execution are in **$CERESHOME/tisa\_avg/data/**. These files are accessed from those areas for the comparison.

**The script compare\_output.csh** is used to execute the comparison software for each output data file. The script **eval\_runtest.pl** is used to execute the comparison of (1) sge\_log files, (2) PCF files, (3) Logfiles, and (4) met files. Enter the following commands:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**setenv year 2017**

**setenv month 01**

**setenv DATADATE $year$month**

**source $CERESHOME/tisa\_avg/CER8.1P2/rcf/setupenv.csh $DATADATE**

**setenv INSTANCE ${SS8}\_${PS8}\_${CC8}.$DATADATE**

**setenv INSTANCE1 ${SS8}\_${PS8}**

**cd $CERESHOME/tisa\_avg/CER8.1P2/test\_suites/rcf**

**./eval\_runtest.pl 1**

**./eval\_runtest.pl 2**

**./eval\_runtest.pl 3**

**./eval\_runtest.pl 4**

**./compare\_output.csh > test\_TerraNPP\_compare.txt**

**grep -i difference test\_TerraNPP\_compare.txt**

**Comparison time: 25 min**

**Notify subsystem if the grep command above returns any lines with the word ‘difference’ as this indicates that the comparison was not successful. The only expected differences from eval\_runtest.pl are dates, times, blades, and directory paths.**

### Solutions to Possible Problems

All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE created files, CleanOutput.pl, is located in the rcf directory. To use the clean-up script for CER8.1P2, type the following commands:

**cd $CERESHOME/tisa\_avg/CER8.1P2/rcf**

**setenv year 2017**

**setenv month 01**

**setenv DATADATE $year$month**

**source $CERESHOME/tisa\_avg/CER8.1P2/rcf/setupenv.csh $DATADATE**

**setenv INSTANCE ${SS8}\_${PS8}\_${CC8}.$DATADATE**

**setenv INSTANCE1 ${SS8}\_${PS8}**

**$CERESHOME/tisa\_avg/CER8.1P2/rcf/CleanOutput.pl $year $month**

## CER10.0P5 Processor

### Stand-alone Test Procedures for Terra on the *x86* Platform

#### Execution

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER10.0P5/rcf**

**setenv year 2007**

**setenv month 07**

**setenv satellites terra**

**source $CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf/setupenv\_ssit.csh $year$month $satellites**

**setenv DATADATE $year$month**

**setenv INSTANCE1 Terra-MODIS\_TestSuite**

**setenv INSTANCE Terra-MODIS\_TestSuite\_999999.$DATADATE**

**./CER10.0P5-SGE\_Driver.pl -date $DATADATE -test Y -satellites terra -platform x86 -clean**

The Processor, Product Generation Executive (PGE) CER10.0P5, will be executed and will create files found using the following commands:

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Month/Terra-MODIS\_TestSuite/$year/$month/CER\_SSF1deg-Month\_$INSTANCE**

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Month/Terra-MODIS\_TestSuite/$year/$month/CER\_SSF1deg-Month\_$INSTANCE.met**

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Day/Terra-MODIS\_TestSuite/$year/$month/CER\_SSF1deg-Day\_$INSTANCE**

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Day/Terra-MODIS\_TestSuite/$year/$month/CER\_SSF1deg-Day\_$INSTANCE.met**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 2 minutes 22 seconds

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in

**$CERESHOME/tisa\_avg/data\_exp/CER10.0P5**

#### Log and Status File Results

The Error and Status Log File, **CER10.0P5\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER10.0P5**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER10.0P5 has been executed. Metadata files are written to directories where the output data are resided.

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp/CER10.0P5**. These input files are accessed from those areas for the comparison.

**cd $CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf**. To clean up the files for **CER10.0P5**:

**$CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf/CleanOutput.pl $year $month**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

### Stand-alone Test Procedures for Aqua on the x86 Platform

#### Execution

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER10.0P5/rcf**

**setenv year 2005**

**setenv month 02**

**setenv satellites aqua**

**source $CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf/setupenv\_ssit.csh $year$month $satellites**

**setenv DATADATE $year$month**

**setenv INSTANCE1 Aqua-MODIS\_TestSuite**

**setenv INSTANCE Aqua-MODIS\_TestSuite\_999999.$DATADATE**

**./CER10.0P5-SGE\_Driver.pl -date $DATADATE -test Y -satellites aqua -platform x86 -clean**

The Processor, Product Generation Executive (PGE) CER10.0P5, will be executed and will create files found using the following commands:

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Month/Aqua-MODIS\_TestSuite/$year/$month/CER\_SSF1deg-Month\_$INSTANCE**

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Month/Aqua-MODIS\_TestSuite/$year/$month/CER\_SSF1deg-Month\_$INSTANCE.met**

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Day/Aqua-MODIS\_TestSuite/$year/$month/CER\_SSF1deg-Day\_$INSTANCE**

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Day/Aqua-MODIS\_TestSuite/$year/$month/CER\_SSF1deg-Day\_$INSTANCE.met**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 2 minutes 42 seconds

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in

**$CERESHOME/tisa\_avg/data\_exp/CER10.0P5**

#### Log and Status File Results

The Error and Status Log File, **CER10.0P5\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER10.0P5**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER10.0P5 has been executed. Metadata files are written to directories where the output data are resided.

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp/CER10.0P5**. These input files are accessed from those areas for the comparison.

**cd $CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf**. To clean up the files for **CER10.0P5**:

**$CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf/CleanOutput.pl CER10.0P5\_PCF\_$INSTANCE**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

### Stand-alone Test Procedures for NPP on the x86 Platform

#### Execution

**source $CERESENV**

**cd $CERESHOME/tisa\_avg/CER10.0P5/rcf**

**setenv year 2013**

**setenv month 04**

**setenv satellites NPP**

**source $CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf/setupenv\_ssit.csh $year$month $satellites**

**setenv DATADATE $year$month**

**setenv INSTANCE1 NPP-VIIRS\_TestSuite**

**setenv INSTANCE NPP-VIIRS\_TestSuite\_999999.$DATADATE**

**./CER10.0P5-SGE\_Driver.pl -date $DATADATE -test Y -satellites NPP -platform x86 -clean**

The Processor, Product Generation Executive (PGE) CER10.0P5, will be executed and will create files found using the following commands:

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Month/NPP-VIIRS\_TestSuite/$year/$month/CER\_SSF1deg-Month\_$INSTANCE**

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Month/NPP-VIIRS\_TestSuite/$year/$month/CER\_SSF1deg-Month\_$INSTANCE.met**

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Day/NPP-VIIRS\_TestSuite/$year/$month/CER\_SSF1deg-Day\_$INSTANCE**

**ls -l $CERESHOME/tisa\_avg/data/SSF1deg-Day/NPP-VIIRS\_TestSuite/$year/$month/CER\_SSF1deg-Day\_$INSTANCE.met**

#### Exit Codes

0 - Normal Exit,

202 - Failure Exit.

#### Test Summary

Total Run Time: 2 minutes 42 seconds

### Evaluation Procedures

The processor will complete and create the following output data products:

The exact filenames can be found in

**$CERESHOME/tisa\_avg/data\_exp/CER10.0P5**

#### Log and Status File Results

The Error and Status Log File, **CER10.0P5\_LogReport\_$INSTANCE**, is located in directory **$CERESHOME/tisa\_avg/runlogs/CER10.0P5**.

#### Metadata Evaluation

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER10.0P5 has been executed. Metadata files are written to directories where the output data are resided.

#### Execution of Comparison Software

The delivered input files are in **$CERESHOME/tisa\_avg/data\_exp/CER10.0P5**. These input files are accessed from those areas for the comparison.

**cd $CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf/**

**./comp.csh**

### Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script which removes PGE-created files, **CleanOutput.pl**, is located in directory **$CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf**. To clean up the files for **CER10.0P5**:

**$CERESHOME/tisa\_avg/CER10.0P5/test\_suites/rcf/CleanOutput.pl CER10.0P5\_PCF\_$INSTANCE**

1. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

Acronyms and Abbreviations

ADM Angular Distribution Models

ASCII American Standard Code Information Interchange

ASDC Atmospheric Science Data Center

AVG Monthly Regional Radiative Fluxes and Clouds

CERES Clouds and the Earth’s Radiant Energy System

CERESLib CERES Library

DAAC Distributed Active Archive Center

ECS EOSDIS Core System

EOS Earth Observing System

EOS-AM EOS Morning Crossing Mission

EOSDIS EOS Data Information System

EOS-PM EOS Afternoon Crossing Mission

ERBE Earth Radiation Budget Experiment

ERBS Earth Radiation Budget Satellite

FSW Gridded Single Satellite Fluxes and Clouds and Compute Spatial Averages

GB Gigabytes

F90 Fortran 90

FOV Field-of-View

GGEO Geostationary data file

GMT Greenwich mean time

HDF Hierarchical Data Format

HDF-EOS Hierarchical Data Format - Earth Observing System

KB Kilobytes

LaRC Langley Research Center

LaTIS Langley TRMM Information System

LW Longwave

MB Megabytes

MCF Metadata Control Files

met metadata file

MM Two digit month

MOA Meteorological, Ozone, and Aerosol

N/A Not Applicable

NASA National Aeronautics and Space Administration

NOAA National Oceanic and Atmospheric Administration

PCF Process Control File

PGE Product Generation Executive

PMOA Post Meteorological, Ozone, and Aerosol

PSF Point Spread Function

QC Quality Control

SARB Surface and Atmospheric Radiation Budget

SDP Science Data Production

SFC Hourly Gridded Single Satellite TOA and Surface Fluxes and Clouds

SMF Status Message File

SRBAVG Monthly TOA and SRB Averages

SRD Software Requirements Document

SSAI Science Systems and Applications, Inc.

SW Shortwave

SYN Synoptic Radiative Fluxes and Clouds

TISA Time Interpolation and Spatial Averaging

TOA Top-of-the-Atmosphere

TRMM Tropical Rainfall Measuring Mission

TSI Time Space Interpolate

UT Universal Time