

**Clouds and the Earth's Radiant Energy System
(CERES)**

Data Management System

**CERES Instantaneous SARB
(Subsystem 5.0)**

**Release 4 Test Plan
TRMM Launch
Version 1**

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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.

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03/24/04	R3V11	515	<ul style="list-style-type: none"> • Modified description of PGE CER5.4P1. • Updated SCCR number in tar filenames. • Added filenames to list of outputs. • Modified runtimes for PGE CER5.4P1. • Added comparisons for new filenames. • Updated App. B directory structure chart. • Updated format to comply with standards. 	1.2.4 2.1 3.8.1.1 3.8.1.1.2 3.8.2.2 Appendix B All

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1.0 Introduction

The Clouds and the Earth's Radiant Energy System (CERES) is a key component of the Earth Observing System (EOS). The CERES instrument provides radiometric measurements of the Earth's atmosphere from three broadband channels: a shortwave channel (0.3 - 5 μm), a total channel (0.3 - 200 μm), and an infrared window channel (8 - 12 μm). The CERES instruments are improved models of the Earth Radiation Budget Experiment (ERBE) scanner instruments, which operated from 1984 through 1990 on the National Aeronautics and Space Administration's (NASA) Earth Radiation Budget Satellite (ERBS) and on the National Oceanic and Atmospheric Administration's (NOAA) operational weather satellites NOAA-9 and NOAA-10. The strategy of flying instruments on Sun-synchronous, polar orbiting satellites, such as NOAA-9 and NOAA-10, simultaneously with instruments on satellites that have precessing orbits in lower inclinations, such as ERBS, was successfully developed in ERBE to reduce time sampling errors. CERES continues that strategy by flying instruments on the polar orbiting EOS platforms simultaneously with an instrument on the Tropical Rainfall Measuring Mission (TRMM) spacecraft, which has an orbital inclination of 35 degrees. In addition, to reduce the uncertainty in data interpretation and to improve the consistency between the cloud parameters and the radiation fields, CERES includes cloud imager data and other atmospheric parameters. The CERES instruments fly on the TRMM spacecraft, on the EOS-AM platforms and on the EOS-PM platforms. The TRMM satellite carries one CERES instrument while the EOS satellites carry two CERES instruments, one operating in a fixed azimuth scanning mode and the other operating in a rotating azimuth scanning mode.

1.1 Document Overview

This document, the CERES Release 4 Delivery Test Plan for the CERES Instantaneous Surface and Atmospheric Radiation Budget (SARB) Subsystem (Subsystem 5.0), is part of the CERES Subsystem 5.0 Release 4 delivery package provided to the Langley Atmospheric Sciences Data Center (ASDC). It provides a description of the CERES Instantaneous SARB Subsystem Release 2 software, 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](#), a directory structure diagram is contained in [Appendix B](#), and a description of the software and data files is contained in [Appendix C](#).

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

[Appendix B](#) - Directory Structure Diagrams

[Appendix C](#) - File Description Tables

1.2 Subsystem Overview

Two PGEs are currently required for the Instantaneous SARB Subsystem. PGE CER5.1P1 is the Main-Processor, which is run on an hourly basis. Prior to processing CER 5.1P1, the monthly pre-processor, CER5.0P1, must be executed. After CER5.0P1 has processed, CER5.1P1 processes for each hour of available data for the month.

1.2.1 CER5.0P1: CERES Instantaneous SARB Subsystem Surface Albedo and Daily MODIS Aerosol Monthly Pre-Processors

PGE CER5.0P1 executes two Instantaneous SARB Subsystem pre-processors: the Instantaneous SARB Subsystem Surface Albedo Monthly Pre-Processor and the Daily MODIS Aerosol Monthly Pre-Processor.

The Instantaneous SARB Subsystem Surface Albedo Monthly Pre-Processor produces a single monthly file containing a 10-minute map of surface albedo observations from clear-sky over land FOVs. Two versions of this map are produced. The first version, HMSAL, contains only data derived from the input SSFB files, thus leaving some areas with only default data. The second file, HMPSAL, fills in those areas for which no SSF data were available with data from a default data file. It is this second nonarchival file that is used as input by PGE CER5.1P1 for each hour of the month. An ASCII QC report is also produced.

The Instantaneous SARB Subsystem Daily MODIS Aerosol Monthly Pre-Processor produces a single monthly file, HMAER, of aerosol optical depth data based on the daily MOD08 or MYD08 data files produced from the MODIS instrument. In addition to merging these daily files into a single file for the month, the Aerosol Monthly Pre-Processor also fills in data gaps that may exist for a day over a given region by interpolating data for the same region from the closest days for which data are available.

1.2.2 CER5.1P1: CERES Instantaneous SARB Subsystem Main-Processor

The Product Generation Executive (PGE) CER5.1P1 processes the CERES Instantaneous SARB Subsystem. This PGE consists of a Main-Processor and an Hierarchical Data Format (HDF) Post-Processor. The Instantaneous SARB Subsystem Main-Processor computes vertical longwave, shortwave, and window channel flux profiles that span from the surface to the top of the Earth's atmosphere for each Earth-viewing CERES Field-of-View (FOV). The primary output from the Main-Processor is the binary version of the Clouds and Radiative Swath (CRS) product, the CRS-Binary (CRSB), which contains vertical flux profile data for all FOVs processed through the SARB Main-Processor. A smaller version of the CRSB which contains data only for FOVs that coincide with the CERES Validation Regions, the CRS Validation-Binary, is also produced. The CRSVB is used by members of the CERES Science Team located at Langley for quick evaluations of the data corresponding to other experiments. An ASCII Quality Control (QC) report is also produced with each run of the Subsystem.

The CRSB serves as input for CERES Subsystem 6.0, and as input to the Instantaneous SARB Subsystem HDF Post-Processor. The HDF Post-Processor reads the CRSB product and converts the data to an HDF format, thus generating the CRS archival product for distribution outside of NASA-Langley.

1.2.3 CER5.3P1: CERES Instantaneous SARB Subsystem Monthly Post-Processor

The PGE CER5.3P1, the Instantaneous SARB Subsystem HDF Post-Processor, converts an existing CRSB into a CRS, using an executable that is routinely executed with PGE CER5.1P1. This PGE is intended to be used on an as-needed basis only, as the CRSB is converted to HDF format routinely by PGE CER5.1P1. There is no source code or executable that is unique to CER5.3P1. The ASCII filename and PCF generators, and the runscript are unique to CER5.3P1.

1.2.4 CER5.4P1: CERES Instantaneous SARB Subsystem Monthly QC Processor

The PGE CER5.4P1, the Instantaneous SARB Subsystem Monthly QC Processor, parses through a month of CRSB QC reports to produce a monthly summary table of available hours, region and footprint reports, and QC statistics plots. This PGE also validates the HDF conversion process of CER5.1P1 by converting up to five hours of CRS files back to binary and comparing the results with the corresponding CRSB files already in existence. The ASCII filename and PCF generators, and the runscript are unique to CER5.4P1.

2.0 Software and Data File Installation Procedures

This section describes how to install both the SARB library and the Subsystem 5.0 Instantaneous SARB software in preparation for making the necessary test runs at the Langley ASDC. The installation procedures include instructions for uncompressing and untarring the delivered files, properly defining environmental variables, and compiling the Instantaneous SARB programs.

2.1 Installation

Software/Data File Install Procedure:

1. The scripts, makefiles, and Process Control Files (PCF) in the Subsystem 5.0 delivery package expect the following environment variables, found in the `$CERESENV` script, to be defined:

PGSDIR	- Directory for Toolkit libraries
CERESHOME	- Top Directory for CERES Software
CERESLIB	- Directory for CERESlib
PGSINC	- Pointer to the PGS Include file directory
PGSLIB	- Directory which contains the SGI 64-bit Toolkit library file
PGSMMSG	- Directory which contains Toolkit and CERES Status Message Files
HDFDIR	- Pointer to the HDF home directory

The included makefiles for the Main-Processor (SARBlib and Instantaneous SARB-only code) redefine the following environment variables:

FCOMP	- Fortran 77 compilation flags (-O2 -c -64)
F90COMP	- SGI Fortran 90 compilation flags (use the following options: -w -O2 -c -64)

2. Change directory to the directory where you plan to install the SARB Subsystems. (The following instructions assume that the directory will be `$CERESHOME`.)
3. Uncompress and untar the SARB library and Instantaneous SARB Subsystem files:

```
uncompress InstSARB_anc_R4-541.tar.Z
tar -xf InstSARB_anc_R4-541.tar
uncompress InstSARB_data_R4-541.tar.Z
tar -xf InstSARB_data_R4-541.tar
uncompress InstSARB_src_R4-541.tar.Z
tar -xf InstSARB_src_R4-541.tar
```

4. If the delivery is a full subsystem delivery then the files from previous deliveries should be removed using the `$CERESHOME/InstSARB_OldFileRemove.csh` script before the newly untarred files are copied into the `/SSIT/CERES` directory. This script removes all of the old Instantaneous SARB files except the ones in the `$CERESHOME/sarb/data/ancillary/static/sarb` directory.

2.2 Compilation

The status message files for all three Instantaneous SARB PGEs are delivered in one directory. Software modules common to more than one PGE are contained in the SARB library. The instructions for compiling these portions of the subsystem follow. Instructions for generating the executable for PGE CER 5.0P1 are contained in [Section 2.2.1](#), and the instructions for generating the executable for PGE CER5.1P1 are contained in [Section 2.2.2](#). Note that there are no compilation-related instructions for CER5.3P1. The instructions for generating the executable for PGE CER5.4P1 are contained in [Section 2.2.3](#).

1. The Status Message Files can be made by typing:

```
cd $CERESHOME/sarb/smf/sarb  
make clean  
make
```

2. The SARB Library can be made by typing:

```
cd $CERESHOME/sarb/lib/src  
make clean -f Makefile.CRS  
make -f Makefile.CRS
```

As this is a software library, no executable is generated. The message “Warning: creating SARBlib_CRS.a” appears at the end of successful compilation. The file, **SARBlib_CRS.a**, remains in the **\$CERESHOME/sarb/lib/src** directory.

2.2.1 Compiling PGE 5.0P1

1. The Subsystem 5.0 Monthly Pre-Processor (PGE CER5.0P1) includes two executables that are made by typing:

```
cd $CERESHOME/sarb/src/sarb/press5_monthly  
make clean  
make
```

The resulting executable, **sfcalthist_drv.exe**, is stored in the directory **\$CERESHOME/sarb/bin/sarb**.

```
cd $CERESHOME/sarb/src/sarb/press5_modisaer  
make clean  
make
```

The resulting executable, **modis_aer.exe**, is stored in the directory **\$CERESHOME/sarb/bin/sarb**.

2. The PGE CER5.0P1 Comparison code executable, for use in evaluating the surface albedo history map test run results, can be made by typing:

```
cd $CERESHOME/sarb/test_suites/sarb/src/press5_monthly
make clean
make
```

The resulting executable, **Monthly_SAH_Compare.exe**, remains in the directory **\$CERESHOME/sarb/test_suites/sarb/src/press5_monthly**.

3. The PGE CER5.0P1 Comparison code executable, for use in evaluating the monthly map of gridded daily MODIS aerosol data test run results, can be made by typing:

```
cd $CERESHOME/sarb/test_suites/sarb/src/press5_modisaer
make clean
make
```

The resulting executable, **gmod_compare.exe**, remains in the directory **\$CERESHOME/sarb/test_suites/sarb/src/press5_modisaer**.

2.2.2 Compiling PGE 5.1P1

1. The Subsystem 5.1 Main-Processor executable can be made by typing:

```
cd $CERESHOME/sarb/src/sarb/mainss5
make clean
make
```

The resulting executable, **InstSARB_Drv.exe**, is stored in the directory **\$CERESHOME/sarb/bin/sarb**.

2. Execute the following to compile the comparison software for the Main-Processor output:

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5
make clean
make
```

The resulting executable, **crscomp.exe**, remains in the directory **\$CERESHOME/sarb/test_suites/sarb/src/mainss5**.

3. The HDF Post-Processor executable can be made by typing:

```
cd $CERESHOME/sarb/src/sarb/mainss5/crs_hdf
make clean
make
```

The resulting executable, **crs2hdf.exe**, is stored in the directory **\$CERESHOME/sarb/bin/sarb**.

NOTE: This is the executable that is also used by PGE CER5.3P1. There is not a separate compilation for that PGE.

4. To compile the software to compare the HDF versions of the CRS file, enter the following at the command line:.

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf
make clean
make
```

The Makefile compiles the provided C code and creates an executable, **hcmp**, that compares each Vdata and each SDS on the CRS HDF output file. This executable remains in the directory **\$CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf**.

NOTE: Ignore any warning messages regarding variables that have been declared but never referenced. In no way do these warnings affect execution of the software.

2.2.3 Compiling PGE 5.4P1

1. The Subsystem 5.4 Monthly QC Processor (PGE CER5.4P1) includes three executables that are made by typing:

```
cd $CERESHOME/sarb/src/sarb/qc_check
make clean
make
```

The resulting executable, **sarbmonqc.exe**, is stored in the directory **\$CERESHOME/sarb/bin/sarb**.

```
cd $CERESHOME/sarb/src/sarb/hdf2crsb
make clean
make
```

The resulting executable, **hdf2crsb.exe**, is stored in the directory **\$CERESHOME/sarb/bin/sarb**.

```
cd $CERESHOME/sarb/src/sarb/crsb_check
make clean
make
```

The resulting executable, **crsbcheck.exe**, is stored in the directory **\$CERESHOME/sarb/bin/sarb**.

3.0 Test and Evaluation Procedures

This section provides general information on how to execute the Subsystem 5.0 PGEs 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.

3.1 PGE CER5.0P1--Monthly Pre-Processor for TRMM only

3.1.1 Stand Alone Test Procedures

3.1.1.1 PCF Generator

The SARB Surface Albedo Monthly Pre-Processor production script, run_press5, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. This PCF for the test case is created by first executing an ASCII file generator, ascii_gen_5.0P1, and then executing the PCF generator, pcfgen_5.0P1.

For production runs, the ASCII file generator, ascii_gen_5.0P1, must be executed to create the ASCII input file for a particular production run. The ASCII file generator requires one command line argument--the date parameter, formatted as YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data. The PCF generator, pcfgen_5.0P1, is then executed using the newly created ASCII input file name as a command line argument.

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

```
cd $CERESHOME/sarb/bin/sarb
source $CERESHOME/sarb/bin/sarb/ssit-monthly-env-TRMM.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- **\$DATE = 199805**
- **\$INSTANCE = TRMM-PFM-VIRS_SSIT-Monthly_999999.199805**

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.0P1 $DATE
```

The following file will be generated in **\$CERESHOME/sarb/rcf/PCFgen/sarb**:

- **CER5.0P1_PCFin_\$INSTANCE**

2. Generate the PCF for the test case:

```
$CERESHOME/sarb/bin/sarb/pcfgen_5.0P1 CER5.0P1_PCFin_$INSTANCE
```

The following PCF will be generated in **\$CERESHOME/sarb/rcf/pcf/sarb**:

- **CER5.0P1_PCF_\$INSTANCE**

3. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

```
diff $CERESHOME/sarb/rcf/pcf/sarb/CER5.0P1_PCF_$INSTANCE
    $CERESHOME/sarb/data/out_exp/data/sarb/CER5.0P1_PCF_$INSTANCE
```

The only differences between the files should be in the directory paths where the tests were run.

3.1.1.2 Execution

Execute the production script by typing the script name, `run_press5`, followed by the name of the PCF generated by `pcfgen_5.0P1`.

```
cd $CERESHOME/sarb/bin/sarb
run_press5 CER5.0P1_PCF_$INSTANCE
```

When the run script is executed upon the command line, a shell script is sourced in order to set the various environment variables for such runtime parameters as Sampling Strategy, Production Strategy, and Configuration Code.

For TRMM processing, six files will be created by the Monthly Pre-Processor:

- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMSAL_\$INSTANCE**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMSAL_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMPSAL_\$INSTANCE**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMPSAL_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/CER_MQCSA_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/CER_MQCSA_\$INSTANCE.met**

3.1.1.3 Exit Codes

All CER5.0P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for the executable.

3.1.1.4 Test Summary

While the sizes of the input files provided for this SSI&T test case are fairly representative of what may be expected in the production environment, it should be noted that the sizes of the input files can vary, thus varying the amount of required disk space.

Total Run Time:	TBD for TRMM data
Memory:	TBD for TRMM data
Required Disk Space:	TBD for TRMM data

3.1.2 Evaluation Procedures

3.1.2.1 Log and Status File Results

The Error and Status Log Files, CER5.0P1_LogReport_\${INSTANCE} and CER5.0P1_LogStatus_\${INSTANCE} are located in directory \$CERESHOME/sarb/data/runlogs/sarb after PGE CER5.0P1 has been executed.

3.1.2.2 Metadata Evaluation

Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER5.0P1 has been executed. Compare the metadata contained in these files with the expected contents of the files with the same names found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command:

```
cd $CERESHOME/sarb/data/ancillary/dynamic/sarb
diff CER_HMSAL_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_HMSAL_${INSTANCE}.met

diff CER_HMPSAL_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_HMPSAL_${INSTANCE}.met

cd $CERESHOME/sarb/data/out_comp/qa_reports/sarb
diff CER_MQCSA_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_MQCSA_${INSTANCE}.met
```

The only differences between the files should be the production times and differences in the directory paths where the tests were run.

3.1.2.3 Execution of Comparison Software for PGE CER5.0P1

This section provides information on how to compile and execute the comparison software for PGE CER5.0P1, the Instantaneous SARB Subsystem Surface Albedo Monthly Pre-Processor.

1. Execute the following to run comparison software for PGE CER5.0P1 surface albedo history output:

```
cd $CERESHOME/sarb/test_suites/sarb/src/press5_monthly  
run_msah_compare CER_HMSAL_$INSTANCE
```

NOTE: The script run_msah_compare removes any output files left over from previous executions if they exist. If a file the script is attempting to remove does not exist, a message is written to the screen.

One file will be created:

- **\$CERESHOME/sarb/test_suites/sarb/src/press5_monthly/
CER_HMSAL_\$INSTANCE_test_suites_results**

2. Repeat the execution of the comparison software for another file produced by the monthly pre-processor:

```
run_msah_compare CER_HMPSAL_$INSTANCE
```

NOTE: The script run_msah_compare removes any output files left over from previous executions if they exist. If a file the script is attempting to remove does not exist, a message is written to the screen.

One file will be created:

- **\$CERESHOME/sarb/test_suites/sarb/src/press5_monthly/
CER_HMPSAL_\$INSTANCE_test_suites_results**

3. Compare the Quality Control Report against the expected output:

```
cd $CERESHOME/sarb/data/out_comp/qa_reports/sarb  
diff CER_MQCSA_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_MQCSA_$INSTANCE
```

The only differences should be in the Processing Date information in the Quality Control Report Header.

3.1.2.4 Evaluation of PGE CER5.0P1 Comparison Software Output

This section provides the procedure for evaluating the output from PGE CER5.0P1.

1. Examine the comparison report file for the Monthly Pre-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/press5_monthly/  
CER_HMSAL_$INSTANCE\_test_suites_results
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES

team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Steps 2 and 3.

2. Examine the second comparison report file for the Monthly Pre-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/press5_monthly/  
CER_HMPSAL_$INSTANCE\_test_suites_results
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Step 3.

3. E-mail the file `$CERESHOME/sarb/test_suites/sarb/src/press5_monthly/CER_HMSAL_$INSTANCE_test_suites_results` and `$CERESHOME/sarb/test_suites/sarb/press5_monthly/CER_HMPSAL_$INSTANCE_test_suites_results` to `ceresdmt+sarb@larc.nasa.gov@larc.nasa.gov`.

3.1.3 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb  
source $CERESHOME/sarb/bin/sarb/ssit-monthly-env-TRMM.csh  
rm_script_5.0P1 CER5.0P1_PCF_$INSTANCE
```

2. A “No match” indicates there were no files to delete during execution of a script. This message does not indicate a problem.

3.2 PGE CER5.0P1--Monthly Pre-Processor for Terra

3.2.1 Stand Alone Test Procedures

3.2.1.1 PCF Generator

The SARB Surface Albedo Monthly Pre-Processor production script, run_press5, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. This PCF for the test case is created by first executing an ASCII file generator, ascii_gen_5.0P1, and then executing the PCF generator, pcfgen_5.0P1.

For production runs, the ASCII file generator, ascii_gen_5.0P1, must be executed to create the ASCII input file for a particular production run. The ASCII file generator requires one command line argument--the date parameter, formatted as YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data. The PCF generator, pcfgen_5.0P1, is then executed using the newly created ASCII input file name as a command line argument.

1. Link the SSFB, MOA, and MODIS input files to the appropriate input directories by typing:

```
cd $CERESHOME/sarb/data/input/sarb  
sarb_datalink_200202.csh
```

Warning messages may state that the files cannot be created because they already exist. These messages can be ignored.

2. Copy the SSFB input files provided with this delivery to the directories to which the PCF is pointing by typing:

```
cd $CERESHOME/sarb/data/input/sarb  
CER5.0P1_InputFileMover.csh copyfiles
```

3. Generate the ASCII input file for the Terra test case:

```
cd $CERESHOME/sarb/bin/sarb  
source $CERESHOME/sarb/bin/sarb/ssit-monthly-env-Terra.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- **\$DATE = 200202**
- **\$INSTANCE = Terra-FM1-MODIS_SSIT_999999.200202**

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.0P1 $DATE
```

The following file will be generated in **\$CERESHOME/sarb/rcf/PCFgen/sarb**:

- **CER5.0P1_PCFin_\$INSTANCE**

4. Generate the PCF for the test case:

\$CERESHOME/sarb/bin/sarb/pcfgen_5.0P1 CER5.0P1_PCFin_\$INSTANCE

The following PCF will be generated in **\$CERESHOME/sarb/rcf/pcf/sarb**:

- **CER5.0P1_PCF_\$INSTANCE**

5. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

**diff \$CERESHOME/sarb/rcf/pcf/sarb/CER5.0P1_PCF_\$INSTANCE
\$CERESHOME/sarb/data/out_exp/data/sarb/CER5.0P1_PCF_\$INSTANCE**

The only differences between the files should be in the directory paths where the tests were run.

3.2.1.2 Execution

Execute the production script by typing the script name, `run_press5`, followed by the name of the PCF generated by `pcfgen_5.0P1`.

```
cd $CERESHOME/sarb/bin/sarb  
run_press5 CER5.0P1_PCF_$INSTANCE
```

When the run script is executed upon the command line, a shell script is sourced in order to set the various environment variables for such runtime parameters as Sampling Strategy, Production Strategy, and Configuration Code.

Eight files will be created by the Monthly Pre-Processor:

- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMSAL_\$INSTANCE**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/
CER_HMSAL_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/
CER_HMPSAL_\$INSTANCE**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/
CER_HMPSAL_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMAER_\$INSTANCE**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/
CER_HMAER_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/
CER_MQCSA_\$INSTANCE**

- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/
CER_MQCSA_\$INSTANCE.met**

3.2.1.3 Exit Codes

All CER5.0P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for the executable.

3.2.1.4 Test Summary

While the sizes of the input files provided for this SSI&T test case are fairly representative of what may be expected in the production environment, it should be noted that the sizes of the input files can vary, thus varying the amount of required disk space.

Please note that the run time for this test is not typical for this PGE. Typical run times are on the order of 3 or 4 hours.

Total Run Time:	2 minutes
Memory:	40864 k
Required Disk Space:	167971.53 MB

3.2.2 Evaluation Procedures

3.2.2.1 Log and Status File Results

The Error and Status Log Files, CER5.0P1_LogReport_\$INSTANCE and CER5.0P1_LogStatus_\$INSTANCE are located in directory \$CERESHOME/sarb/data/runlogs/sarb after PGE CER5.0P1 has been executed.

3.2.2.2 Metadata Evaluation

Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER5.0P1 has been executed. Compare the metadata contained in these files with the expected contents of the files with the same names found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command:

```
cd $CERESHOME/sarb/data/ancillary/dynamic/sarb
diff CER_HMSAL_$INSTANCE.met $CERESHOME/sarb/data/out_exp/data/
sarb/CER_HMSAL_$INSTANCE.met
```

```
diff CER_HMPSAL_$INSTANCE.met $CERESHOME/sarb/data/out_exp/data/
sarb/CER_HMPSAL_$INSTANCE.met
```

```
diff CER_HMAER_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/
sarb/CER_HMAER_${INSTANCE}.met
```

```
cd $CERESHOME/sarb/data/out_comp/qa_reports/sarb
diff CER_MQCSA_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/
sarb/CER_MQCSA_${INSTANCE}.met
```

The only differences between the files should be the production times and differences in the directory paths where the tests were run.

3.2.2.3 Execution of Comparison Software for PGE CER5.0P1

This section provides information on how to compile and execute the comparison software for PGE CER5.0P1, the Instantaneous SARB Subsystem Surface Albedo Monthly Pre-Processor.

1. Execute the following to run comparison software for PGE CER5.0P1 output:

```
cd $CERESHOME/sarb/test_suites/sarb/src/press5_monthly
run_msah_compare CER_HMSAL_${INSTANCE}
```

NOTE: The script run_msah_compare removes any output files left over from previous executions if they exist. If a file the script is attempting to remove does not exist, a message is written to the screen.

One file will be created:

- \$CERESHOME/sarb/test_suites/sarb/src/press5_monthly/
CER_HMSAL_\${INSTANCE}_test_suites_results

2. Repeat the execution of the comparison software for another file produced by the monthly pre-processor:

```
run_msah_compare CER_HMPSAL_${INSTANCE}
```

NOTE: The script run_msah_compare removes any output files left over from previous executions if they exist. If a file the script is attempting to remove does not exist, a message is written to the screen.

One file will be created:

- \$CERESHOME/sarb/test_suites/sarb/src/press5_monthly/
CER_HMPSAL_\${INSTANCE}_test_suites_results

3. Execute the following to run comparison software for PGE CER5.0P1 aerosol history output:

```
cd $CERESHOME/sarb/test_suites/sarb/src/press5_modisaer
run_gmod_compare CER_HMAER_${INSTANCE}
```

One file will be created:

- **\$CERESHOME/sarb/test_suites/sarb/src/press5_modisaer/
CompareResults_CER_HMAER_\$INSTANCE**

4. Compare the Quality Control Report against the expected output:

```
cd $CERESHOME/sarb/data/out_comp/qa_reports/sarb  
diff CER_MQCSA_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_MQCSA_$INSTANCE
```

The only differences should be in the Processing Date information in the Quality Control Report Header.

3.2.2.4 Evaluation of PGE CER5.0P1 Comparison Software Output

This section provides the procedure for evaluating the output from PGE CER5.0P1.

1. Examine the comparison report file for the Monthly Pre-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/press5_monthly/  
CER_HMSAL_$INSTANCE\_test_suites_results
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Steps 2, 3, and 4.

2. Examine the second comparison report file for the Monthly Pre-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/press5_monthly/  
CER_HMPSAL_$INSTANCE\_test_suites_results
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Steps 3 and 4.

3. Examine the third comparison report file for the Monthly Pre-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/press5_modisaer/  
CompareResults_CER_HMAER_$INSTANCE
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Step 4.

4. E-mail the file `$CERESHOME/sarb/test_suites/sarb/src/press5_monthly/CER_HMSAL_${INSTANCE}_test_suites_results` and `$CERESHOME/sarb/test_suites/sarb/press5_monthly/CER_HMPSAL_${INSTANCE}_test_suites_results` to `ceresdmt+sarb@larc.nasa.gov`.

3.2.3 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb  
source $CERESHOME/sarb/bin/sarb/ssit-monthly-env-Terra.csh  
rm_script_5.0P1 CER5.0P1_PCF_${INSTANCE}
```

A “No match” indicates there were no files to delete during execution of a script. This message does not indicate a problem.

3.3 PGE CER5.0P1--Monthly Pre-Processor for Aqua

3.3.1 Stand Alone Test Procedures

3.3.1.1 PCF Generator

The SARB Surface Albedo Monthly Pre-Processor production script, run_press5, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. This PCF for the test case is created by first executing an ASCII file generator, ascii_gen_5.0P1, and then executing the PCF generator, pcfgen_5.0P1.

For production runs, the ASCII file generator, ascii_gen_5.0P1, must be executed to create the ASCII input file for a particular production run. The ASCII file generator requires one command line argument--the date parameter, formatted as YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data. The PCF generator, pcfgen_5.0P1, is then executed using the newly created ASCII input file name as a command line argument.

1. Link the SSFB, MOA, and MODIS input files to the appropriate input directories by typing:

```
cd $CERESHOME/sarb/data/input/sarb  
sarb_datalink_200307.csh
```

Warning messages may state that the files cannot be created because they already exist. These messages can be ignored.

2. Copy the SSFB input files provided with this delivery to the directories to which the PCF is pointing by typing:

```
cd $CERESHOME/sarb/data/input/sarb  
CER5.0P1_InputFileMover.csh copyfiles
```

3. Generate the ASCII input file for the Aqua test case:

```
cd $CERESHOME/sarb/bin/sarb  
source $CERESHOME/sarb/bin/sarb/ssit-monthly-env-Aqua.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- **\$DATE = 200307**
- **\$INSTANCE = Aqua-FM3-MODIS_SSIT_999999.200307**

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.0P1 $DATE
```

The following file will be generated in **\$CERESHOME/sarb/rcf/PCFgen/sarb**:

- **CER5.0P1_PCFin_\$INSTANCE**

4. Generate the PCF for the test case:

\$CERESHOME/sarb/bin/sarb/pcfgen_5.0P1 CER5.0P1_PCFin_\$INSTANCE

The following PCF will be generated in **\$CERESHOME/sarb/rcf/pcf/sarb**:

- **CER5.0P1_PCF_\$INSTANCE**

5. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

```
diff $CERESHOME/sarb/rcf/pcf/sarb/CER5.0P1_PCF_$INSTANCE
    $CERESHOME/sarb/data/out_exp/data/sarb/CER5.0P1_PCF_$INSTANCE
```

The only differences between the files should be in the directory paths where the tests were run.

3.3.1.2 Execution

Execute the production script by typing the script name, `run_press5`, followed by the name of the PCF generated by `pcfgen_5.0P1`.

```
cd $CERESHOME/sarb/bin/sarb
run_press5 CER5.0P1_PCF_$INSTANCE
```

When the run script is executed upon the command line, a shell script is sourced in order to set the various environment variables for such runtime parameters as Sampling Strategy, Production Strategy, and Configuration Code.

Eight files will be created by the Monthly Pre-Processor:

- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMSAL_\$INSTANCE**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMSAL_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMPSAL_\$INSTANCE**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMPSAL_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMAER_\$INSTANCE**
- **\$CERESHOME/sarb/data/ancillary/dynamic/sarb/CER_HMAER_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/CER_MQCSA_\$INSTANCE**

- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/
CER_MQCSA_\$INSTANCE.met**

3.3.1.3 Exit Codes

All CER5.0P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for the executable.

3.3.1.4 Test Summary

While the sizes of the input files provided for this SSI&T test case are fairly representative of what may be expected in the production environment, it should be noted that the sizes of the input files can vary, thus varying the amount of required disk space.

Please note that the Aqua test case for this delivery will have a very short run time (2 minutes) due to unavailability of Aqua SSFB data at this time. Typical run times are on the order of 3 to 4 hours.

Total Run Time:	2 minutes
Memory:	40976 k
Required Disk Space:	167971.53 MB

3.3.2 Evaluation Procedures

3.3.2.1 Log and Status File Results

The Error and Status Log Files, CER5.0P1_LogReport_\$INSTANCE and CER5.0P1_LogStatus_\$INSTANCE are located in directory \$CERESHOME/sarb/data/runlogs/sarb after PGE CER5.0P1 has been executed.

3.3.2.2 Metadata Evaluation

Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER5.0P1 has been executed. Compare the metadata contained in these files with the expected contents of the files with the same names found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command:

```
cd $CERESHOME/sarb/data/ancillary/dynamic/sarb
diff CER_HMSAL_$INSTANCE.met $CERESHOME/sarb/data/out_exp/data/
sarb/CER_HMSAL_$INSTANCE.met
diff CER_HMPSAL_$INSTANCE.met $CERESHOME/sarb/data/out_exp/data/
sarb/CER_HMPSAL_$INSTANCE.met
```

```
diff CER_HMAER_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/
sarb/CER_HMAER_${INSTANCE}.met
```

```
cd $CERESHOME/sarb/data/out_comp/qa_reports/sarb
diff CER_MQCSA_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/
sarb/CER_MQCSA_${INSTANCE}.met
```

The only differences between the files should be the production times and differences in the directory paths where the tests were run.

3.3.2.3 Execution of Comparison Software for PGE CER5.0P1

This section provides information on how to compile and execute the comparison software for PGE CER5.0P1, the Instantaneous SARB Subsystem Surface Albedo Monthly Pre-Processor.

1. Execute the following to run comparison software for PGE CER5.0P1 output:

```
cd $CERESHOME/sarb/test_suites/sarb/src/press5_monthly
run_msah_compare CER_HMSAL_${INSTANCE}
```

NOTE: The script run_msah_compare removes any output files left over from previous executions if they exist. If a file the script is attempting to remove does not exist, a message is written to the screen.

One file will be created:

- **\$CERESHOME/sarb/test_suites/sarb/src/press5_monthly/
CER_HMSAL_\${INSTANCE}_test_suites_results**

2. Repeat the execution of the comparison software for another file produced by the monthly pre-processor:

```
run_msah_compare CER_HMPSAL_${INSTANCE}
```

NOTE: The script run_msah_compare removes any output files left over from previous executions if they exist. If a file the script is attempting to remove does not exist, a message is written to the screen.

One file will be created:

- **\$CERESHOME/sarb/test_suites/sarb/src/press5_monthly/
CER_HMPSAL_\${INSTANCE}_test_suites_results**

3. Execute the following to run comparison software for PGE CER5.0P1 aerosol history output:

```
cd $CERESHOME/sarb/test_suites/sarb/src/press5_modisaer
run_gmod_compare CER_HMAER_${INSTANCE}
```

One file will be created:

- **\$CERESHOME/sarb/test_suites/sarb/src/press5_modisaer/
CompareResults_CER_HMAER_\$INSTANCE**

4. Compare the Quality Control Report against the expected output:

```
cd $CERESHOME/sarb/data/out_comp/qa_reports/sarb  
diff CER_MQCSA_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_MQCSA_$INSTANCE
```

The only differences should be in the Processing Date information in the Quality Control Report Header.

3.3.2.4 Evaluation of PGE CER5.0P1 Comparison Software Output

This section provides the procedure for evaluating the output from PGE CER5.0P1.

1. Examine the comparison report file for the Monthly Pre-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/press5_monthly/  
CER_HMSAL_$INSTANCE\_test_suites_results
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Steps 2, 3, and 4.

2. Examine the second comparison report file for the Monthly Pre-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/press5_monthly/  
CER_HMPSAL_$INSTANCE\_test_suites_results
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Steps 3 and 4.

3. Examine the third comparison report file for the Monthly Pre-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/press5_modisaer/  
CompareResults_CER_HMAER_$INSTANCE
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Step 4.

4. E-mail the file `$CERESHOME/sarb/test_suites/sarb/src/press5_monthly/CER_HMSAL_${INSTANCE}_test_suites_results` and `$CERESHOME/sarb/test_suites/sarb/press5_monthly/CER_HMPSAL_${INSTANCE}_test_suites_results` to `ceresdmt+sarb@larc.nasa.gov`.

3.3.3 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb  
source $CERESHOME/sarb/bin/sarb/ssit-monthly-env-Aqua.csh  
rm_script_5.0P1 CER5.0P1_PCF_${INSTANCE}
```

A “No match” indicates there were no files to delete during execution of a script. This message does not indicate a problem.

3.4 PGE CER5.1P1--Main-Processor TRMM Test Case

3.4.1 Stand Alone Test Procedures

The Main-Processor production script, runsarb, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF is created by first executing an ASCII file generator, ascii_gen_5.1P1, and then executing the PCF generator, pcfgen_5.1P1.

In the production environment, ascii_gen_5.1P1 and pcfgen_5.1P1 must be executed to create the PCF for each production run. The ASCII file generator, ascii_gen_5.1P1, requires one command line argument--the date parameter, formatted as YYYYMMDDHH, where YYYY is the 4-digit year, MM is the 2-digit month, DD is the 2-digit day and HH is the 2-digit hour of the data. The PCF generator, pcfgen_5.1P1, is then executed using the newly created ASCII input file name as a command line argument. Execute the production script by typing the script name, runsarb, followed by the name of the PCF generated by pcfgen_5.1P1.

3.4.1.1 PCF Generation and Execution

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

```
cd $CERESHOME/sarb/bin/sarb
source $CERESHOME/sarb/bin/sarb/ssit-main-env-TRMM.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- **\$DATE = 1998050100**
- **\$INSTANCE = TRMM-PFM-VIRS_SSIT_999999.1998050100**

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.1P1 $DATE
```

The following file will be generated in **\$CERESHOME/sarb/rcf/PCFgen/sarb**:

- **CER5.1P1_PCFin_\$INSTANCE**

2. Generate the PCF for the test case:

```
cd $CERESHOME/sarb/bin/sarb
$CERESHOME/sarb/bin/sarb/pcfgen_5.1P1 CER5.1P1_PCFin_$INSTANCE
```

The following PCF will be generated in **\$CERESHOME/sarb/rcf/pcf/sarb**:

- **CER5.1P1_PCF_\$INSTANCE**

3. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

```
diff $CERESHOME/sarb/rcf/pcf/sarb/CER5.1P1_PCF_$INSTANCE
    $CERESHOME/sarb/data/out_exp/data/sarb/CER5.1P1_PCF_$INSTANCE
```

The only differences between the files should be in the directory paths where the tests were run.

4. Copy the SSFA input files provided with this delivery to the directories to which the PCF is pointing by typing:

```
cd $CERESHOME/sarb/data/input/sarb
    CER5.1P1_InputFileMover.csh copyfiles
```

5. Execute the Full-Hour Mode test case by typing:

```
cd $CERESHOME/sarb/bin/sarb
    runsarb CER5.1P1_PCF_$INSTANCE
```

Six files will be created by the Main-Processor:

- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSB_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSB_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSVB_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSVB_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/**
CER_HQCR_\$INSTANCE
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/**
CER_HQCR_\$INSTANCE.met

Two files will be created by the HDF Post-Processor:

- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE.met**

3.4.1.1.1 Exit Codes

All CER5.1P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the two executables.

3.4.1.1.2 Test Summary

Total Run Time:	TBD for TRMM data
Memory:	TBD for TRMM data
Required Disk Space:	TBD for TRMM data

3.4.1.2 Metadata Evaluation

Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER5.1P1 has been executed. Compare the metadata contained in these files with the expected contents of the files with the same names found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command.

The only differences between the files should be the production times and differences in the directory paths where the tests were run.

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/
  CER_CRSB_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_CRSB_${INSTANCE}.met
```

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/
  CER_CRSVB_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_CRSVB_${INSTANCE}.met
```

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_${INSTANCE}.met
  $CERESHOME/sarb/data/out_exp/data/sarb/CER_CRS_${INSTANCE}.met
```

```
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/
  CER_HQCR_${INSTANCE}.met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_HQCR_${INSTANCE}.met
```

3.4.1.3 Execution of Comparison Software for the Main-Processor

This section provides information on how to compile and execute the comparison software for the Instantaneous SARB Subsystem 5.1.

1. Execute the following to compare the binary output from the Main-Processor Full-Hour Mode test case. Note that this software does not compare the HDF version of the CRS.

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5
run_crsb_compare CER_CRSB_${INSTANCE}
```

One file will be created:

- \$CERESHOME/sarb/test_suites/sarb/src/mainss5/
CER_CRSB_\${INSTANCE}_test_suites_results

NOTE: The message “lib-4961 : WARNING” is repeated many times during the execution of this code. The cause is currently unknown. The results do not appear to be affected, however.

NOTE: The script `run_crsb_compare` removes any output files left over from previous executions if they exist. If a file the script is attempting to remove does not exist, a message is written to the screen.

2. Compare the Quality Control Report for the Mode against the expected output:

First, try to remove old output files IF they exist:

```
cd $CERESHOME/sarb/data/out_exp/data/sarb
rm CER5.1P1_MainQC_FullHour_diff
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/
  CER_HQCR_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_HQCR_$INSTANCE > $CERESHOME/sarb/data/out_exp/data/sarb/
  CER5.1P1_MainQC_FullHour_diff
```

The only differences should be in the Processing Date information in the Quality Control Report Header. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm.

3.4.1.4 Execution of Comparison Software for the HDF Post-Processor

Execute comparison software for the test case

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf
run_crshdf_compare CER_CRS_$INSTANCE > CER5.1P1_FullOut
```

3.4.1.5 Evaluation of Main-Processor Comparison Software Output

This section provides the procedure for evaluating the output from the Instantaneous SARB Subsystem 5.1.

1. Examine the comparison report files for the Main-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/mainss5/
  CER_CRSB_$INSTANCE\_test_suites_results
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Step 2.

2. E-mail the files `$CERESHOME/sarb/test_suites/sarb/mainss5/CER_CRSB_$INSTANCE.Diag` and `$CERESHOME/sarb/data/out_exp/sarb/CER5.1P1_MainQC_FullHour_diff` to `ceresdmt+sarb@larc.nasa.gov`.

3.4.1.6 Evaluation of the CRS HDF Product

1. During the executions of the HDF Post-Processor, if the SDS data or Vdata field data on the newly created HDF file, `$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_$INSTANCE` matches the data on the provided CRS HDF file of the same name on `$CERESHOME/sarb/data/out_exp/data/sarb`, 'OK.' is appended to the end of the output line as follows:

```
Comparing SDS "....." data... OK.
or
Comparing Vfield "....." data... OK.
```

The only differences between the two HDF output files should be the dates on Vfields: "CRS_DATE" on the "CRS_Header_Vdata" Vdata and "CERPRODUCTIONDATETIME" on the "CERES_metadata" Vdata. If CERESLIB has changed, the date may be different in the "LOCALVERSIONID" on the "CERES_metadata" Vdata. Another possible acceptable difference is in the "INST_SARBVER" Vdata.

- To examine the output produced by the HDF Post-Processor for the Full-Hour Mode, type

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf
more CER5.1P1_FullOut
```

3.4.2 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb
```

For the Full-Hour Mode test case:

```
source $CERESHOME/sarb/bin/sarb/ssit-main-env-TRMM.csh
rm_script_5.1P1 CER5.1P1_PCF_$INSTANCE
```

2. Environment variables, FCOMP and F90COMP, must be set to the following SGI compiler options for the Main-Processor:

```
setenv F90COMP '-w -O2 -c -64'
setenv FCOMP '-O2 -c -64'
```

3. Environment variables, FCOMP and F90COMP, must be set to the following SGI compiler options for the HDF Post-Processor:

```
setenv F90COMP '-O -c -64 -OPT:fold_arith_limit=1122'
setenv FCOMP '-O -c -64'
```

Compiler warnings will be generated and runtime problems may occur if these compiler options are not properly set.

4. Environment variables, HDFLIB and HDFINC, must point to the NAG 32-bit Toolkit directories during evaluation of the CRS HDF product. These variables must point to the SGI 64-bit Toolkit directories during all other testing procedures.
5. A “No match” indicates there were no files to delete during execution of a script. This message does not indicate a problem.

3.5 PGE CER5.1P1--Main-Processor Terra Test Case

3.5.1 Stand Alone Test Procedures

The Main-Processor production script, runsarb, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF is created by first executing an ASCII file generator, ascii_gen_5.1P1, and then executing the PCF generator, pcfgen_5.1P1.

In the production environment, ascii_gen_5.1P1 and pcfgen_5.1P1 must be executed to create the PCF for each production run. The ASCII file generator, ascii_gen_5.1P1, requires one command line argument--the date parameter, formatted as YYYYMMDDHH, where YYYY is the 4-digit year, MM is the 2-digit month, DD is the 2-digit day and HH is the 2-digit hour of the data. The PCF generator, pcfgen_5.1P1, is then executed using the newly created ASCII input file name as a command line argument. Execute the production script by typing the script name, runsarb, followed by the name of the PCF generated by pcfgen_5.1P1.

Since the Main-Processor can execute in two different modes, as discussed in [Section 1.2.2](#), a test case for each mode is provided.

3.5.1.1 PCF Generation and Execution

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

```
cd $CERESHOME/sarb/bin/sarb
source $CERESHOME/sarb/bin/sarb/ssit-main-env-Terra.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- **\$DATE = 2002021600**
- **\$INSTANCE = Terra-FM1-MODIS_SSIT_999999.2002021600**

```
$CERESHOME/sarb/bin/sarb/rm_script_5.1P1 CER5.1P1_PCF_$INSTANCE
```

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.1P1 $DATE
```

The following file will be generated in **\$CERESHOME/sarb/rcf/PCFgen/sarb**:

- **CER5.1P1_PCFin_\$INSTANCE**

2. Generate the PCF for the test case:

```
cd $CERESHOME/sarb/bin/sarb
$CERESHOME/sarb/bin/sarb/pcfgen_5.1P1 CER5.1P1_PCFin_$INSTANCE
```

The following PCF will be generated in **\$CERESHOME/sarb/rcf/pcf/sarb:**

- **CER5.1P1_PCF_\$INSTANCE**

3. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

```
diff $CERESHOME/sarb/rcf/pcf/sarb/CER5.1P1_PCF_$INSTANCE
    $CERESHOME/sarb/data/out_exp/data/sarb/CER5.1P1_PCF_$INSTANCE
```

The only differences between the files should be in the directory paths where the tests were run.

4. Copy the SSFA input files provided with this delivery to the directories to which the PCF is pointing by typing:

```
cd $CERESHOME/sarb/data/input/sarb
CER5.1P1_InputFileMover.csh copyfiles
```

5. Execute the Full-Hour Mode test case by typing:

```
cd $CERESHOME/sarb/bin/sarb
runsarb CER5.1P1_PCF_$INSTANCE
```

Six files will be created by the Main-Processor:

- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSB_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSB_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSVB_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSVB_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/**
CER_HQCR_\$INSTANCE
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/**
CER_HQCR_\$INSTANCE.met

Two files will be created by the HDF Post-Processor:

- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE.met**

3.5.1.1.1 Exit Codes

All CER5.1P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the two executables.

3.5.1.1.2 Test Summary

Total Run Time:	2:43 Hours
Memory:	115296 k
Required Disk Space:	1364.55 MB

3.5.2 Evaluation Procedures

3.5.2.1 Log and Status File Results

The Error and Status Log Files for the Full-Hour Mode test case, CER5.1P1_LogReport_\$(INSTANCE) and CER5.1P1_LogStatus_\$(INSTANCE) are located in directory \$CERESHOME/sarb/data/runlogs/sarb after PGE CER5.1P1 has been executed.

3.5.2.2 Metadata Evaluation

Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER5.1P1 has been executed. Compare the metadata contained in these files with the expected contents of the files with the same names found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command:

The only differences between the files should be the production times and differences in the directory paths where the tests were run.

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/
  CER_CRSB_$(INSTANCE).met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_CRSB_$(INSTANCE).met
```

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/
  CER_CRSVB_$(INSTANCE).met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_CRSVB_$(INSTANCE).met
```

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_$(INSTANCE).met
  $CERESHOME/sarb/data/out_exp/data/sarb/CER_CRS_$(INSTANCE).met
```

```
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/
  CER_HQCR_$(INSTANCE).met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_HQCR_$(INSTANCE).met
```

3.5.2.3 Execution of Comparison Software for the Main-Processor

This section provides information on how to compile and execute the comparison software for the Instantaneous SARB Subsystem 5.1.

1. Execute the following to compare the binary output from the Main-Processor test case. Note that this software does not compare the HDF version of the CRS.

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5  
run_crsb_compare CER_CRSB_$INSTANCE
```

One file will be created:

- **\$CERESHOME/sarb/test_suites/sarb/src/mainss5/
CER_CRSB_\$INSTANCE_test_suites_results**

NOTE: The message “lib-4961 : WARNING” is repeated many times during the execution of this code. The cause is currently unknown. The results do not appear to be affected, however.

NOTE: The script run_crsb_compare removes any output files left over from previous executions if they exist. If a file the script is attempting to remove does not exist, a message is written to the screen.

2. Compare the Quality Control Report for the Full-Hour Mode against the expected output:

First, try to remove old output files IF they exist:

```
cd $CERESHOME/sarb/data/out_exp/data/sarb  
rm CER5.1P1_MainQC_FullHour_diff  
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/  
CER_HQCR_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_HQCR_$INSTANCE > $CERESHOME/sarb/data/out_exp/data/sarb/  
CER5.1P1_MainQC_FullHour_diff
```

Examine the output file:

```
more $CERESHOME/sarb/data/out_exp/data/sarb/  
CER5.1P1_MainQC_FullHour_diff
```

The only differences should be in the Processing Date information in the Quality Control Report Header. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm.

3.5.2.4 Execution of Comparison Software for the HDF Post-Processor

Execute comparison software for the test case:

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf  
run_crshdf_compare CER_CRS_$INSTANCE > CER5.1P1_FullOut
```

3.5.2.5 Evaluation of Main-Processor Comparison Software Output

This section provides the procedure for evaluating the output from the Instantaneous SARB Subsystem 5.1.

1. Examine the comparison report files for the Main-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/mainss5/  
CER_CRSB_${INSTANCE}\_test_suites_results
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Step 2.

2. E-mail the files `$CERESHOME/sarb/test_suites/sarb/src/mainss5/CER_CRSB_${INSTANCE}.Diag`, and `$CERESHOME/sarb/data/out_exp/data/sarb/CER5.1P1_MainQC_FullHour_diff` to `ceresdmt+sarb@larc.nasa.gov@larc.nasa.gov`.

3.5.2.6 Evaluation of the CRS HDF Product

1. During the executions of the HDF Post-Processor, if the SDS data or Vdata field data on the newly created HDF file, `$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSB_${INSTANCE}` matches the data on the provided CRS HDF file of the same name on `$CERESHOME/sarb/data/out_exp/data/sarb`, 'OK.' is appended to the end of the output line as follows:

```
Comparing SDS "....." data... OK.  
or  
Comparing Vfield "....." data... OK.
```

The only differences between the two HDF output files should be the dates on Vfields: "CRS_DATE" on the "CRS_Header_Vdata" Vdata and "CERPRODUCTIONDATETIME" on the "CERES_metadata" Vdata. If CERESLIB has changed, the date may be different in the "LOCALVERSIONID" on the "CERES_metadata" Vdata. Another possible acceptable difference is in the "INST_SARBVER" Vdata.

To examine the output produced by the HDF Post-Processor for the Full-Hour Mode, type

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf  
more CER5.1P1_FullOut
```

3.5.3 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb  
rm_script_5.1P1 CER5.1P1_PCF_$INSTANCE
```

2. Environment variables, FCOMP and F90COMP, must be set to the following SGI compiler options for the Main-Processor:

```
setenv F90COMP '-w -O2 -c -64'  
setenv FCOMP '-O2 -c -64'
```

3. Environment variables, FCOMP and F90COMP, must be set to the following SGI compiler options for the HDF Post-Processor:

```
setenv F90COMP '-O -c -64 -OPT:fold_arith_limit=1122'  
setenv FCOMP '-O -c -64'
```

Compiler warnings will be generated and runtime problems may occur if these compiler options are not properly set.

4. Environment variables, HDFLIB and HDFINC, must point to the NAG 32-bit Toolkit directories during evaluation of the CRS HDF product. These variables must point to the SGI 64-bit Toolkit directories during all other testing procedures.
5. A "No match" indicates there were no files to delete during execution of a script. This message does not indicate a problem.

3.6 PGE CER5.1P1--Main-Processor Aqua Test Case

3.6.1 Stand Alone Test Procedures

The Main-Processor production script, runsarb, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF is created by first executing an ASCII file generator, ascii_gen_5.1P1, and then executing the PCF generator, pcfgen_5.1P1.

In the production environment, ascii_gen_5.1P1 and pcfgen_5.1P1 must be executed to create the PCF for each production run. The ASCII file generator, ascii_gen_5.1P1, requires one command line argument--the date parameter, formatted as YYYYMMDDHH, where YYYY is the 4-digit year, MM is the 2-digit month, DD is the 2-digit day and HH is the 2-digit hour of the data. The PCF generator, pcfgen_5.1P1, is then executed using the newly created ASCII input file name as a command line argument. Execute the production script by typing the script name, runsarb, followed by the name of the PCF generated by pcfgen_5.1P1.

Since the Main-Processor can execute in two different modes, as discussed in [Section 1.2.2](#), a test case for each mode is provided.

3.6.1.1 PCF Generation and Execution

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

```
cd $CERESHOME/sarb/bin/sarb
source $CERESHOME/sarb/bin/sarb/ssit-main-env-Aqua.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- **\$DATE = 2003070100**
- **\$INSTANCE = Aqua-FM3-MODIS_SSIT_999999.2003070100**

```
$CERESHOME/sarb/bin/sarb/rm_script_5.1P1 CER5.1P1_PCF_$INSTANCE
```

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.1P1 $DATE
```

The following file will be generated in **\$CERESHOME/sarb/rcf/PCFgen/sarb**:

- **CER5.1P1_PCFin_\$INSTANCE**

2. Generate the PCF for the test case:

```
cd $CERESHOME/sarb/bin/sarb
$CERESHOME/sarb/bin/sarb/pcfgen_5.1P1 CER5.1P1_PCFin_$INSTANCE
```

The following PCF will be generated in **\$CERESHOME/sarb/rcf/pcf/sarb:**

- **CER5.1P1_PCF_\$INSTANCE**

3. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

```
diff $CERESHOME/sarb/rcf/pcf/sarb/CER5.1P1_PCF_$INSTANCE
    $CERESHOME/sarb/data/out_exp/data/sarb/CER5.1P1_PCF_$INSTANCE
```

The only differences between the files should be in the directory paths where the tests were run.

4. Copy the SSFA input files provided with this delivery to the directories to which the PCF is pointing by typing:

```
cd $CERESHOME/sarb/data/input/sarb
CER5.1P1_InputFileMover.csh copyfiles
```

5. Execute the Full-Hour Mode test case by typing:

```
cd $CERESHOME/sarb/bin/sarb
runsarb CER5.1P1_PCF_$INSTANCE
```

Six files will be created by the Main-Processor:

- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSB_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSB_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSVB_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSVB_\$INSTANCE.met**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/**
CER_HQCR_\$INSTANCE
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/**
CER_HQCR_\$INSTANCE.met

Two files will be created by the HDF Post-Processor:

- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE.met**

3.6.1.1.1 Exit Codes

All CER5.1P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the two executables.

3.6.1.1.2 Test Summary

Total Run Time:	2:43 Hours
Memory:	115296 k
Required Disk Space:	1364.55 MB

3.6.2 Evaluation Procedures

3.6.2.1 Log and Status File Results

The Error and Status Log Files for the Full-Hour Mode test case, CER5.1P1_LogReport_\$(INSTANCE) and CER5.1P1_LogStatus_\$(INSTANCE) are located in directory \$CERESHOME/sarb/data/runlogs/sarb after PGE CER5.1P1 has been executed.

3.6.2.2 Metadata Evaluation

Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER5.1P1 has been executed. Compare the metadata contained in these files with the expected contents of the files with the same names found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command:

The only differences between the files should be the production times and differences in the directory paths where the tests were run.

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/
  CER_CRSB_$(INSTANCE).met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_CRSB_$(INSTANCE).met
```

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/
  CER_CRSVB_$(INSTANCE).met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_CRSVB_$(INSTANCE).met
```

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_$(INSTANCE).met
  $CERESHOME/sarb/data/out_exp/data/sarb/CER_CRS_$(INSTANCE).met
```

```
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/
  CER_HQCR_$(INSTANCE).met $CERESHOME/sarb/data/out_exp/data/sarb/
  CER_HQCR_$(INSTANCE).met
```

3.6.2.3 Execution of Comparison Software for the Main-Processor

This section provides information on how to compile and execute the comparison software for the Instantaneous SARB Subsystem 5.1.

1. Execute the following to compare the binary output from the Main-Processor test case. Note that this software does not compare the HDF version of the CRS.

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5  
run_crsb_compare CER_CRSB_$INSTANCE
```

One file will be created:

- **\$CERESHOME/sarb/test_suites/sarb/src/mainss5/
CER_CRSB_\$INSTANCE_test_suites_results**

NOTE: The message “lib-4961 : WARNING” is repeated many times during the execution of this code. The cause is currently unknown. The results do not appear to be affected, however.

NOTE: The script run_crsb_compare removes any output files left over from previous executions if they exist. If a file the script is attempting to remove does not exist, a message is written to the screen.

2. Compare the Quality Control Report for the Full-Hour Mode against the expected output:

First, try to remove old output files IF they exist:

```
cd $CERESHOME/sarb/data/out_exp/data/sarb  
rm CER5.1P1_MainQC_FullHour_diff  
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/  
CER_HQCR_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_HQCR_$INSTANCE > $CERESHOME/sarb/data/out_exp/data/sarb/  
CER5.1P1_MainQC_FullHour_diff
```

Examine the output file:

```
more $CERESHOME/sarb/data/out_exp/data/sarb/  
CER5.1P1_MainQC_FullHour_diff
```

The only differences should be in the Processing Date information in the Quality Control Report Header. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm.

3.6.2.4 Execution of Comparison Software for the HDF Post-Processor

Execute comparison software for the test case:

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf  
run_crshdf_compare CER_CRS_$INSTANCE > CER5.1P1_FullOut
```

3.6.2.5 Evaluation of Main-Processor Comparison Software Output

This section provides the procedure for evaluating the output from the Instantaneous SARB Subsystem 5.1.

1. Examine the comparison report files for the Main-Processor:

```
more $CERESHOME/sarb/test_suites/sarb/src/mainss5/  
CER_CRSB_${INSTANCE}\_test_suites_results
```

If all goes well, there will be a line indicating that no mismatches were found when comparing the results produced by the Langley ASDC with those produced by the CERES team. Some mismatches might occur due to computer precision, thus, there is no need for immediate alarm. Just perform Step 2.

2. E-mail the files `$CERESHOME/sarb/test_suites/sarb/src/mainss5/CER_CRSB_${INSTANCE}.Diag`, and `$CERESHOME/sarb/data/out_exp/data/sarb/CER5.1P1_MainQC_FullHour_diff` to `ceresdmt+sarb@larc.nasa.gov@larc.nasa.gov`.

3.6.2.6 Evaluation of the CRS HDF Product

1. During the executions of the HDF Post-Processor, if the SDS data or Vdata field data on the newly created HDF file, `$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRSB_${INSTANCE}` matches the data on the provided CRS HDF file of the same name on `$CERESHOME/sarb/data/out_exp/data/sarb`, 'OK.' is appended to the end of the output line as follows:

```
Comparing SDS "....." data... OK.  
or  
Comparing Vfield "....." data... OK.
```

The only differences between the two HDF output files should be the dates on Vfields: "CRS_DATE" on the "CRS_Header_Vdata" Vdata and "CERPRODUCTIONDATETIME" on the "CERES_metadata" Vdata. If CERESLIB has changed, the date may be different in the "LOCALVERSIONID" on the "CERES_metadata" Vdata. Another possible acceptable difference is in the "INST_SARBVER" Vdata.

To examine the output produced by the HDF Post-Processor for the Full-Hour Mode, type

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf  
more CER5.1P1_FullOut
```

3.6.3 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb  
rm_script_5.1P1 CER5.1P1_PCF_$INSTANCE
```

2. Environment variables, FCOMP and F90COMP, must be set to the following SGI compiler options for the Main-Processor:

```
setenv F90COMP '-w -O2 -c -64'  
setenv FCOMP '-O2 -c -64'
```

3. Environment variables, FCOMP and F90COMP, must be set to the following SGI compiler options for the HDF Post-Processor:

```
setenv F90COMP '-O -c -64 -OPT:fold_arith_limit=1122'  
setenv FCOMP '-O -c -64'
```

Compiler warnings will be generated and runtime problems may occur if these compiler options are not properly set.

4. Environment variables, HDFLIB and HDFINC, must point to the NAG 32-bit Toolkit directories during evaluation of the CRS HDF product. These variables must point to the SGI 64-bit Toolkit directories during all other testing procedures.
5. A "No match" indicates there were no files to delete during execution of a script. This message does not indicate a problem.

3.7 PGE CER5.3P1--HDF Post-Processor TRMM Test Case

3.7.1 Stand Alone Test Procedures

The HDF Post-Processor production script, `runsarb_post`, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF is created by first executing an ASCII file generator, `ascii_gen_5.3P1`, and then executing the PCF generator, `pcfgen_5.3P1`.

In the production environment, `ascii_gen_5.3P1` and `pcfgen_5.3P1` must be executed to create the PCF for each production run. The ASCII file generator, `ascii_gen_5.3P1`, requires one command line argument--the date parameter, formatted as YYYYMMDDHH, where YYYY is the 4-digit year, MM is the 2-digit month, DD is the 2-digit day and HH is the 2-digit hour of the data. The PCF generator, `pcfgen_5.3P1`, is then executed using the newly created ASCII input file name as a command line argument. Execute the production script by typing the script name, `runsarb_post`, followed by the name of the PCF generated by `pcfgen_5.3P1`.

3.7.1.1 PCF Generation and Execution

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

```
cd $CERESHOME/sarb/bin/sarb
source $CERESHOME/sarb/bin/sarb/ssit-post-env-TRMM.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- **\$DATE = 1998050100**
- **\$INSTANCE = TRMM-PFM-VIRS_SSIT_999999.1998050100**

```
$CERESHOME/sarb/bin/sarb/rm_script_5.3P1 CER5.3P1_PCF_$INSTANCE
```

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.3P1 $DATE
```

The following file will be generated in `$CERESHOME/sarb/rcf/PCFgen/sarb`:

- **CER5.3P1_PCFin_\$INSTANCE**

2. Generate the PCF for the test case:

```
cd $CERESHOME/sarb/bin/sarb
$CERESHOME/sarb/bin/sarb/pcfgen_5.3P1 CER5.3P1_PCFin_$INSTANCE
```

The following PCF will be generated in `$CERESHOME/sarb/rcf/pcf/sarb`:

- **CER5.3P1_PCF_\$INSTANCE**

3. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

```
diff $CERESHOME/sarb/rcf/pcf/sarb/CER5.3P1_PCF_$INSTANCE
    $CERESHOME/sarb/data/out_exp/data/sarb/CER5.3P1_PCF_$INSTANCE
```

The only differences between the files should be in the directory paths where the tests were run.

4. Execute the test case by typing:

```
cd $CERESHOME/sarb/bin/sarb
runsarb_post CER5.3P1_PCF_$INSTANCE
```

Two files will be created by the HDF Post-Processor:

- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE.met**

3.7.1.1.1 Exit Codes

All CER5.3P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0.

3.7.1.1.2 Test Summary

Total Run Time:	1:42 Minutes
Memory:	157928 k
Required Disk Space:	346 MB

3.7.1.2 Metadata Evaluation

Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER5.3P1 has been executed. Compare the metadata contained in these files with the expected contents of the files with the same names found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command.

The only differences between the files should be the production times and differences in the directory paths where the tests were run.

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_$INSTANCE.met
    $CERESHOME/sarb/data/out_exp/data/sarb/CER_CRS_$INSTANCE.met
```

3.7.1.3 Execution of Comparison Software for the HDF Post-Processor

Execute comparison software for the test case

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf
run_crshdf_compare CER_CRS_${INSTANCE} > CER5.3P1_FullOut
```

3.7.1.4 Evaluation of the CRS HDF Product

1. During the executions of the HDF Post-Processor, if the SDS data or Vdata field data on the newly created HDF file, \$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\${INSTANCE} matches the data on the provided CRS HDF file of the same name on \$CERESHOME/sarb/data/out_exp/data/sarb, 'OK.' is appended to the end of the output line as follows:

```
Comparing SDS "....." data... OK.
or
Comparing Vfield "....." data... OK.
```

The only differences between the two HDF output files should be the dates on Vfields: "CRS_DATE" on the "CRS_Header_Vdata" Vdata and "CERPRODUCTIONDATETIME" on the "CERES_metadata" Vdata. If CERESLIB has changed, the date may be different in the "LOCALVERSIONID" on the "CERES_metadata" Vdata. Another possible acceptable difference is in the "INST_SARBVER" Vdata.

To examine the output produced by the HDF Post-Processor, type

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf
more CER5.3P1_FullOut
```

3.7.2 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb
```

For the test case:

```
source $CERESHOME/sarb/bin/sarb/ssit-post-env-TRMM.csh
rm_script_5.3P1 CER5.3P1_PCF_${INSTANCE}
```

2. Environment variables, HDFLIB and HDFINC, must point to the NAG 32-bit Toolkit directories during evaluation of the CRS HDF product. These variables must point to the SGI 64-bit Toolkit directories during all other testing procedures.

3. A “No match” indicates there were no files to delete during execution of a script. This message does not indicate a problem.

3.8 PGE CER5.3P1--HDF Post-Processor Terra Test Case

3.8.1 Stand Alone Test Procedures

The HDF Post-Processor production script, `runsarb_post`, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF is created by first executing an ASCII file generator, `ascii_gen_5.3P1`, and then executing the PCF generator, `pcfgen_5.3P1`.

In the production environment, `ascii_gen_5.3P1` and `pcfgen_5.3P1` must be executed to create the PCF for each production run. The ASCII file generator, `ascii_gen_5.3P1`, requires one command line argument--the date parameter, formatted as `YYYYMMDDHH`, where `YYYY` is the 4-digit year, `MM` is the 2-digit month, `DD` is the 2-digit day and `HH` is the 2-digit hour of the data. The PCF generator, `pcfgen_5.3P1`, is then executed using the newly created ASCII input file name as a command line argument. Execute the production script by typing the script name, `runsarb`, followed by the name of the PCF generated by `pcfgen_5.3P1`.

3.8.1.1 PCF Generation and Execution

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

```
cd $CERESHOME/sarb/bin/sarb
source $CERESHOME/sarb/bin/sarb/ssit-post-env-Terra.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- `$DATE = 2001071200`
- `$INSTANCE = Terra-FM1-MODIS_SSIT_999999.2001071200`

```
$CERESHOME/sarb/bin/sarb/rm_script_5.3P1 CER5.3P1_PCF_$INSTANCE
```

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.3P1 $DATE
```

The following file will be generated in `$CERESHOME/sarb/rcf/PCFgen/sarb`:

- `CER5.3P1_PCFin_$INSTANCE`

2. Generate the PCF for the test case:

```
cd $CERESHOME/sarb/bin/sarb
$CERESHOME/sarb/bin/sarb/pcfgen_5.3P1 CER5.3P1_PCFin_$INSTANCE
```

The following PCF will be generated in `$CERESHOME/sarb/rcf/pcf/sarb`:

- `CER5.3P1_PCF_$INSTANCE`

3. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

```
diff $CERESHOME/sarb/rcf/pcf/sarb/CER5.3P1_PCF_$INSTANCE
    $CERESHOME/sarb/data/out_exp/data/sarb/CER5.3P1_PCF_$INSTANCE
```

The only differences between the files should be in the directory paths where the tests were run.

4. Copy the SSFA input file provided with this delivery to the directory to which the PCF is pointing by typing:

```
cd $CERESHOME/sarb/data/input/sarb
    CER5.3P1_InputFileMover.csh copyfiles
```

5. Execute the test case by typing:

```
cd $CERESHOME/sarb/bin/sarb
    runsarb_post CER5.3P1_PCF_$INSTANCE
```

Two files will be created by the HDF Post-Processor:

- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_\$INSTANCE.met**

3.8.1.1.1 Exit Codes

All CER5.3P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0.

3.8.1.1.2 Test Summary

Total Run Time:	2:34 Minutes
Memory:	207808 k
Required Disk Space:	345.20 MB

3.8.2 Evaluation Procedures

3.8.2.1 Log and Status File Results

The Error and Status Log Files for the test case, CER5.3P1_LogReport_\$INSTANCE and CER5.3P1_LogStatus_\$INSTANCE are located in directory \$CERESHOME/sarb/data/runlogs/sarb after PGE CER5.3P1 has been executed.

3.8.2.2 Metadata Evaluation

Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER5.3P1 has been executed. Compare the metadata contained in these files with the expected contents of the files with the same names found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command:

The only differences between the files should be the production times and differences in the directory paths where the tests were run.

```
diff $CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_${INSTANCE}.met
    $CERESHOME/sarb/data/out_exp/data/sarb/CER_CRS_${INSTANCE}.met
```

3.8.2.3 Execution of Comparison Software for the HDF Post-Processor

Execute comparison software for the test case:

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf
run_crshdf_compare CER_CRS_${INSTANCE} > CER5.3P1_FullOut
```

3.8.2.4 Evaluation of the CRS HDF Product

1. During the executions of the HDF Post-Processor, if the SDS data or Vdata field data on the newly created HDF file, \$CERESHOME/sarb/data/out_comp/data/sarb/CER_CRS_Terra-FM2-MODIS_SSIT_999999.2001071200 matches the data on the provided CRS HDF file of the same name on \$CERESHOME/sarb/data/out_exp/data/sarb, 'OK.' is appended to the end of the output line as follows:

```
Comparing SDS "....." data... OK.
or
Comparing Vfield "....." data... OK.
```

The only differences between the two HDF output files should be the dates on Vfields: "CRS_DATE" on the "CRS_Header_Vdata" Vdata and "CERPRODUCTIONDATETIME" on the "CERES_metadata" Vdata. If CERESLIB has changed, the date may be different in the "LOCALVERSIONID" on the "CERES_metadata" Vdata. Another possible acceptable difference is in the "INST_SARBVER" Vdata.

To examine the output produced by the HDF Post-Processor, type

```
cd $CERESHOME/sarb/test_suites/sarb/src/mainss5/crs_hdf
more CER5.3P1_FullOut
```

3.8.3 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb  
rm_script_5.3P1 CER5.3P1_PCF_${INSTANCE}
```

Environment variables, HDFLIB and HDFINC, must point to the NAG 32-bit Toolkit directories during evaluation of the CRS HDF product. These variables must point to the SGI 64-bit Toolkit directories during all other testing procedures.

2. A “No match” indicates there were no files to delete during execution of a script. This message does not indicate a problem.

3.9 PGE CER5.4P1--Monthly QC Processor for Terra

3.9.1 Stand Alone Test Procedures

The Monthly QC Processor production script, `run_postss5`, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF is created by first executing an ASCII file generator, `ascii_gen_5.4P1`, and then executing the PCF generator, `pcfgen_5.4P1`.

In the production environment, `ascii_gen_5.4P1` and `pcfgen_5.4P1` must be executed to create the PCF for each production run. The ASCII file generator, `ascii_gen_5.4P1`, requires one command line argument--the date parameter, formatted as `YYYYMM`, where `YYYY` is the 4-digit year and `MM` is the 2-digit month. The PCF generator, `pcfgen_5.4P1`, is then executed using the newly created ASCII input file name as a command line argument. Execute the production script by typing the script name, `run_postss5`, followed by the name of the PCF generated by `pcfgen_5.4P1`.

3.9.1.1 PCF Generation and Execution

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

```
cd $CERESHOME/sarb/bin/sarb
source $CERESHOME/sarb/bin/sarb/ssit-qc-env-Terra.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- `$DATE = 200212`
- `$INSTANCE = Terra-FM1-MODIS_SSIT_999999.200212`

```
$CERESHOME/sarb/bin/sarb/rm_script_5.4P1 CER5.4P1_PCF_$INSTANCE
```

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.4P1 $DATE
```

The following file will be generated in `$CERESHOME/sarb/rcf/PCFgen/sarb`:

- `CER5.4P1_PCFin_$INSTANCE`

2. Generate the PCF for the test case:

```
cd $CERESHOME/sarb/bin/sarb
$CERESHOME/sarb/bin/sarb/pcfgen_5.4P1 CER5.4P1_PCFin_$INSTANCE
```

The following PCF will be generated in `$CERESHOME/sarb/rcf/pcf/sarb`:

- `CER5.4P1_PCF_$INSTANCE`

3. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

```
diff $CERESHOME/sarb/rcf/pcf/sarb/CER5.4P1_PCF_$INSTANCE
    $CERESHOME/sarb/data/out_exp/data/sarb/CER5.4P1_PCF_$INSTANCE
```

The only differences between the files should be in the directory paths where the tests were run.

4. Execute the test case by typing:

```
cd $CERESHOME/sarb/bin/sarb
run_postss5 CER5.4P1_PCF_$INSTANCE
```

Four files will be created by the Monthly QC Processor:

- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/CER_HMQCR_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/CER_HMRV_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/CER_HMAVAIL_\$INSTANCE**
- **\$CERESHOME/sarb/data/out_comp/qa_reports/sarb/CER_HQCP_\$INSTANCE.tar.gz**

3.9.1.1.1 Exit Codes

All CER5.4P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0.

3.9.1.1.2 Test Summary

Total Run Time:	7:48 Minutes
Memory:	22392 k
Required Disk Space:	1353 MB

3.9.2 Evaluation Procedures

3.9.2.1 Log and Status File Results

The Error and Status Log Files for the test case, CER5.4P1_LogReport_\$INSTANCE and CER5.4P1_LogStatus_\$INSTANCE are located in directory \$CERESHOME/sarb/data/runlogs/sarb after PGE CER5.4P1 has been executed.

3.9.2.2 Output Evaluation

Compare the output file with the expected contents of the file with the same name found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command:

```
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/  
CER_HMAVAIL_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_HMAVAIL_$INSTANCE
```

```
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/  
CER_HMRV_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_HMRV_$INSTANCE
```

```
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/  
CER_HMQCR_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_HMQCR_$INSTANCE
```

The only difference between the files should be the date when the reports were generated.

3.9.3 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb  
rm_script_5.4P1 CER5.4P1_PCF_$INSTANCE
```

Environment variables, HDFLIB and HDFINC, must point to the NAG 32-bit Toolkit directories during evaluation of the CRS HDF product. These variables must point to the SGI 64-bit Toolkit directories during all other testing procedures.

2. A “No match” indicates there were no files to delete during execution of a script. This message does not indicate a problem.

3.10 PGE CER5.4P1--Monthly QC Processor for Aqua

3.10.1 Stand Alone Test Procedures

The Monthly QC Processor production script, run_postss5, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF is created by first executing an ASCII file generator, ascii_gen_5.4P1, and then executing the PCF generator, pcfgen_5.4P1.

In the production environment, ascii_gen_5.4P1 and pcfgen_5.4P1 must be executed to create the PCF for each production run. The ASCII file generator, ascii_gen_5.4P1, requires one command line argument--the date parameter, formatted as YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month. The PCF generator, pcfgen_5.4P1, is then executed using the newly created ASCII input file name as a command line argument. Execute the production script by typing the script name, run_postss5, followed by the name of the PCF generated by pcfgen_5.4P1.

3.10.1.1 PCF Generation and Execution

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

```
cd $CERESHOME/sarb/bin/sarb
source $CERESHOME/sarb/bin/sarb/ssit-qc-env-Aqua.csh
```

Sourcing the Latis environment file sets the Date and Instance variables:

- **\$DATE = 200212**
- **\$INSTANCE = Aqua-FM3-MODIS_SSIT_999999.200212**

```
$CERESHOME/sarb/bin/sarb/rm_script_5.4P1 CER5.4P1_PCF_$INSTANCE
```

Execute the ASCII file generator:

```
$CERESHOME/sarb/bin/sarb/ascii_gen_5.4P1 $DATE
```

The following file will be generated in **\$CERESHOME/sarb/rcf/PCFgen/sarb**:

- **CER5.4P1_PCFin_\$INSTANCE**

2. Generate the PCF for the test case:

```
cd $CERESHOME/sarb/bin/sarb
$CERESHOME/sarb/bin/sarb/pcfgen_5.4P1 CER5.4P1_PCFin_$INSTANCE
```

The following PCF will be generated in **\$CERESHOME/sarb/rcf/pcf/sarb**:

- **CER5.4P1_PCF_\$INSTANCE**

3. Compare the PCF for the test case with the PCF provided in this delivery, using the diff command:

```
diff $CERESHOME/sarb/rcf/pcf/sarb/CER5.4P1_PCF_${INSTANCE}
    $CERESHOME/sarb/data/out_exp/data/sarb/CER5.4P1_PCF_${INSTANCE}
```

The only differences between the files should be in the directory paths where the tests were run.

4. Execute the test case by typing:

```
cd $CERESHOME/sarb/bin/sarb
run_postss5 CER5.4P1_PCF_${INSTANCE}
```

Four files will be created by the Monthly QC Processor:

- \$CERESHOME/sarb/data/out_comp/qa_reports/sarb/
CER_HMQCR_\${INSTANCE}
- \$CERESHOME/sarb/data/out_comp/qa_reports/sarb/
CER_HMRV_\${INSTANCE}
- \$CERESHOME/sarb/data/out_comp/qa_reports/sarb/
CER_HMAVAIL_\${INSTANCE}
- \$CERESHOME/sarb/data/out_comp/qa_reports/sarb/
CER_HQCP_\${INSTANCE}.tar.gz

3.10.1.1.1 Exit Codes

All CER5.4P1 software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0.

3.10.1.1.2 Test Summary

Total Run Time:	7:48 Minutes
Memory:	22392 k
Required Disk Space:	1353 MB

3.10.2 Evaluation Procedures

3.10.2.1 Log and Status File Results

The Error and Status Log Files for the test case, CER5.4P1_LogReport_\${INSTANCE} and CER5.4P1_LogStatus_\${INSTANCE} are located in directory \$CERESHOME/sarb/data/runlogs/sarb after PGE CER5.4P1 has been executed.

3.10.2.2 Output Evaluation

Compare the output file with the expected contents of the file with the same name found in directory \$CERESHOME/sarb/data/out_exp/data/sarb, using the diff command:

```
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/  
CER_HMAVAIL_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_HMAVAIL_$INSTANCE
```

```
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/  
CER_HMRV_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_HMRV_$INSTANCE
```

```
diff $CERESHOME/sarb/data/out_comp/qa_reports/sarb/  
CER_HMQCR_$INSTANCE $CERESHOME/sarb/data/out_exp/data/sarb/  
CER_HMQCR_$INSTANCE
```

The only difference between the files should be the date when the reports were generated.

3.10.3 Solutions to Possible Problems

1. All output files must be deleted or renamed in order to run the production software properly again. To use the provided script, type the following:

```
cd $CERESHOME/sarb/bin/sarb  
rm_script_5.4P1 CER5.4P1_PCF_$INSTANCE
```

Environment variables, HDFLIB and HDFINC, must point to the NAG 32-bit Toolkit directories during evaluation of the CRS HDF product. These variables must point to the SGI 64-bit Toolkit directories during all other testing procedures.

2. A “No match” indicates there were no files to delete during execution of a script. This message does not indicate a problem.

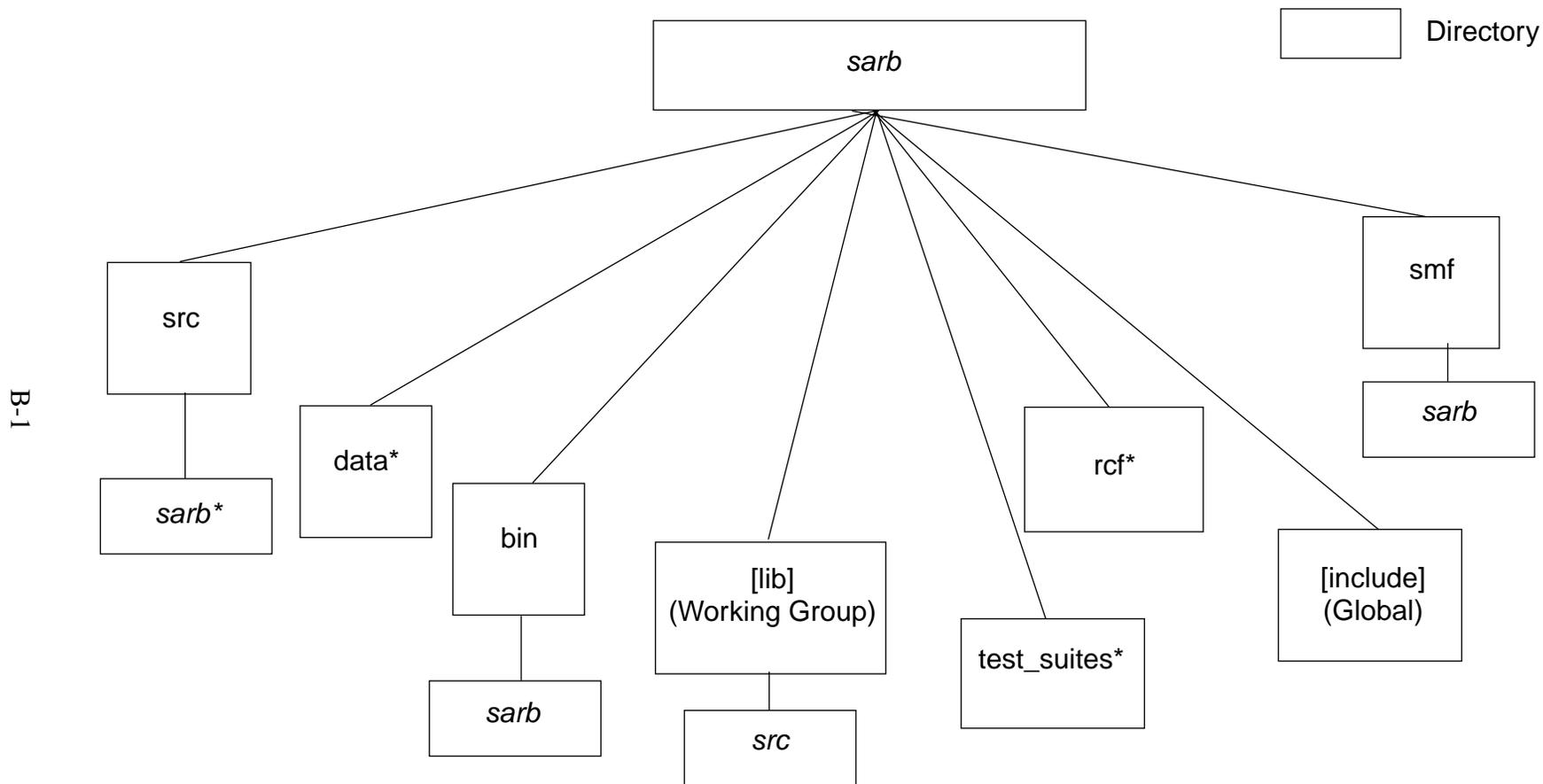
Appendix A

Acronyms and Abbreviations

ASDC	Atmospheric Sciences Data Center
CERES	Clouds and the Earth's Radiant Energy System
CERESlib	CERES library
CRS	Clouds and Radiation Swath
CRSB	Clouds and Radiation Swath Binary
DAAC	Distributed Active Archive Center
DRIVTAB	Derivative Table
EOS	Earth Observing System
EOS-AM	EOS Morning Crossing Mission
EOS-PM	EOS Afternoon Crossing Mission
ERBE	Earth Radiation Budget Experiment
ERBS	Earth Radiation Budget Satellite
FOV	Field-of-View
GFDL	Geophysical Fluid Dynamics Laboratory
HDF	Hierarchical Data Format
LaTIS	Langley TRMM Information System
MCF	Metadata Control Files
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
PCF	Process Control File
PGE	Product Generation Executive
QC	Quality Control
SAH	Surface Albedo History
SARB	Surface and Atmospheric Radiation Budget
SCF	Science Computing Facility
SMF	Status Message Facility
TRMM	Tropical Rainfall Measuring Mission

Appendix B Directory Structure Diagrams

BREAKDOWN OF THE INSTANTANEOUS SARB DIRECTORY STRUCTURE



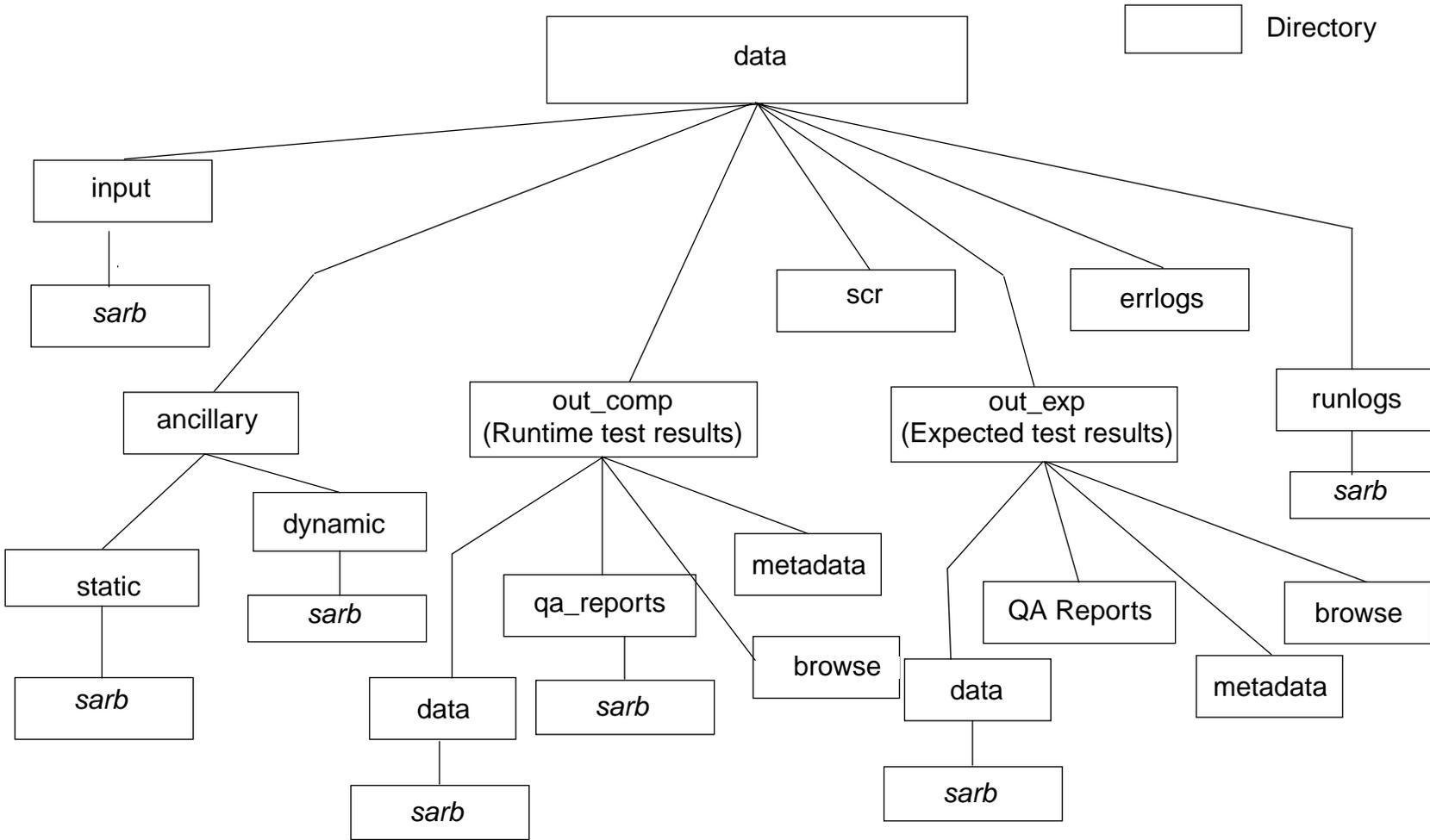
Italicized names are dependent on delivered software

*Breakdown of subdirectories shown on following pages

Names in brackets [] are optional files or directories

Figure B-1. Instantaneous SARB Directory Structure (1 of 3)

BREAKDOWN OF A DATA DIRECTORY



Italicized names are dependent on delivered software

Figure B-1. Instantaneous SARB Directory Structure (2 of 3)

B-2

Appendix C File Description Tables

C.1 Production Scripts and Executables

Table C.1-1. Production Scripts

File Name	Format	Description
ascii_gen_5.1P1	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by both the Main-Processor and the HDF Post-Processor
ascii_gen_5.2P1	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by the Surface Albedo Daily Pre-Processor
ascii_gen_5.3P1	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by the Monthly HDF Post Processor
ascii_gen_5.0P1	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by the Surface Albedo Monthly Pre-Processor
ascii_gen_5.4P1	ASCII	C-Shell script which creates the PCF generator's ASCII file needed by the Monthly QC Processor
pcfgen_5.1P1	ASCII	C-Shell script which creates the PCF for both the Main-Processor and the HDF Post-Processor
pcfgen_5.2P1	ASCII	C-Shell script which creates the PCF for the Surface Albedo Daily Pre-Processor
pcfgen_5.3P1	ASCII	C-Shell script which creates the PCF for the Monthly HDF Post Processor
pcfgen_5.0P1	ASCII	C-Shell script which creates the PCF for the Surface Albedo Monthly Pre-Processor
pcfgen_5.4P1	ASCII	C-Shell script which creates the PCF for the Monthly QC Processor
runsarb	ASCII	C-Shell script which executes both the Main-Processor and the HDF Post-Processor
runsarb_post	ASCII	C-Shell script which executes the HDF Post-Processor
run_press5	ASCII	C-Shell script which executes the Surface Albedo Monthly Pre-Processor
run_postss5	ASCII	C-Shell script which executes the Monthly QC Processor

Table C.1-2. Executables

File Name	Format	Description
InstSARB_Drv.exe ¹	Binary	Main-Processor executable
crs2hdf.exe ¹	Binary	HDF Post-Processor executable
modis_aer.exe	Binary	MODIS Aerosol map executable
sfcalbhist_drv.exe	Binary	Surface Albedo Monthly Pre-Processor executable
sarbmonqc.exe	Binary	Monthly QC Processor executable
hdf2crsb.exe	Binary	HDF to binary conversion executable
crsbcheck.exe	Binary	CRSB comparison executable

1. These files will be generated on execution of Subsystem software and are not included in the tar file.

C.2 Processing Control Files (PCF), Metadata Control Files (MCF) and Status Message Files (SMF)

The Process Control Files are not included in the Software Delivery Package. They will be created by the PCF generator scripts.

Table C.2-1. Metadata Control Files

File Name	Format	Description
mcf_sarbgc	ODL	MCF for Binary QC Report for Main-Processor
mcf_sarbhdf	ODL	MCF for CRS's HDF file for HDF Post-Processor
mcf_sarb	ODL	MCF for Binary CRS file for Main-Processor
mcf_monthly_aer	ODL	MCF for MODIS Aerosol file for MODIS Pre-Processor
mcf_daily_sah	ODL	MCF for Daily Surface Albedo files for Surface Albedo Pre-Processor
mcf_monthly_sahprod	ODL	MCF for Monthly Surface Albedo files for Surface Albedo Monthly Pre-Processor--production use
mcf_monthly_sahcurr	ODL	MCF for Monthly Surface Albedo files for Surface Albedo Monthly Pre-Processor--SSF data only
mcf_monthly_sahqc	ODL	MCF for Monthly Surface Albedo files for Surface Albedo Monthly Pre-Processor Quality Control Report

Table C.2-2. Process Control Files

File Name	Format	Description
CER5.1P1_PCF_TRMM-PFM-VIRS_SSIT_999999.1998050100 ¹	ASCII	Process Control File for Main-Processor - Full-Hour Mode
CER5.1P1_PCF_TRMM-PFM-VIRS_SubsetSSIT_999999.1998050101 ¹	ASCII	Process Control File for Main-Processor - Subset Mods
CER5.3P1_PCF_TRMM-PFM-VIRS_SSIT-New_999999.19980501	ASCII	Process Control File for HDF Post-Processor
CER5.0P1_PCF_TRMM-PFM-VIRS_SSIT-Monthly_999999.199805 ¹	ASCII	Process Control File template for Surface Albedo Monthly Pre-Processor
CER5.4P1_PCF_TRMM-PFM-VIRS_SSIT-Monthly_999999.199805 ¹	ASCII	Process Control File template for Monthly QC Processor

1. These files will be generated on execution of Subsystem software and are not included in the tar file.

Table C.2-3. Status Message Files (SMF) (1 of 2)

File Name	Format	Directory	Description
ANCINIT_25725.t	ASCII	smf/sarb	Toolkit Message File
PGS_25725 ¹	ASCII	PGS_message/sarb	Toolkit Message File
FLSALUT_25724.t	ASCII	smf/sarb	Toolkit Message File
PGS_25724 ¹	ASCII	PGS_message/sarb	Toolkit Message File
GADSAER_25715.t	ASCII	smf/sarb	Toolkit Message File
PGS_25715 ¹	ASCII	PGS_message/sarb	Toolkit Message File
GFDLAER_25716.t	ASCII	smf/sarb	Toolkit Message File
PGS_25716 ¹	ASCII	PGS_message/sarb	Toolkit Message File
HCMOCNALB_225723.t	ASCII	smf/sarb	Toolkit Message File
PGS_225723 ¹	ASCII	PGS_message/sarb	Toolkit Message File
IGBPUTIL_25721.t	ASCII	smf/sarb	Toolkit Message File
PGS_25721 ¹	ASCII	PGS_message/sarb	Toolkit Message File
INITSARB_25701.t	ASCII	smf/sarb	Toolkit Message File
PGS_25701 ¹	ASCII	PGS_message/sarb	Toolkit Message File
MSFCALBIO_25722.t	ASCII	smf/sarb	Toolkit Message File
PGS_25722 ¹	ASCII	PGS_message/sarb	Toolkit Message File
PGS_INGEST_25702.t	ASCII	smf/sarb	Toolkit Message File
PGS_25702 ¹	ASCII	PGS_message/sarb	Toolkit Message File
PGS_SIGMALOAD_25703.t	ASCII	smf/sarb	Toolkit Message File
PGS_25703 ¹	ASCII	PGS_message/sarb	Toolkit Message File
PGS_TUNEDRV_25704.t	ASCII	smf/sarb	Toolkit Message File
PGS_25704 ¹	ASCII	PGS_message/sarb	Toolkit Message File
PGS_FLXRANGE_25705.t	ASCII	smf/sarb	Toolkit Message File
PGS_25705 ¹	ASCII	PGS_message/sarb	Toolkit Message File
PGS_FLMODEL_25706.t	ASCII	smf/sarb	Toolkit Message File
PGS_25706 ¹	ASCII	PGS_message/sarb	Toolkit Message File

Table C.2-3. Status Message Files (SMF) (2 of 2)

File Name	Format	Directory	Description
SARBMETA_25726.t	ASCII	smf/sarb	Toolkit Message File
PGS_25726 ¹	ASCII	PGS_message/sarb	Toolkit Message File
PGS_MODISAERRD_25751.t		smf/sarb	Toolkit Message File
PGS_25751		PGS_message/sarb	Toolkit Message File
SARBIOUTIL_25750.t		smf/sarb	Toolkit Message File
PGS_25750		PGS_message/sarb	Toolkit Message File
SSFAAOT_25727.t		smf/sarb	Toolkit Message File
PGS_25727		PGS_message/sarb	Toolkit Message File
PGS_SFCALBCALC_25707.t	ASCII	smf/sarb	Toolkit Message File
PGS_25707 ¹	ASCII	PGS_message/sarb	Toolkit Message File
PGS_SFCALBINGEST_25708.t	ASCII	smf/sarb	Toolkit Message File
PGS_25708 ¹	ASCII	PGS_message/sarb	Toolkit Message File
PGS_DERIVLOAD_25709.t	ASCII	smf/sarb	Toolkit Message File
PGS_25709 ¹	ASCII	PGS_message/sarb	Toolkit Message File
PGS_WRAPSARB_25710.t	ASCII	smf/sarb	Toolkit Message File
PGS_25710 ¹	ASCII	PGS_message/sarb	Toolkit Message File
postproc_mod_26513.t	ASCII	smf/sarb	Toolkit Message File
PGS_26513	ASCII	PGS_message/sarb	Toolkit Message File

1. These files will be generated on execution of Subsystem software and are not included in the tar file.

C.3 Ancillary Input Data

Table C.3-1. Ancillary Input Data

File Name	Format	Description	Static/Dynamic
SS5_DrivTab_19990315	Binary	Derivative tables	Static
IGBP_Ver3.0	Binary	IGBP map	Static
SigTab_Instantaneous_20040625	ASCII	Sigma tables	Static
ControlFile_20040625	ASCII	Control parameters for CER5.1P1	Static
CollinsAer_1998TRMM_Ver3.0	Binary	Collins-based assimilated aerosol climatology	Static
SS5_HuCoxMunk_OcnAlb	Binary	Coefficients for Hu-Cox-Munk surface albedo over ocean retrieval	Static
SS5_ZJin_OcnAlb_20031101	Binary	Coefficients for Zhonghai Jin surface albedo over ocean retrieval	Static
SS5_GFDLAerClim_200006	Binary	Geophysical Fluid Dynamics Laboratory (GFDL) Aerosol climatology	Static
flsa0404_lut.2s.coef	Binary	Surface Albedo look up table for Fu-Liou model	Static
flsa3_lut.4s.coef_19991215	Binary	Surface Albedo look up table for Fu-Liou model	Static
flsa4_lut.2s.coef_19991215	Binary	Surface Albedo look up table for Fu-Liou model	Static
MATCH_TERRA_AOTS_MODIS. yyyymmdd (in match_aot/match_aots_yyyyymm/)	Binary	Match aerosol data for Terra processing	Static
MATCH_TERRA_AOTS_CLIM_ MODIS.mm (in match_aot)	Binary	Match climatology aerosol data for Terra processing	Static

C.4 Output Temporary Data Files (Production Results)

Table C.4-1. Output Temporary Data Files

File Name	Format	Description
CER5.1P1_PCFIn_TRMM-PFM-VIRS_SSIT_999999.1998050100 ¹	ASCII	ASCII file created by the ASCII file generator to be used to produce PCF generator used by both the Main-Processor and the HDF Post-Processor for the Full-Hour Mode.
CER5.1P1_PCFIn_TRMM-PFM-VIRS_SubsetSSIT_999999.1998050101 ¹	ASCII	ASCII file created by the ASCII file generator to be used to produce PCF generator used by both the Main-Processor and the HDF Post-Processor for the Subset Mode.
CER5.3P1_PCFIn_TRMM-PFM-VIRS_SSIT-New_999999.19980501 ¹	ASCII	ASCII file created by the ASCII file generator to be used to produce PCF generator used by the HDF Post-Processor.
CER5.0P1_PCFIn_TRMM-PFM-VIRS_SSIT-Monthly_999999.199805 ¹	ASCII	ASCII file created by the ASCII file generator to be used to produce PCF generator used by the Surface Albedo Monthly Pre-Processor.
CER5.4P1_PCFIn_TRMM-PFM-VIRS_SSIT-Monthly_999999.199805 ¹	ASCII	ASCII file created by the ASCII file generator to be used to produce PCF generator used by the Monthly QC Processor.

1. These files will be generated on execution of Subsystem software and are not included in the tar file.

C.5 SSF HDF Read Software

Table C.5-1. CRS HDF Read Software Files

File Name	Format	Description
CRS_readhdf_daacv3.c	ASCII	Main program which accesses the HDF reading functions
CRS_readHDFfuncs_daacv3.c	ASCII	C functions that are linked with 'readhdf.c' and calls the HDF functions
CRS_HDFread_daacv3.h	ASCII	Header file for 'readhdf.c' and the HDF libraries
compile_CRS_readhdf_daacv3	ASCII	Script to compile the C programs in a UNIX environment. The script must be modified for different platforms to properly compile the programs and correctly link the HDF libraries
CRS_README	ASCII	Informational file