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

Data Management System

CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget, Subsystems 4.5 and 4.6 Test Plan

Release 5
Version 10

Primary Authors

Sandra K. Nolan, Carla B. Franklin, Aaron T. Hoppe, Victor Sothcott

Science Systems Applications, Inc. (SSAI)
One Enterprise Parkway, Suite 200
Hampton, VA 23666

NASA Langley Research Center
Climate Science Branch
Science Directorate
21 Langley Boulevard
Hampton, VA 23681-2199

SW Delivered to CM: November 2012
Document Date: November 2012

Document Revision Record

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

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
10/19/01	R3V5	302	• Changed input MOA file names to use $CC12. • Updated format to comply with standards.	Secs. 3.1.1.1 & 3.1.2 All
03/21/02	R3V6	322	• Added new PGEs CER4.5-6.1P2 and CER4.5-6.2P2. • Updated format to comply with standards.	New sections: 3.2 & 3.4 All
04/26/02	R3V7	346	• SSFB-nadir and SSF-nadir products produced by PGE CER4.5-6.2P2. • Updated format to comply with standards.	Secs. 3.4.2.2 & 3.4.2.3 All
06/21/02	R4V1	367	• Added new PGE CER4.5-6.1P3 for processing Aqua data. • Updated CER4.5-6.1P2 to use dynamic SCC produced by PGE CER2.4P1. • Updated format to comply with standards.	Secs. 1.2, 2.2.1, & 3.3 Secs. 3.2.1.1 & 3.2.2 All
08/20/02	R4V2	381	• Updated CER4.5-6.2P2 to produce binary SSF/SSFA validation product. • Updated format to comply with standards.	Secs. 1.2.2, 3.5, 3.5.2.1, 3.5.2.2, & 3.5.2.3 All
01/27/03	R4V3	416	• Modified command line for CER4.5-6.1P3 PCF generator. • Updated format to comply with standards.	Sec. 3.3.1.1 All
04/24/03	R4V4	434	• Modified Instance definition line to use environment variables for CER4.5-6.1P1. • Updated format to comply with standards.	Secs. 2.1, 3.1.1.1, 3.1.1.4, 3.1.2, & C.2 All
08/27/03	R4V5	461	• Added new PGE CER4.5-6.3P2. • Added new PGE CER4.5-6.4P1. • Updated format to comply with standards.	Apps. B & C Secs. 2.2.4, 2.2.5, 3.7, & 3.8 All
10/29/03	R4V6	477	• Updated CER4.5-6.2P2 to produce new parameter ADMGEO. • Updated format to comply with standards.	Sec. 3.5.1.1 All

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
12/08/03	R4V7	488	• Updated PGE CER4.5-6.3P2 to use Terra Edition2 ADMs. • Added new PGE CER4.5-6.3P3. • Updated format to comply with standards.	Sec. 3.7.1.1 Secs. 2.2.5, 3.8, & App. C All
12/01/04	R4V8	570	• Updated PGE CER4.5-6.3P3 to include Spectral Correction and new test data. There are now separate test cases for FM3 and FM4. • Added new PGE CER4.5-6.6P2. • Updated format to comply with standards.	Secs. 1.2.5, 2.2.7, & 3.8 Sec. 3.10, Apps. B & C All
12/08/04	R4V9	572	• Added new PGE CER4.5-6.6P3. • Updated format to comply with standards.	Secs. 1.2.6, 3.11, Apps. B & C All
03/07/05	R4V10	578	• Modified PGE CER4.5-6.6P2. Changed output instance variable name for FM1 test case to INSTANCE_FM1. • Added FM2 test case for CER4.5-6.6P2. • Updated format to comply with standards.	Secs. 3.10.1-4 Secs. 3.10.5-8 All
04/04/05	R4V11	581	• Modified test case for CER4.5-6.6P2. Changed output instance variable name for FM1 test case to INSTANCE3_FM1. • Added FM2 test case for CER4.5-6.3P2. • Updated format to comply with standards.	Secs. 3.7.1-4 Secs. 3.7.5-8 All
05/11/05	R4V12	587	• Modified test case for CER4.5-6.2P2. Added tests for SCOOL output. • Added FM3 and FM4 test cases for CER4.5-6.2P2. • Updated format to comply with standards.	Secs. 3.5.2 & 3.5.5 Secs. 3.5.7-12 All
10/10/05	R4V13	596	• Modified test case for CER4.5-6.1P3. Added separate FM3 and FM4 test cases for CER4.5-6.1P3. • Modified input data for FM3 and FM4 test cases for CER4.5-6.3P3. • Updated Description Tables for CER4.5.6-6P2 & CER4.5-6.6P3. • Updated format to comply with standards.	Sec. 3.3 Sec. 3.8 App. C All
10/04/06	R4V14	638	• Changed SAIC and address to SSAI and new address. • Changed SAIC to SSAI.	Cover page Preface

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
10/04/06 Continued	R4V14	638	• Removed Item #2 that references emailing the results because this no longer happens. • Removed SAIC and added SSAI to acronym list.	Secs. 3.1.2.3, 3.2.2.3, 3.3.2.3, 3.3.5.3, 3.6.2.3, 3.7.3.2, 3.7.7.2, 3.8.3.2, & 3.8.7.2 App. A
06/29/07	R4V15	659	• Changed SCOOL input filename and the 'copy to' location in PGE CER4.5-6.2P2.	Secs. 3.5.1.1, 3.5.4.1, 3.5.7.1, & 3.5.10.1
02/21/08	R5V1	666	• Added PGEs CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.2P3, and CER4.5-6.4P2.	Secs. 1.2.1, 1.2.2, 2.2.2, 2.2.3, 2.2.5, 2.2.10, 3.4, 3.5, 3.8, 3.13, Apps. B, & C
12/08/08	R5V2	690	• Changed directory structure for PGEs CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.2P2, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.4P1, CER4.5-6.6P2, and CER4.5-6.6P3.	Secs. 2.1, 2.2.1, 2.2.4, 2.2.7, 2.2.8, 2.2.9, 2.2.11, 2.2.12, 3.2.1.1, 3.2.1.4, 3.2.2.1, 3.2.2.4, 3.2.3, 3.3.1.1, 3.3.1.2, 3.3.1.4, 3.3.2.1, 3.3.2.2, 3.3.2.4, 3.3.3, 3.3.4.1, 3.3.4.2, 3.3.4.4, 3.3.5.1, 3.3.5.2, 3.3.5.4, 3.3.6, 3.7.1.1, 3.7.1.2, 3.7.1.4, 3.7.2.1, 3.7.2.4, 3.7.3, 3.7.4.1, 3.7.4.2, 3.7.4.4, 3.7.5.1, 3.7.5.4, 3.7.6, 3.7.7.1, 3.7.7.2, 3.7.7.4, 3.7.8.1, 3.7.8.4, 3.7.9, 3.7.10.1, 3.7.10.2, 3.7.10.4, 3.7.11.1,

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
12/08/08 (Continued)	R5V2	690	• Changed directory structure for PGEs CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.2P2, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.4P1, CER4.5-6.6P2, and CER4.5-6.6P3.	3.7.11.4, 3.7.12, 3.10.1.1, 3.10.1.2, 3.10.1.4, 3.10.3, 3.10.3.1, 3.10.3.3, 3.10.4, 3.10.5.1, 3.10.5.2, 3.10.5.4, 3.10.7, 3.10.7.1, 3.10.7.3, 3.10.8, 3.11.1.1, 3.11.1.2, 3.11.1.4, 3.11.3, 3.11.3.1, 3.11.3.3, 3.11.4, 3.11.5.1, 3.11.5.2, 3.11.5.4, 3.11.7, 3.11.7.1, 3.11.7.3, 3.11.8, 3.12.1.1, 3.12.1.2, 3.12.1.4, 3.12.2.1, 3.12.3, 3.14.1.1, 3.14.1.2, 3.14.1.4, 3.14.3, 3.14.5.1, 3.14.5.2, 3.14.5.4, 3.14.7, 3.14.7.1, 3.14.7.3, 3.14.8, 3.15.1.1, 3.15.1.2, 3.15.1.4, 3.15.3, 3.15.3.1, 3.15.3.3, 3.15.4, 3.15.5.1, 3.15.5.2, 3.15.5.4, 3.15.7, 3.15.7.1, 3.15.7.3, 3.15.8, App B

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
12/08/08 (Continued)	R5V2	690	• Changed directory name from “PCF” to “pcf.” (04/02/09)	All
03/04/09	R5V3	704	• Updated test data and dates for PGEs CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.2P3 and CER4.5-6.4P2. • Updated evaluation procedures for PGEs CER4.5-6.1P4, CER4.5-6.1P5 and CER4.5-6.2P3. • Removed PCFin files and corrected the PCF directory for PGEs CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.2P3 and CER4.5-6.4P2.	Secs. 3.4.1.1, 3.4.2, 3.4.2.4, 3.4.4.1, 3.4.5, 3.4.5.4, 3.5.1.1, 3.5.2, 3.5.2.4, 3.5.4.1, 3.5.5, 3.5.5.4, 3.8.1.1, 3.8.2, 3.8.2.4, 3.8.4.1, 3.8.5, 3.8.5.4, 3.8.7.1, 3..8, 3.8.8.4, 3.8.10.1, 3.8.11, 3.8.11.2, 3.8.11.4, 3.13.1.1, 3.13.2, 3.13.4.1, 3.13.5, 3.13.7.1, 3.13.8, 3.13.10.1, & 3.13.11
09/04/09	R5V4	722	• Added PGEs CER4.5-6.5P2 and CER4.5-6.5P3. • Corrections to directory paths (changed “PGE” to “CER.” (05/14/10)	Secs. 1.2.5, 2.2.11, 2.2.12, 3.13, 3.14, Fig. B-2, Tables C.1-14, C.1-15, C.1-16, C.1-17, C.2-14, C-2-15, C.2-16, C.2-17, C.4-6, C.4-7, C.4-22, C.4-23, C.4-24, C.4-25, & C.6-2 Secs. 2.2.1, 2.2.4, 2.2.7, 2.2.8, 2.2.9, 2.2.13, & 2.2.14

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
05/28/2010	R5V5	786	• Added PGEs CER4.5-6.5P4 and CER4.5-6.5P5. • Changed references of Edition3 to Edition4.	Secs. 3-16, 3-17, 1.2.6, 2.2.13, 2.2.14, Fig. B-2, Tables C.1-16, C.1-17, C.2-16, C.2-17, C.4-6, C.4-7, C.4-24, C.4-25, & C.5-2 Secs. 1.2.1, 1.2.2, 3.8, 3.13, Tables C.2-4, & C.2-5
06/22/2010	R5V6	791	• Added PGE CER4.5-6.2P4.	Secs. 1.2.2, 2.2.6, & 3.9, Fig. B-3, Tables C.1-9, C.2-9, C.4-4, & C.4-17
11/04/2010	R5V7	814	• Updated PGEs CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.2P3, and CER4.5-6.4P2 to include testing for SGE.	Secs. 3.4, 3.5, 3.8, 3.14, Tables C.1-4, C.1-5, C.1-8, C.1-14, & C.5-2
7/25/2012	R5V8	912	• Updated PGEs CER4.5-6.2P4, CER4.5-6.4P1, CER4.5-6.5P4, and CER4.5-6.5P5 to include testing for SGE and for operation on *AMI-P6* and *x86* systems. • Updated compilation information for PGEs CER4.5-6.2P4, CER4.5-6.4P1, CER4.5-6.5P4, and CER4.5-6.5P5. • Updated Production Scripts and Executables Tables for PGEs CER4.5-6.2P4, CER4.5-6.4P1, CER4.5-6.5P4, and CER4.5-6.5P5. • Added PGE CER4.5-6.1P6 for future use.	Secs. 3.10, 3.14, 3.18, & 3.19 Secs. 2.2.6, 2.2.10, 2.2.14, & 2.2.15 Tables C.1-9, C.1-13, C.1-17, C.1-18, C.2-9, C.2-13, C.2-17, & C.2-18 Sec. 3.6
7/25/2012	R5V9	913	• Updated PGEs CER4.5-6.1P2, CER4.5-6.1P3, and CER4.5-6.2P2 to include testing for SGE and for operation on *AMI-P6* and *x86* systems. • Updated compilation information for PGEs CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.2P2, and CER4.5-6.2P3.	Secs. 3.2, 3.3, & 3.8 Secs. 2.2.1, 2.2.2, 2.2.3, 2.2.4, & 2.2.5

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
7/25/2012 (Continued)	R5V9	913	• Updated Production Scripts and Executables Tables for PGEs CER4.5-6.1P2, CER4.5-6.1P3, and CER4.5-6.2P2.	Tables C.1-2, C.1-3, C.1-7, C.2-2, C.2-3, C.2-7, C.4-10, C.4-11, C.4-12, C.4-13, C.4-15, C.4-16, C.4-17, C.4-21, & C.4-22
11/26/2012	R5V10	939	• Removed command line testing from PGEs CER4.5-6.2P4, CER4.5-6.4P1, CER4.5-6.5P4, and CER4.5-6.5P5.	Secs. 3.10.1.2, 3.10.4.2, 3.10.7.2, 3.10.10.2, 3.14.1.2, 3.14.4.2, 3.14.7.2, 3.14.10.2, 3.18.1.2, 3.18.5.2, 3.19.1.2, & 3.19.5.2
			• Formatting issues were fixed. (12/05/2012)	All

Preface

The Clouds and the Earth's Radiant Energy System (CERES) Data Management System (DMS) supports the data processing needs of the CERES Science Team research to increase understanding of the Earth's climate and radiant environment. The CERES Data Management Team works with the CERES Science Team to develop the software necessary to support the science algorithms. This software, being developed to operate at the Langley Atmospheric Science Data Center (ASDC), produces an extensive set of science data products.

The DMS consists of 12 subsystems; each subsystem contains one or more Product Generation Executables. Each subsystem executes when all of its required input data sets are available and produces one or more archival science products.

This Test Plan is written by the responsible CERES subsystem team for the CERES Configuration Management Team and the Langley ASDC to support subsystem testing. This document describes the software and supporting data files for this Subsystem and explains the procedures for installing, executing, and testing the software in the Science Software Integration and Testing environment. A section is also included on validating the software results.

Acknowledgment is given to Tammy O. Ayers and Joanne Saunders of Science Systems Applications, Inc. for their support in preparing this document.

TABLE OF CONTENTS

Section Page

Document Revision Record ii

Preface ix

1.0 Introduction 1

1.1 Document Overview 1

1.2 Subsystem Overview 2

1.2.1 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Main Processors and HDF Post Processor 2

1.2.2 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Subset Post Processors 2

1.2.3 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Post Processor 3

1.2.4 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Monthly Validation Site Post Processor 3

1.2.5 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Post Processor Using Instrument IES data 3

1.2.6 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Post Processor Using Instrument IES data 3

1.2.7 CER4.5-6.6P2 - Daily CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Postprocessor for Terra 4

1.2.8 CER4.5-6.6P3 - Daily CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Postprocessor for Aqua 4

2.0 Software and Data File Installation Procedures 5

2.1 Installation 5

TABLE OF CONTENTS

Section Page

2.2 Compilation 5
2.2.1 Compiling PGEs CER4.5-6.1P1, CER4.5-6.1P2, and CER4.5-6.1P3 6
2.2.2 Compiling PGE CER4.5-6.1P4 6
2.2.3 Compiling PGE CER4.5-6.1P5 7
2.2.4 Compiling PGE CER4.5-6.2P1 and PGE CER4.5-6.2P2 7
2.2.5 Compiling PGE CER4.5-6.2P3 8
2.2.6 Compiling PGE CER4.5-6.2P4 8
2.2.7 Compiling PGE CER4.5-6.3P1 8
2.2.8 Compiling PGE CER4.5-6.3P2 8
2.2.9 Compiling PGE CER4.5-6.3P3 9
2.2.10 Compiling PGE CER4.5-6.4P1 9
2.2.11 Compiling PGE CER4.5-6.4P2 9
2.2.12 Compiling PGE CER4.5-6.5P2 10
2.2.13 Compiling PGE CER4.5-6.5P3 10
2.2.14 Compiling PGE CER4.5-6.5P4 10
2.2.15 Compiling PGE CER4.5-6.5P5 10
2.2.16 Compiling PGE CER4.5-6.6P2 11
2.2.17 Compiling PGE CER4.5-6.6P3 11
3.0 Test and Evaluation Procedures 12
3.1 CER4_5-6.1P1 Main and Post Processors for TRMM VIRS-only Processing 12
3.1.1 Stand Alone Test Procedures 12
3.1.1.1 PCF Generator 12
3.1.1.2 Execution 13
3.1.1.3 Exit Codes 13

TABLE OF CONTENTS

Section Page

3.1.1.4 Test Summary 13
3.1.2 Evaluation Procedures 13
3.1.2.1 Log and Status File Results and Metadata Evaluation 14
3.1.2.2 Execution of Comparison Software for the Main Processor 14
3.1.2.3 Evaluation of Comparison Software Output 15
3.1.2.4 Evaluation of SSF HDF Product 15
3.1.3 Solutions to Possible Problems 15
3.2 CER4_5-6.1P2 Main and Post Processors for Terra Processing for both *P6* and *x86* processors. 17
3.2.1 Stand Alone Test Procedures for FM1 17
3.2.1.1 Environment setup and file preparation 17
3.2.1.2 Execution 17
3.2.1.3 Exit Codes 18
3.2.1.4 Test Summary 18
3.2.2 Evaluation Procedures 18
3.2.3 Log and Status File Results and Metadata Evaluation 19
3.2.3.1 Execution of Comparison Software for the Main Processor 19
3.2.3.2 Evaluation of Comparison Software Output 19
3.2.3.3 Evaluation of SSF HDF Product 20
3.2.4 Solutions to Possible Problems 20
3.3 CER4_5-6.1P3 Main and Post Processors for Aqua Processing 21
3.3.1 Stand Alone Test Procedures for FM3 21
3.3.1.1 Environment setup and file preparation 21
3.3.1.2 Execution 21

TABLE OF CONTENTS

Section Page

3.3.1.3 Exit Codes 22
3.3.1.4 Test Summary 22
3.3.2 Evaluation Procedures 22
3.3.3 Log and Status File Results and Metadata Evaluation 23
3.3.3.1 Execution of Comparison Software for the Main Processor 23
3.3.3.2 Evaluation of Comparison Software Output 24
3.3.3.3 Evaluation of SSF HDF Product 24
3.3.4 Solutions to Possible Problems 24
3.3.5 Stand Alone Test Procedures for FM4 25
3.3.5.1 Environment setup and file preparation 25
3.3.5.2 Execution 25
3.3.5.3 Exit Codes 26
3.3.5.4 Test Summary 26
3.3.6 Evaluation Procedures 26
3.3.7 Log and Status File Results and Metadata Evaluation 27
3.3.7.1 Execution of Comparison Software for the Main Processor 27
3.3.7.2 Evaluation of Comparison Software Output 28
3.3.7.3 Evaluation of SSF HDF Product 28
3.3.8 Solutions to Possible Problems 28
3.4 CER4_5-6.1P4 Main and Post Processors for Terra Edition4 Processing 29
3.4.1 Stand Alone Test Procedures for FM1, Environment variables: REPROCESS = ‘NO’, READ_IES = ‘NO’ and PROD = ‘no’ 29
3.4.1.1 Environment setup and file preparation 29
3.4.1.2 Execution 30

TABLE OF CONTENTS

Section Page

3.4.1.3 Exit Codes 31

3.4.1.4 Test Summary 31

3.4.2 Evaluation Procedures 31

3.4.2.1 Log and Status File Results and Metadata Evaluation 32

3.4.2.2 Execution of Comparison Software for the Main Processor 32

3.4.2.3 Evaluation of Comparison Software Output 33

3.4.2.4 Evaluation of SSF HDF Product 33

3.4.3 Solutions to Possible Problems 33

3.4.4 Stand Alone, command line, Test Procedures for FM1, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no' 34

3.4.4.1 Environment setup and file preparation 34

3.4.4.2 Execution 35

3.4.4.3 Exit Codes 36

3.4.4.4 Test Summary 36

3.4.5 Evaluation Procedures 36

3.4.5.1 Log and Status File Results and Metadata Evaluation 37

3.4.5.2 Execution of Comparison Software for the Main Processor 37

3.4.5.3 Evaluation of Comparison Software Output 38

3.4.5.4 Evaluation of SSF HDF Product 38

3.4.6 Solutions to Possible Problems 38

3.4.7 Stand Alone, command line, Test Procedures for FM1, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES' 39

3.4.7.1 Environment setup and file preparation 39

3.4.7.2 Execution 40

3.4.7.3 Exit Codes 41

TABLE OF CONTENTS

Section Page

3.4.7.4 Test Summary 41

3.4.8 Evaluation Procedures 41

3.4.8.1 Log and Status File Results and Metadata Evaluation 42

3.4.8.2 Execution of Comparison Software for the Main Processor 43

3.4.8.3 Evaluation of Comparison Software Output 43

3.4.8.4 Evaluation of SSF HDF Product 43

3.4.9 Solutions to Possible Problems 44

3.4.10 Stand Alone Test Procedures for FM2, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no' 45

3.4.10.1 Environment setup and file preparation 45

3.4.10.2 Execution 46

3.4.10.3 Exit Codes 47

3.4.10.4 Test Summary 47

3.4.11 Evaluation Procedures 47

3.4.11.1 Log and Status File Results and Metadata Evaluation 48

3.4.11.2 Execution of Comparison Software for the Main Processor 48

3.4.11.3 Evaluation of Comparison Software Output 49

3.4.11.4 Evaluation of SSF HDF Product 49

3.4.12 Solutions to Possible Problems 49

3.4.13 Stand Alone, command line, Test Procedures for FM2, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no' 50

3.4.13.1 Environment setup and file preparation 50

3.4.13.2 Execution 51

3.4.13.3 Exit Codes 52

3.4.13.4 Test Summary 52

TABLE OF CONTENTS

Section Page

3.4.14 Evaluation Procedures 52

3.4.14.1 Log and Status File Results and Metadata Evaluation 53

3.4.14.2 Execution of Comparison Software for the Main Processor 53

3.4.14.3 Evaluation of Comparison Software Output 54

3.4.14.4 Evaluation of SSF HDF Product 54

3.4.15 Solutions to Possible Problems 54

3.4.16 Stand Alone, command line, Test Procedures for FM2, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES' 55

3.4.16.1 Environment setup and file preparation 55

3.4.16.2 Execution 56

3.4.16.3 Exit Codes 57

3.4.16.4 Test Summary 57

3.4.17 Evaluation Procedures 57

3.4.17.1 Log and Status File Results and Metadata Evaluation 58

3.4.17.2 Execution of Comparison Software for the Main Processor 59

3.4.17.3 Evaluation of Comparison Software Output 59

3.4.17.4 Evaluation of SSF HDF Product 59

3.4.18 Solutions to Possible Problems 60

3.5 CER4_5-6.1P5 Main and Post Processors for Aqua Edition4 Processing 61

3.5.1 Stand Alone Test Procedures for FM3, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no' 61

3.5.1.1 Environment setup and file preparation 61

3.5.1.2 Execution 62

3.5.1.3 Exit Codes 63

3.5.1.4 Test Summary 63

TABLE OF CONTENTS

Section Page

3.5.2 Evaluation Procedures 63

3.5.2.1 Log and Status File Results and Metadata Evaluation 64

3.5.2.2 Execution of Comparison Software for the Main Processor 64

3.5.2.3 Evaluation of Comparison Software Output 65

3.5.2.4 Evaluation of SSF HDF Product 65

3.5.3 Solutions to Possible Problems 65

3.5.4 Stand Alone, command line, Test Procedures for FM3, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no' 66

3.5.4.1 Environment setup and file preparation 66

3.5.4.2 Execution 67

3.5.4.3 Exit Codes 68

3.5.4.4 Test Summary 68

3.5.5 Evaluation Procedures 68

3.5.5.1 Log and Status File Results and Metadata Evaluation 69

3.5.5.2 Execution of Comparison Software for the Main Processor 69

3.5.5.3 Evaluation of Comparison Software Output 70

3.5.5.4 Evaluation of SSF HDF Product 70

3.5.6 Solutions to Possible Problems 70

3.5.7 Stand Alone, command line, Test Procedures for FM3, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES' 71

3.5.7.1 Environment setup and file preparation 71

3.5.7.2 Execution 72

3.5.7.3 Exit Codes 73

3.5.7.4 Test Summary 73

3.5.8 Evaluation Procedures 73

TABLE OF CONTENTS

Section Page

3.5.8.1 Log and Status File Results and Metadata Evaluation 74

3.5.8.2 Execution of Comparison Software for the Main Processor 74

3.5.8.3 Evaluation of Comparison Software Output 75

3.5.8.4 Evaluation of SSF HDF Product 75

3.5.9 Solutions to Possible Problems 75

3.5.10 Stand Alone Test Procedures for FM4, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no' 77

3.5.10.1 Environment setup and file preparation 77

3.5.10.2 Execution 78

3.5.10.3 Exit Codes 79

3.5.10.4 Test Summary 79

3.5.11 Evaluation Procedures 79

3.5.11.1 Log and Status File Results and Metadata Evaluation 80

3.5.11.2 Execution of Comparison Software for the Main Processor 80

3.5.11.3 Evaluation of Comparison Software Output 81

3.5.11.4 Evaluation of SSF HDF Product 81

3.5.12 Solutions to Possible Problems 81

3.5.13 Stand Alone, command line, Test Procedures for FM4, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no' 82

3.5.13.1 Environment setup and file preparation 82

3.5.13.2 Execution 83

3.5.13.3 Exit Codes 84

3.5.13.4 Test Summary 84

3.5.14 Evaluation Procedures 84

3.5.14.1 Log and Status File Results and Metadata Evaluation 85

TABLE OF CONTENTS

Section Page

3.5.14.2 Execution of Comparison Software for the Main Processor 85

3.5.14.3 Evaluation of Comparison Software Output 86

3.5.14.4 Evaluation of SSF HDF Product 86

3.5.15 Solutions to Possible Problems 86

3.5.16 Stand Alone, command line, Test Procedures for FM4, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES' 88

3.5.16.1 Environment setup and file preparation 88

3.5.16.2 Execution 89

3.5.16.3 Exit Codes 90

3.5.16.4 Test Summary 90

3.5.17 Evaluation Procedures 90

3.5.17.1 Log and Status File Results and Metadata Evaluation 91

3.5.17.2 Execution of Comparison Software for the Main Processor 92

3.5.17.3 Evaluation of Comparison Software Output 92

3.5.17.4 Evaluation of SSF HDF Product 92

3.5.18 Solutions to Possible Problems 93

3.6 CER4_5-6.1P6 Main and Post Processors for Terra and Aqua Edition4 Processing 94

3.6.1 Stand Alone Test Procedures for FM1, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no' 94

3.6.1.1 Environment setup and file preparation 94

3.6.1.2 Execution 95

3.6.1.3 Exit Codes 96

3.6.1.4 Test Summary 96

3.6.2 Evaluation Procedures 96

3.6.2.1 Log and Status File Results and Metadata Evaluation 97

TABLE OF CONTENTS

Section Page

3.6.2.2 Execution of Comparison Software for the Main Processor 97

3.6.2.3 Evaluation of Comparison Software Output 98

3.6.2.4 Evaluation of SSF HDF Product 98

3.6.3 Solutions to Possible Problems 98

3.6.4 Stand Alone, command line, Test Procedures for FM1, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no' 99

3.6.4.1 Environment setup and file preparation 99

3.6.4.2 Execution 100

3.6.4.3 Exit Codes 101

3.6.4.4 Test Summary 101

3.6.5 Evaluation Procedures 101

3.6.5.1 Log and Status File Results and Metadata Evaluation 102

3.6.5.2 Execution of Comparison Software for the Main Processor 102

3.6.5.3 Evaluation of Comparison Software Output 103

3.6.5.4 Evaluation of SSF HDF Product 103

3.6.6 Solutions to Possible Problems 103

3.6.7 Stand Alone, command line, Test Procedures for FM1, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES' 104

3.6.7.1 Environment setup and file preparation 104

3.6.7.2 Execution 105

3.6.7.3 Exit Codes 106

3.6.7.4 Test Summary 106

3.6.8 Evaluation Procedures 106

3.6.8.1 Log and Status File Results and Metadata Evaluation 107

3.6.8.2 Execution of Comparison Software for the Main Processor 108

TABLE OF CONTENTS

Section Page

3.6.8.3 Evaluation of Comparison Software Output 108

3.6.8.4 Evaluation of SSF HDF Product 108

3.6.9 Solutions to Possible Problems 109

3.6.10 Stand Alone Test Procedures for FM2, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no' 110

3.6.10.1 Environment setup and file preparation 110

3.6.10.2 Execution 111

3.6.10.3 Exit Codes 112

3.6.10.4 Test Summary 112

3.6.11 Evaluation Procedures 112

3.6.11.1 Log and Status File Results and Metadata Evaluation 113

3.6.11.2 Execution of Comparison Software for the Main Processor 113

3.6.11.3 Evaluation of Comparison Software Output 114

3.6.11.4 Evaluation of SSF HDF Product 114

3.6.12 Solutions to Possible Problems 114

3.6.13 Stand Alone, command line, Test Procedures for FM2, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no' 115

3.6.13.1 Environment setup and file preparation 115

3.6.13.2 Execution 116

3.6.13.3 Exit Codes 117

3.6.13.4 Test Summary 117

3.6.14 Evaluation Procedures 117

3.6.14.1 Log and Status File Results and Metadata Evaluation 118

3.6.14.2 Execution of Comparison Software for the Main Processor 118

3.6.14.3 Evaluation of Comparison Software Output 119

TABLE OF CONTENTS

Section Page

3.6.14.4 Evaluation of SSF HDF Product 119

3.6.15 Solutions to Possible Problems 119

3.6.16 Stand Alone, command line, Test Procedures for FM2, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES' 120

3.6.16.1 Environment setup and file preparation 120

3.6.16.2 Execution 121

3.6.16.3 Exit Codes 122

3.6.16.4 Test Summary 122

3.6.17 Evaluation Procedures 122

3.6.17.1 Log and Status File Results and Metadata Evaluation 123

3.6.17.2 Execution of Comparison Software for the Main Processor 124

3.6.17.3 Evaluation of Comparison Software Output 124

3.6.17.4 Evaluation of SSF HDF Product 124

3.6.18 Solutions to Possible Problems 125

3.6.19 Stand Alone Test Procedures for FM3, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no' 126

3.6.19.1 Environment setup and file preparation 126

3.6.19.2 Execution 127

3.6.19.3 Exit Codes 128

3.6.19.4 Test Summary 128

3.6.20 Evaluation Procedures 128

3.6.20.1 Log and Status File Results and Metadata Evaluation 129

3.6.20.2 Execution of Comparison Software for the Main Processor 129

3.6.20.3 Evaluation of Comparison Software Output 130

3.6.20.4 Evaluation of SSF HDF Product 130

TABLE OF CONTENTS

Section Page

3.6.21 Solutions to Possible Problems 130

3.6.22 Stand Alone, command line, Test Procedures for FM3, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no' 131

3.6.22.1 Environment setup and file preparation 131

3.6.22.2 Execution 132

3.6.22.3 Exit Codes 133

3.6.22.4 Test Summary 133

3.6.23 Evaluation Procedures 133

3.6.23.1 Log and Status File Results and Metadata Evaluation 134

3.6.23.2 Execution of Comparison Software for the Main Processor 134

3.6.23.3 Evaluation of Comparison Software Output 135

3.6.23.4 Evaluation of SSF HDF Product 135

3.6.24 Solutions to Possible Problems 135

3.6.25 Stand Alone, command line, Test Procedures for FM3, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES' 136

3.6.25.1 Environment setup and file preparation 136

3.6.25.2 Execution 137

3.6.25.3 Exit Codes 138

3.6.25.4 Test Summary 138

3.6.26 Evaluation Procedures 138

3.6.26.1 Log and Status File Results and Metadata Evaluation 139

3.6.26.2 Execution of Comparison Software for the Main Processor 139

3.6.26.3 Evaluation of Comparison Software Output 140

3.6.26.4 Evaluation of SSF HDF Product 140

3.6.27 Solutions to Possible Problems 140

TABLE OF CONTENTS

Section Page

3.6.28 Stand Alone Test Procedures for FM4, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no' 142

3.6.28.1 Environment setup and file preparation..... 142

3.6.28.2 Execution 143

3.6.28.3 Exit Codes..... 144

3.6.28.4 Test Summary..... 144

3.6.29 Evaluation Procedures 144

3.6.29.1 Log and Status File Results and Metadata Evaluation 145

3.6.29.2 Execution of Comparison Software for the Main Processor 145

3.6.29.3 Evaluation of Comparison Software Output 146

3.6.29.4 Evaluation of SSF HDF Product 146

3.6.30 Solutions to Possible Problems..... 146

3.6.31 Stand Alone, command line, Test Procedures for FM4, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no'..... 147

3.6.31.1 Environment setup and file preparation..... 147

3.6.31.2 Execution 148

3.6.31.3 Exit Codes..... 149

3.6.31.4 Test Summary..... 149

3.6.32 Evaluation Procedures 149

3.6.32.1 Log and Status File Results and Metadata Evaluation 150

3.6.32.2 Execution of Comparison Software for the Main Processor 150

3.6.32.3 Evaluation of Comparison Software Output 151

3.6.32.4 Evaluation of SSF HDF Product 151

3.6.33 Solutions to Possible Problems..... 151

TABLE OF CONTENTS

Section Page

3.6.34 Stand Alone, command line, Test Procedures for FM4, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES' 153

3.6.34.1 Environment setup and file preparation..... 153

3.6.34.2 Execution 154

3.6.34.3 Exit Codes..... 155

3.6.34.4 Test Summary..... 155

3.6.35 Evaluation Procedures 155

3.6.35.1 Log and Status File Results and Metadata Evaluation 156

3.6.35.2 Execution of Comparison Software for the Main Processor 157

3.6.35.3 Evaluation of Comparison Software Output 157

3.6.35.4 Evaluation of SSF HDF Product 157

3.6.36 Solutions to Possible Problems..... 158

3.7 CER4_5-6.2P1 Daily SSF Subset Post Processor for TRMM VIRS-only SSF Subsetting 159

3.7.1 Stand Alone Test Procedures 159

3.7.1.1 PCF Generator..... 159

3.7.1.2 Execution..... 159

3.7.1.3 Exit Codes 159

3.7.1.4 Test Summary 160

3.7.2 Evaluation Procedures 160

3.7.2.1 Log and Status File Results and Metadata Evaluation..... 160

3.7.2.2 Execution of Comparison Software for the SSF Subset Post Processor..... 160

3.7.2.3 Evaluation of Comparison Software Output 160

3.7.3 Solutions to Possible Problems..... 161

TABLE OF CONTENTS

Section Page

3.8 CER4_5-6.2P2 Terra SSF Subsetting Post Processor Producing Daily SSF and SSFA subset files, and Nadir SSF, Validation SSF, Validation SSFA and SCOOL SSF subset products for Edition1 and Edition2 for both *P6* and *x86* processors. 162

3.8.1 Stand Alone Test Procedures for FM1 162

3.8.1.1 Environment setup and file preparation 162

3.8.1.2 Execution 162

3.8.1.3 Exit Codes 163

3.8.1.4 Test Summary 163

3.8.2 Evaluation Procedures 163

3.8.2.1 Log and Status File Results and Metadata Evaluation 163

3.8.2.2 Execution of Comparison Software for the SSF Subset Post Processor 164

3.8.2.3 Evaluation of Comparison Software Output 164

3.8.2.4 Evaluation of SSF HDF Product 165

3.8.3 Solutions to Possible Problems 165

3.8.4 Stand Alone Test Procedures for FM2 166

3.8.4.1 Environment setup and file preparation 166

3.8.4.2 Execution 166

3.8.4.3 Exit Codes 167

3.8.4.4 Test Summary 167

3.8.5 Evaluation Procedures 167

3.8.5.1 Log and Status File Results and Metadata Evaluation 167

3.8.5.2 Execution of Comparison Software for the SSF Subset Post Processor 168

3.8.5.3 Evaluation of Comparison Software Output 168

3.8.5.4 Evaluation of SSF HDF Product 169

TABLE OF CONTENTS

Section Page

3.8.6 Solutions to Possible Problems 169
3.8.7 Stand Alone Test Procedures for FM3 170
3.8.7.1 Environment setup and file preparation 170
3.8.7.2 Execution 170
3.8.7.3 Exit Codes 171
3.8.7.4 Test Summary 171
3.8.8 Evaluation Procedures 171
3.8.8.1 Log and Status File Results and Metadata Evaluation 171
3.8.8.2 Execution of Comparison Software for the SSF Subset Post Processor 172
3.8.8.3 Evaluation of Comparison Software Output 172
3.8.8.4 Evaluation of SSF HDF Product 173
3.8.9 Solutions to Possible Problems 173
3.8.10 Stand Alone Test Procedures for FM4 174
3.8.10.1 Environment setup and file preparation 174
3.8.10.2 Execution 174
3.8.10.3 Exit Codes 175
3.8.10.4 Test Summary 175
3.8.11 Evaluation Procedures 175
3.8.11.1 Log and Status File Results and Metadata Evaluation 175
3.8.11.2 Execution of Comparison Software for the SSF Subset Post Processor 176
3.8.11.3 Evaluation of Comparison Software Output 176
3.8.11.4 Evaluation of SSF HDF Product 177
3.8.12 Solutions to Possible Problems 177

TABLE OF CONTENTS

Section Page

3.9 CER4_5-6.2P3 Terra and Aqua Edition4 SSF Subsetting Post Processor Producing Daily SSF and SSFA Subset Files, and Nadir SSF, Validation SSF, Validation SSFA and SCOOL SSF Subset Products 178

3.9.1 Stand Alone Test Procedures for FM1 178

3.9.1.1 Environment setup and file preparation 178

3.9.1.2 Execution 178

3.9.1.3 Exit Codes 180

3.9.1.4 Test Summary 180

3.9.2 Evaluation Procedures 180

3.9.2.1 Log and Status File Results and Metadata Evaluation 180

3.9.2.2 Execution of Comparison Software for the SSF Subset Post Processor 181

3.9.2.3 Evaluation of Comparison Software Output 182

3.9.2.4 Evaluation of SSF HDF Product 182

3.9.3 Solutions to Possible Problems 182

3.9.4 Stand Alone Test Procedures for FM2 183

3.9.4.1 Environment setup and file preparation 183

3.9.4.2 Execution 183

3.9.4.3 Exit Codes 185

3.9.4.4 Test Summary 185

3.9.5 Evaluation Procedures 185

3.9.5.1 Log and Status File Results and Metadata Evaluation 185

3.9.5.2 Execution of Comparison Software for the SSF Subset Post Processor 186

3.9.5.3 Evaluation of Comparison Software Output 186

3.9.5.4 Evaluation of SSF HDF Product 187

3.9.6 Solutions to Possible Problems 187

TABLE OF CONTENTS

Section Page

3.9.7 Stand Alone Test Procedures for FM3 188
3.9.7.1 Environment setup and file preparation 188
3.9.7.2 Execution 188
3.9.7.3 Exit Codes 190
3.9.7.4 Test Summary 190
3.9.8 Evaluation Procedures 190
3.9.8.1 Log and Status File Results and Metadata Evaluation 190
3.9.8.2 Execution of Comparison Software for the SSF Subset Post Processor 191
3.9.8.3 Evaluation of Comparison Software Output 191
3.9.8.4 Evaluation of SSF HDF Product 192
3.9.9 Solutions to Possible Problems 192
3.9.10 Stand Alone Test Procedures for FM4 193
3.9.10.1 Environment setup and file preparation 193
3.9.10.2 Execution 193
3.9.10.3 Exit Codes 195
3.9.10.4 Test Summary 195
3.9.11 Evaluation Procedures 195
3.9.11.1 Log and Status File Results and Metadata Evaluation 195
3.9.11.2 Execution of Comparison Software for the SSF Subset Post Processor 196
3.9.11.3 Evaluation of Comparison Software Output 197
3.9.11.4 Evaluation of SSF HDF Product – THERE IS NO HDF PRODUCT WITH THIS TEST DATA. 197
3.9.12 Solutions to Possible Problems 197

TABLE OF CONTENTS

Section Page

3.10 CER4_5-6.2P4 Terra and Aqua SSF Subsetting Post Processor Producing Daily SSF and SSFA subset files, and Nadir SSF, Validation SSF, Validation SSFA and SCOOL SSF subset products for Edition3 for both *P6* and *x86* processors. 199

3.10.1 Stand Alone Test Procedures for FM1 199

3.10.1.1 Environment setup and file preparation 199

3.10.1.2 Execution 199

3.10.1.3 Exit Codes 200

3.10.1.4 Test Summary 200

3.10.2 Evaluation Procedures 200

3.10.2.1 Log and Status File Results and Metadata Evaluation 200

3.10.2.2 Execution of Comparison Software for the SSF Subset Post Processor 201

3.10.2.3 Evaluation of Comparison Software Output 201

3.10.2.4 Evaluation of SSF HDF Product 202

3.10.3 Solutions to Possible Problems 202

3.10.4 Stand Alone Test Procedures for FM2 203

3.10.4.1 Environment setup and file preparation 203

3.10.4.2 Execution 203

3.10.4.3 Exit Codes 204

3.10.4.4 Test Summary 204

3.10.5 Evaluation Procedures 204

3.10.5.1 Log and Status File Results and Metadata Evaluation 204

3.10.5.2 Execution of Comparison Software for the SSF Subset Post Processor 205

3.10.5.3 Evaluation of Comparison Software Output 205

3.10.5.4 Evaluation of SSF HDF Product 206

3.10.6 Solutions to Possible Problems 206

TABLE OF CONTENTS

Section Page

3.10.7 Stand Alone Test Procedures for FM3 207
3.10.7.1 Environment setup and file preparation 207
3.10.7.2 Execution 207
3.10.7.3 Exit Codes 208
3.10.7.4 Test Summary 208
3.10.8 Evaluation Procedures 208
3.10.8.1 Log and Status File Results and Metadata Evaluation 208
3.10.8.2 Execution of Comparison Software for the SSF Subset Post Processor 209
3.10.8.3 Evaluation of Comparison Software Output 209
3.10.8.4 Evaluation of SSF HDF Product 210
3.10.9 Solutions to Possible Problems 210
3.10.10 Stand Alone Test Procedures for FM4 211
3.10.10.1 Environment setup and file preparation 211
3.10.10.2 Execution 211
3.10.10.3 Exit Codes 212
3.10.10.4 Test Summary 212
3.10.11 Evaluation Procedures 212
3.10.11.1 Log and Status File Results and Metadata Evaluation 212
3.10.11.2 Execution of Comparison Software for the SSF Subset Post Processor 213
3.10.11.3 Evaluation of Comparison Software Output 213
3.10.11.4 Evaluation of SSF HDF Product 214
3.10.12 Solutions to Possible Problems 214
3.11 CER4_5-6.3P1 Alternate Main and Post Processors 215
3.11.1 Stand Alone Test Procedures 215

TABLE OF CONTENTS

Section Page

3.11.1.1 PCF Generator 215
3.11.1.2 Execution 215
3.11.1.3 Exit Codes 216
3.11.1.4 Test Summary 216
3.11.2 Evaluation Procedures 216
3.11.2.1 Log and Status File Results and Metadata Evaluation 216
3.11.2.2 Execution of Comparison Software for the Main Processor 217
3.11.2.3 Evaluation of Comparison Software Output 217
3.11.2.4 Evaluation of SSF HDF Product 217
3.11.3 Solutions to Possible Problems 218
3.12 CER4_5-6.3P2 Alternate Main and Post Processors for Terra 219
3.12.1 Stand Alone Test Procedures for FM1 219
3.12.1.1 PCF Generator 219
3.12.1.2 Execution 220
3.12.1.3 Exit Codes 220
3.12.1.4 Test Summary 220
3.12.2 Evaluation Procedures 220
3.12.3 Log and Status File Results and Metadata Evaluation 221
3.12.3.1 Execution of Comparison Software for the Main Processor 221
3.12.3.2 Evaluation of Comparison Software Output 222
3.12.3.3 Evaluation of SSF HDF Product 222
3.12.4 Solutions to Possible Problems 222
3.12.5 Stand Alone Test Procedures for FM2 223
3.12.5.1 PCF Generator 223

TABLE OF CONTENTS

Section Page

3.12.5.2 Execution 224
3.12.5.3 Exit Codes 224
3.12.5.4 Test Summary 224
3.12.6 Evaluation Procedures 224
3.12.7 Log and Status File Results and Metadata Evaluation 225
3.12.7.1 Execution of Comparison Software for the Main Processor 225
3.12.7.2 Evaluation of Comparison Software Output 226
3.12.7.3 Evaluation of SSF HDF Product 226
3.12.8 Solutions to Possible Problems 226
3.13 CER4_5-6.3P3 Alternate Main and Post Processors for Aqua 227
3.13.1 Stand Alone Test Procedures for FM3 227
3.13.1.1 PCF Generator 227
3.13.1.2 Execution 228
3.13.1.3 Exit Codes 228
3.13.1.4 Test Summary 228
3.13.2 Evaluation Procedures 228
3.13.3 Log and Status File Results and Metadata Evaluation 229
3.13.3.1 Execution of Comparison Software for the Main Processor 229
3.13.3.2 Evaluation of Comparison Software Output 230
3.13.3.3 Evaluation of SSF HDF Product 230
3.13.4 Solutions to Possible Problems 230
3.13.5 Stand Alone Test Procedures for FM4 231
3.13.5.1 PCF Generator 231
3.13.5.2 Execution 232

TABLE OF CONTENTS

Section Page

3.13.5.3 Exit Codes 232

3.13.5.4 Test Summary 232

3.13.6 Evaluation Procedures 232

3.13.7 Log and Status File Results and Metadata Evaluation 233

3.13.7.1 Execution of Comparison Software for the Main Processor 233

3.13.7.2 Evaluation of Comparison Software Output 234

3.13.7.3 Evaluation of SSF HDF Product 234

3.13.8 Solutions to Possible Problems 234

3.14 CER4_5-6.4P1 Terra and Aqua SSF Post Processor producing Monthly SSF and SSFA Validation subset files for both *P6* and *x86* processors. 235

3.14.1 Stand Alone Test Procedures for FM1 235

3.14.1.1 Environment setup and file preparation 235

3.14.1.2 Execution 235

3.14.1.3 Exit Codes 236

3.14.1.4 Test Summary 236

3.14.2 Evaluation Procedures 236

3.14.2.1 Log and Status File Results and Metadata Evaluation 237

3.14.2.2 Execution of Comparison Software for the SSF Monthly Post Processor 237

3.14.2.3 Evaluation of Comparison Software Output 237

3.14.3 Solutions to Possible Problems 238

3.14.4 Stand Alone Test Procedures for FM2 239

3.14.4.1 Environment setup and file preparation 239

3.14.4.2 Execution 239

3.14.4.3 Exit Codes 240

TABLE OF CONTENTS

Section Page

3.14.4.4 Test Summary 240
3.14.5 Evaluation Procedures 240
3.14.5.1 Log and Status File Results and Metadata Evaluation 240
3.14.5.2 Execution of Comparison Software for the SSF Monthly Post Processor 241
3.14.5.3 Evaluation of Comparison Software Output 241
3.14.6 Solutions to Possible Problems 241
3.14.7 Stand Alone Test Procedures for FM3 243
3.14.7.1 Environment setup and file preparation 243
3.14.7.2 Execution 243
3.14.7.3 Exit Codes 244
3.14.7.4 Test Summary 244
3.14.8 Evaluation Procedures 244
3.14.8.1 Log and Status File Results and Metadata Evaluation 245
3.14.8.2 Execution of Comparison Software for the SSF Monthly Post Processor 245
3.14.8.3 Evaluation of Comparison Software Output 245
3.14.9 Solutions to Possible Problems 246
3.14.10 Stand Alone Test Procedures for FM4 247
3.14.10.1 Environment setup and file preparation 247
3.14.10.2 Execution 247
3.14.10.3 Exit Codes 248
3.14.10.4 Test Summary 248
3.14.11 Evaluation Procedures 248
3.14.11.1 Log and Status File Results and Metadata Evaluation 249
3.14.11.2 Execution of Comparison Software for the SSF Monthly Post Processor 249

TABLE OF CONTENTS

Section Page

3.14.11.3 Evaluation of Comparison Software Output 249

3.14.12 Solutions to Possible Problems 250

3.15 CER4_5-6.4P2 Terra and Aqua Edition4 SSF Post Processor Producing Monthly SSF and SSFA Validation subset files 251

3.15.1 Stand Alone Test Procedures for FM1 251

3.15.1.1 Environment setup and file preparation 251

3.15.1.2 Execution 251

3.15.1.3 Exit Codes 253

3.15.1.4 Test Summary 253

3.15.2 Evaluation Procedures 253

3.15.2.1 Log and Status File Results and Metadata Evaluation 253

3.15.2.2 Execution of Comparison Software for the SSF Subset Post Processor 254

3.15.2.3 Evaluation of Comparison Software Output 254

3.15.3 Solutions to Possible Problems 255

3.15.4 Stand Alone Test Procedures for FM2 256

3.15.4.1 Environment setup and file preparation 256

3.15.4.2 Execution 256

3.15.4.3 Exit Codes 258

3.15.4.4 Test Summary 258

3.15.5 Evaluation Procedures 258

3.15.5.1 Log and Status File Results and Metadata Evaluation 258

3.15.5.2 Execution of Comparison Software for the SSF Subset Post Processor 259

3.15.5.3 Evaluation of Comparison Software Output 259

3.15.6 Solutions to Possible Problems 259

TABLE OF CONTENTS

Section Page

3.15.7 Stand Alone Test Procedures for FM3 260
3.15.7.1 Environment setup and file preparation 260
3.15.7.2 Execution 260
3.15.7.3 Exit Codes 262
3.15.7.4 Test Summary 262
3.15.8 Evaluation Procedures 262
3.15.8.1 Log and Status File Results and Metadata Evaluation 262
3.15.8.2 Execution of Comparison Software for the SSF Subset Post Processor 263
3.15.8.3 Evaluation of Comparison Software Output 263
3.15.9 Solutions to Possible Problems 263
3.15.10 Stand Alone Test Procedures for FM4 264
3.15.10.1 Environment setup and file preparation 264
3.15.10.2 Execution 264
3.15.10.3 Exit Codes 266
3.15.10.4 Test Summary 266
3.15.11 Evaluation Procedures 266
3.15.11.1 Log and Status File Results and Metadata Evaluation 266
3.15.11.2 Execution of Comparison Software for the SSF Subset Post Processor 267
3.15.11.3 Evaluation of Comparison Software Output 267
3.15.12 Solutions to Possible Problems 267
3.16 CER4_5-6.5P2 Alternate Main and Post Processors for Terra Using Instrument IES Data 268
3.16.1 Stand Alone Test Procedures for FM1 268
3.16.1.1 PCF Generator 268

TABLE OF CONTENTS

Section Page

3.16.1.2 Execution 269
3.16.1.3 Exit Codes 269
3.16.1.4 Test Summary 269
3.16.2 Evaluation Procedures 269
3.16.3 Log and Status File Results and Metadata Evaluation 270
3.16.3.1 Execution of Comparison Software for the Main Processor 270
3.16.3.2 Evaluation of Comparison Software Output 271
3.16.3.3 Evaluation of SSF HDF Product 271
3.16.4 Solutions to Possible Problems 271
3.16.5 Stand Alone Test Procedures for FM2 273
3.16.5.1 PCF Generator 273
3.16.5.2 Execution 274
3.16.5.3 Exit Codes 274
3.16.5.4 Test Summary 274
3.16.6 Evaluation Procedures 274
3.16.7 Log and Status File Results and Metadata Evaluation 275
3.16.7.1 Execution of Comparison Software for the Main Processor 275
3.16.7.2 Evaluation of Comparison Software Output 276
3.16.7.3 Evaluation of SSF HDF Product 276
3.16.8 Solutions to Possible Problems 276
3.17 CER4_5-6.5P3 Alternate Main and Post Processors for Aqua Using Instrument IES Data 278
3.17.1 Stand Alone Test Procedures for FM3 278
3.17.1.1 PCF Generator 278

TABLE OF CONTENTS

Section Page

3.17.1.2 Execution 279
3.17.1.3 Exit Codes 279
3.17.1.4 Test Summary 279
3.17.2 Evaluation Procedures 279
3.17.3 Log and Status File Results and Metadata Evaluation 280
3.17.3.1 Execution of Comparison Software for the Main Processor 280
3.17.3.2 Evaluation of Comparison Software Output 281
3.17.3.3 Evaluation of SSF HDF Product 281
3.17.4 Solutions to Possible Problems 281
3.17.5 Stand Alone Test Procedures for FM4 283
3.17.5.1 PCF Generator 283
3.17.5.2 Execution 284
3.17.5.3 Exit Codes 284
3.17.5.4 Test Summary 284
3.17.6 Evaluation Procedures 284
3.17.7 Log and Status File Results and Metadata Evaluation 285
3.17.7.1 Execution of Comparison Software for the Main Processor 285
3.17.7.2 Evaluation of Comparison Software Output 286
3.17.7.3 Evaluation of SSF HDF Product 286
3.17.8 Solutions to Possible Problems 286
3.18 CER4_5-6.5P4 Alternate Main and Post Processors for Terra Using Instrument IES Data for both *P6* and *x86* processors 288
3.18.1 Stand Alone Test Procedures for FM1 288
3.18.1.1 Environment setup and file preparation 288

TABLE OF CONTENTS

Section Page

3.18.1.2 Execution 289
3.18.1.3 Exit Codes 289
3.18.1.4 Test Summary 289
3.18.2 Evaluation Procedures 290
3.18.3 Log and Status File Results and Metadata Evaluation 290
3.18.3.1 Execution of Comparison Software for the Main Processor 290
3.18.3.2 Evaluation of Comparison Software Output 291
3.18.3.3 Evaluation of SSF HDF Product 291
3.18.4 Solutions to Possible Problems 291
3.18.5 Stand Alone Test Procedures for FM2 293
3.18.5.1 Environment setup and file preparation 293
3.18.5.2 Execution 294
3.18.5.3 Exit Codes 294
3.18.5.4 Test Summary 294
3.18.6 Evaluation Procedures 295
3.18.7 Log and Status File Results and Metadata Evaluation 295
3.18.7.1 Execution of Comparison Software for the Main Processor 295
3.18.7.2 Evaluation of Comparison Software Output 296
3.18.7.3 Evaluation of SSF HDF Product 296
3.18.8 Solutions to Possible Problems 297
3.19 CER4_5-6.5P5 Alternate Main and Post Processors for Aqua Using Instrument IES Data for both *P6* and *x86* processors 298
3.19.1 Stand Alone Test Procedures for FM3 298
3.19.1.1 Environment setup and file preparation 298

TABLE OF CONTENTS

Section Page

3.19.1.2 Execution 299
3.19.1.3 Exit Codes 299
3.19.1.4 Test Summary 299
3.19.2 Evaluation Procedures 300
3.19.3 Log and Status File Results and Metadata Evaluation 300
3.19.3.1 Execution of Comparison Software for the Main Processor 300
3.19.3.2 Evaluation of Comparison Software Output 301
3.19.3.3 Evaluation of SSF HDF Product 301
3.19.4 Solutions to Possible Problems 302
3.19.5 Stand Alone Test Procedures for FM4 303
3.19.5.1 Environment setup and file preparation 303
3.19.5.2 Execution 304
3.19.5.3 Exit Codes 304
3.19.5.4 Test Summary 304
3.19.6 Evaluation Procedures 304
3.19.7 Log and Status File Results and Metadata Evaluation 305
3.19.7.1 Execution of Comparison Software for the Main Processor 305
3.19.7.2 Evaluation of Comparison Software Output 306
3.19.7.3 Evaluation of SSF HDF Product 306
3.19.8 Solutions to Possible Problems 306
3.20 CER4_5-6.6P2 Daily CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Postprocessor for Terra 308
3.20.1 Stand Alone Test Procedures for FM1 308
3.20.1.1 PCF Generator 308

TABLE OF CONTENTS

Section Page

3.20.1.2 Execution 310

3.20.1.3 Exit Codes 310

3.20.1.4 Test Summary 310

3.20.2 Evaluation Procedures 310

3.20.3 Log and Status File Results and Metadata Evaluation 311

3.20.3.1 Execution of Comparison Software for the Main Processor 311

3.20.3.2 Evaluation of Comparison Software Output 312

3.20.3.3 Evaluation of SSF HDF Product 312

3.20.4 Solutions to Possible Problems 313

3.20.5 Stand Alone Test Procedures for FM2 314

3.20.5.1 PCF Generator 314

3.20.5.2 Execution 315

3.20.5.3 Exit Codes 316

3.20.5.4 Test Summary 316

3.20.6 Evaluation Procedures 316

3.20.7 Log and Status File Results and Metadata Evaluation 317

3.20.7.1 Execution of Comparison Software for the Main Processor 317

3.20.7.2 Evaluation of Comparison Software Output 318

3.20.7.3 Evaluation of SSF HDF Product 318

3.20.8 Solutions to Possible Problems 318

3.21 CER4_5-6.6P3 Daily CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Postprocessor for Aqua 320

3.21.1 Stand Alone Test Procedures for FM3 320

3.21.1.1 PCF Generator 320

TABLE OF CONTENTS

Section Page

3.21.1.2 Execution 321
3.21.1.3 Exit Codes 322
3.21.1.4 Test Summary 322
3.21.2 Evaluation Procedures 322
3.21.3 Log and Status File Results and Metadata Evaluation 323
3.21.3.1 Execution of Comparison Software for the Main Processor 323
3.21.3.2 Evaluation of Comparison Software Output 324
3.21.3.3 Evaluation of SSF HDF Product 324
3.21.4 Solutions to Possible Problems 325
3.21.5 Stand Alone Test Procedures for FM4 326
3.21.5.1 PCF Generator 326
3.21.5.2 Execution 327
3.21.5.3 Exit Codes 328
3.21.5.4 Test Summary 328
3.21.6 Evaluation Procedures 328
3.21.7 Log and Status File Results and Metadata Evaluation 329
3.21.7.1 Execution of Comparison Software for the Main Processor 329
3.21.7.2 Evaluation of Comparison Software Output 330
3.21.7.3 Evaluation of SSF HDF Product 330
3.21.8 Solutions to Possible Problems 331
Appendix A - Acronyms and Abbreviations A-1
Appendix B - Directory Structure Diagrams B-1

TABLE OF CONTENTS

Section Page

Appendix C - File Description Tables C-1

C.1 Production Scripts and Executables C-1

C.2 Executables..... C-12

C.3 Status Message Files C-16

C.4 Processing Control Files (PCF) and Metadata Control Files (MCF)..... C-16

C.5 Ancillary Input Data..... C-23

C.6 Output Temporary Data Files (Production Results)..... C-29

LIST OF FIGURES

Figure Page

Figure B-1. Directory Structure for Inversion Tar File for PGEs CER4.5-6.1P1, CER4.5-6.2P1 and CER4.5-6.3P1. ..... B-1

Figure B-2. Directory Structure for Inversion Tar File for PGEs CER4.5-6.1P1, CER4.5-6.2P1 and CER4.5-6.3P1. ..... B-2

Figure B-3. Directory Structure for Inversion Tar File for PGEs CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.2P2, CER4.5-6.2P3, CER4.5-6.2P4, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.4P1, CER4.5-6.4P2, CER4.5-6.5P2, CER4.5-6.5P3, CER4.5-6.5P4, CER4.5-6.5P5, CER4.5-6.6P2, and CER4.5-6.6P3. ..... B-3

LIST OF TABLES

Figure Page

Table C.1-1. PGE CER4.5-6.1P1 Production Scripts C-1
Table C.1-2. PGE CER4.5-6.1P2 Production Scripts C-1
Table C.1-3. PGE CER4.5-6.1P3 Production Scripts C-2
Table C.1-4. PGE CER4.5-6.1P4 Production Scripts C-2
Table C.1-5. PGE CER4.5-6.1P5 Production Scripts C-3
Table C.1-6. PGE CER4.5-6.2P1 Production Scripts C-4
Table C.1-7. PGE CER4.5-6.2P2 Production Scripts C-4
Table C.1-8. PGE CER4.5-6.2P3 Production Scripts C-5
Table C.1-10. PGE CER4.5-6.3P1 Production Scripts C-6
Table C.1-11. PGE CER4.5-6.3P2 Production Scripts C-6
Table C.1-12. PGE CER4.5-6.3P3 Production Scripts C-7
Table C.1-13. PGE CER4.5-6.4P1 Production Scripts C-7
Table C.1-14. PGE CER4.5-6.4P2 Production Scripts C-8
Table C.1-15. PGE CER4.5-6.5P2 Production Scripts C-8
Table C.1-16. PGE CER4.5-6.5P3 Production Scripts C-9
Table C.1-17. PGE CER4.5-6.5P4 Production Scripts C-9
Table C.1-18. PGE CER4.5-6.5P5 Production Scripts C-10
Table C.1-19. PGE CER4.5-6.6P2 Production Scripts C-11
Table C.1-20. PGE CER4.5-6.6P3 Production Scripts C-11
Table C.2-1. PGE CER4.5-6.1P1 Executables C-12
Table C.2-2. PGE CER4.5-6.1P2 Executables C-12
Table C.2-3. PGE CER4.5-6.1P3 Executables C-12
Table C.2-4. PGE CER4.5-6.1P4 Executables C-12

LIST OF TABLES

Figure Page

Table C.2-5. PGE CER4.5-6.1P5 Executables C-13

Table C.2-6. PGE CER4.5-6.2P1 Executable C-13

Table C.2-7. PGE CER4.5-6.2P2 Executable C-13

Table C.2-8. PGE CER4.5-6.2P3 Executable C-13

Table C.2-9. PGE CER4.5-6.2P4 Executable C-13

Table C.2-10. PGE CER4.5-6.3P1 Executable C-14

Table C.2-11. PGE CER4.5-6.3P2 and CER4.5-6.6P2 Executables C-14

Table C.2-12. PGE CER4.5-6.3P3 Executables C-14

Table C.2-13. PGE CER4.5-6.4P1 Executables C-14

Table C.2-14. PGE CER4.5-6.4P2 Executables C-14

Table C.2-15. PGE CER4.5-6.5P2 Executables C-15

Table C.2-16. PGE CER4.5-6.5P3 Executables C-15

Table C.2-17. PGE CER4.5-6.5P4 Executables C-15

Table C.2-18. PGE CER4.5-6.5P5 Executables C-15

Table C.2-19. PGE CER4.5-6.6P2 Executables C-15

Table C.2-20. PGE CER4.5-6.6P2 Executables C-16

Table C.4-1. PGE CER4.5-6.1P1 Metadata Control Files C-16

Table C.4-2. PGEs CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4 and CER4.5-6.1P5 Metadata Control Files C-17

Table C.4-3. PGE CER4.5-6.2P1 Metadata Control Files C-17

Table C.4-5. PGE CER4.5-6.3P1 Metadata Control Files C-18

Table C.4-6. PGE CER4.5-6.3P2, CER4.5-6.5P2, CER4.5-6.5P4 and CER4.5-6.6P2 Metadata Control Files C-18

LIST OF TABLES

Figure Page

Table C.4-7. PGE CER4.5-6.3P3, CER4.5-6.5P3, CER4.5-6.5P5 and CER4.5-6.6P3 Metadata Control Files C-18

Table C.4-8. PGE CER4.5-6.4P1 and CER4.5-6.4P2 Metadata Control Files C-18

Table C.4-9. PGE CER4.5-6.1P1 Process Control Files C-19

Table C.4-10. PGE CER4.5-6.1P2 Process Control Files C-19

Table C.4-11. PGE CER4.5-6.1P3 Process Control Files C-19

Table C.4-12. PGE CER4.5-6.1P4 Process Control Files C-20

Table C.4-13. PGE CER4.5-6.1P5 Process Control Files C-20

Table C.4-14. PGE CER4.5-6.2P1 Process Control Files C-20

Table C.4-15. PGE CER4.5-6.2P2 Process Control Files C-20

Table C.4-16. PGE CER4.5-6.2P3 Process Control Files C-20

Table C.4-17. PGE CER4.5-6.2P4 Process Control Files C-21

Table C.4-18. PGE CER4.5-6.3P1 Process Control Files C-21

Table C.4-19. PGE CER4.5-6.3P2 Process Control Files C-21

Table C.4-20. PGE CER4.5-6.3P3 Process Control Files C-21

Table C.4-21. PGE CER4.5-6.4P1 Process Control Files C-22

Table C.4-22. PGE CER4.5-6.4P2 Process Control Files C-22

Table C.4-23. PGE CER4.5-6.5P2 Process Control Files C-22

Table C.4-24. PGE CER4.5-6.5P3 Process Control Files C-22

Table C.4-25. PGE CER4.5-6.5P4 Process Control Files C-22

Table C.4-26. PGE CER4.5-6.5P5 Process Control Files C-23

Table C.4-27. PGE CER4.5-6.6P2 Process Control Files C-23

Table C.4-28. PGE CER4.5-6.6P3 Process Control Files C-23

Table C.5-1. PGE CER4.5-6.1P1 Ancillary Input Data C-23

LIST OF TABLES

Figure Page

Table C.5-2. PGE CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.5P2, CER4.5-6.5P3, CER4.5-6.5P4, CER4.5-6.5P5, CER4.5-6.6P2, and CER4.5-6.6P3 Ancillary Input Data C-25

Table C.6-1. Output Temporary Data Files C-29

1.0 Introduction

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

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

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

1.1 Document Overview

This document, CERES Inversion to Instantaneous Top-of-Atmosphere (TOA) Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Release 4 Test Plan, is part of the CERES Subsystems 4.5 and 4.6 Release 4 delivery package provided to the Langley Atmospheric Science Data Center (ASDC). It provides a description of the CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Release 4 software and explains the procedures for installing, executing, and testing the software. A section is also included on validating the software results. 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.

This 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 Diagram
Appendix C - File Description Tables

1.2 Subsystem Overview

1.2.1 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Main Processors and HDF Post Processor

The Main Processor Product Generation Executives (PGE) CER4.5-6.1P1, CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4 and CER4.5-6.1P5 CERES Inversion to Instantaneous TOA Fluxes and the Empirical Estimates of Surface Radiation Budget, Subsystems 4.5 and 4.6, convert CERES filtered radiance measurements to instantaneous radiative flux estimates at the top of the Earth's atmosphere and produces radiative flux estimates at the Earth's surface for each CERES footprint. The output of the Subsystems 4.5 and 4.6 Main Processor PGE CER4.5-6.1P1, which is for TRMM VIRS-only processing, consists of a binary Single Scanner Footprint TOA/Surface Fluxes and Clouds (SSF) product, which serves as input for CERES Subsystem 5.0 and Subsystem 9.0, an ASCII Quality Control (QC) report, and a binary QC file. The output of the Subsystems 4.5 and 4.6 Main Processor PGE CER4.5-6.1P2, which is for Terra processing, consists of a binary Single Scanner Footprint TOA/Surface Fluxes and Clouds (SSF) product, a binary SSF Aerosol (SSFA) product containing MODIS aerosols, an ASCII Quality Control (QC) report, and a binary QC file. The output of the Subsystems 4.5 and 4.6 Main Processor PGE CER4.5-6.1P3, which is for Aqua processing, consists of a binary Single Scanner Footprint TOA/Surface Fluxes and Clouds (SSF) product, a binary SSF Aerosol (SSFA) product containing MODIS aerosols, an ASCII Quality Control (QC) report, and a binary QC file. . The output of the Subsystems 4.5 and 4.6 Main Processor PGE CER4.5-6.1P4, which is for Terra Edition4 processing, consists of a binary Single Scanner Footprint TOA/Surface Fluxes and Clouds (SSF) product, a binary SSF Aerosol (SSFA) product containing MODIS aerosols, an ASCII Quality Control (QC) report, and a binary QC file. The output of the Subsystems 4.5 and 4.6 Main Processor PGE CER4.5-6.1P5, which is for Aqua Edition4 processing, consists of a binary Single Scanner Footprint TOA/Surface Fluxes and Clouds (SSF) product, a binary SSF Aerosol (SSFA) product containing MODIS aerosols, an ASCII Quality Control (QC) report, and a binary QC file.

The HDF Post Processor for CERES Inversion to Instantaneous TOA Fluxes and the Empirical Estimates of Surface Radiation Budget, Subsystems 4.5 and 4.6, reads the binary SSF (and the binary SSFA for Terra and Aqua processing) as input and generates an SSF product in Hierarchical Data Format (HDF).

1.2.2 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Subset Post Processors

The Subsetting Post Processor PGEs CER4.5-6.2P1 (for TRMM VIRS-only SSF subsetting), CER4.5-6.2P2 (for Terra and Aqua SSF subsetting), CER4.5-6.2P4 (for Terra and Aqua Edition3 SSF subsetting), and CER4.5-6.2P3 (for Terra and Aqua Edition4 SSF subsetting) for CERES Inversion to Instantaneous TOA Fluxes and the Empirical Estimates of Surface Radiation Budget, Subsystems 4.5 and 4.6, reads up to 24 hourly binary SSF products as input and

generates two SSF daily subset files, the first containing daytime data and the second containing nighttime data. CER4.5-6.2P2, CER4.5-6.2P4, and CER4.5-6.2P3 also read in the hourly Terra or Aqua binary SSFA products as input and subsets the SSFA file into two daytime and nighttime aerosol binary files. The same footprints that were placed on the SSF subset files are selected for the SSF aerosol subset files. PGE's CER4.5-6.2P2, CER4.5-6.2P4 and CER4.5-6.2P3 also produce daily binary and HDF SSF Nadir products that contain nadir viewing footprints and a daily binary SSF validation product.

1.2.3 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Post Processor

The Alternate Main Processor converts CERES unfiltered radiance measurements to instantaneous radiative flux estimates at the top of the Earth's atmosphere and produces radiative flux estimates at the Earth's surface for each CERES footprint. This processor uses an archived binary SSF as input and only the TOA and surface fluxes are replaced. The output of Subsystems 4.5 and 4.6 Alternate Main Processor consists of a binary Single Scanner Footprint (SSF) product and an SSF product in Hierarchical Data Format (HDF). CER4.5-6.3P1 processes TRMM data, CER4.5-6.3P2 processes Terra data, and CER4.5-6.3P3 processes Aqua data.

1.2.4 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Monthly Validation Site Post Processor

The Monthly Validation Site Post Processor combines all of the CERES validation site footprint records that were archived in the daily validation site SSF products for a single instrument during a data month and combines them into a single monthly binary SSF file.

1.2.5 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Post Processor Using Instrument IES data

The Alternate Main Processor converts CERES unfiltered radiance measurements to instantaneous radiative flux estimates at the top of the Earth's atmosphere and produces radiative flux estimates at the Earth's surface for each CERES footprint. This processor uses an archived binary SSF and an archived binary IES as input and only the TOA and surface fluxes are replaced. The output of Subsystems 4.5 and 4.6 Alternate Main Processor consists of an Edition4 binary Single Scanner Footprint (SSF) product and an SSF product in Hierarchical Data Format (HDF). CER4.5-6.5P2 processes Terra data and CER4.5-6.5P3 processes Aqua data.

1.2.6 CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Post Processor Using Instrument IES data

The Alternate Main Processor converts CERES unfiltered radiance measurements to instantaneous radiative flux estimates at the top of the Earth's atmosphere and produces radiative flux estimates at the Earth's surface for each CERES footprint. This processor uses an archived binary SSF and an archived binary IES as input and only the TOA and surface fluxes are replaced. The output of Subsystems 4.5 and 4.6 Alternate Main Processor consists of an

Edition3 binary Single Scanner Footprint (SSF) product and an SSF product in Hierarchical Data Format (HDF). CER4.5-6.5P4 processes Terra data and CER4.5-6.5P5 processes Aqua data.

1.2.7 CER4.5-6.6P2 - Daily CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Postprocessor for Terra

The Daily Alternate Main Processor converts up to 24 hours of CERES unfiltered radiance measurements to instantaneous radiative flux estimates at the top of the Earth's atmosphere and produces radiative flux estimates at the Earth's surface for each CERES footprint. This processor uses archived binary SSF files as input and only the TOA and surface fluxes are replaced.

The output of Subsystems 4.5 and 4.6 Daily Alternate Main Processor consists of up to 24 hourly binary Single Scanner Footprint (SSF) products and SSF products in Hierarchical Data Format (HDF).

1.2.8 CER4.5-6.6P3 - Daily CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Postprocessor for Aqua

The Daily Alternate Main Processor converts up to 24 hours of CERES unfiltered radiance measurements to instantaneous radiative flux estimates at the top of the Earth's atmosphere and produces radiative flux estimates at the Earth's surface for each CERES footprint. This processor uses archived binary SSF files as input and only the TOA and surface fluxes are replaced.

The output of Subsystems 4.5 and 4.6 Daily Alternate Main Processor consists of up to 24 hourly binary Single Scanner Footprint (SSF) products and SSF products in Hierarchical Data Format (HDF).

2.0 Software and Data File Installation Procedures

This section describes how to install the Subsystems 4.5 and 4.6 Inversion software in preparation for making the necessary test runs at the Langley ASDC. The installation procedures include instructions for uncompressing and untarring the delivered tar files, properly defining environmental variables, and compiling the Inversion programs.

2.1 Installation

Software/Data File Install Procedure:

1. The scripts, makefiles and Process Control Files in the Subsystems 4.5 and 4.6 delivery package expect the CERES environment variable, **$CERESENV,** to point to a file which sets the following environment variables:

PGSDIR	**-**	**Directory for Toolkit libraries**
F90	**-**	**Pointer to the SGI F90 64 bit compiler**
CERESHOME	**-**	**Top Directory for CERES Software**
CERESLIB	**-**	**Directory for CERESlib**
PGSMSG	**-**	**Directory which contains Toolkit and CERES Status Message Files**
PGSLIB	**-**	**Directory which contains SGI 64-bit Toolkit library file**
PGSINC	**-**	**Pointer to the PGS include file directory**
HDFDIR	**-**	**Pointer to the HDF home directory**
HDFINC	**-**	**Pointer to the directory containing the HDF header files**
HDFLIB	**-**	**Pointer to the directory containing the HDF library**

2. Change directory to the directory where you plan to install the Inversion Subsystems. (The following instructions assume that the directory will be **$CERESHOME**.)

3. Uncompress and untar the tar files by replacing **XXX** with the appropriate SCCR number and typing the following commands:

```
uncompress inversion_src_R5-XXX.tar.Z
tar xf inversion_src_R5-XXX.tar
uncompress inversion_anc_R5-XXX.tar.Z
tar xf inversion_anc_R5-XXX.tar
uncompress inversion_data_R5-XXX.tar.Z
tar xf inversion_data_R5-XXX.tar
```

2.2 Compilation

The instructions for compiling the main processor and HDF post processor and comparison software for PGE CER4.5-6.1P1 are shown in Section 2.2.1, the instructions for compiling the SSF subset post processor and comparison software for PGE CER4.5-6.2P1 are shown in Section 2.2.2, and the instructions for compiling the alternate main processor and HDF post processor and comparison software for PGE CER4.5-6.3P1 are shown in Section 2.2.3. The compilation scripts contained in each of these sections can be compiled independently, if the software delivery contains only one PGE.

2.2.1 Compiling PGEs CER4.5-6.1P1, CER4.5-6.1P2, and CER4.5-6.1P3

To create the Main and Post Processor executables on directory **$CERESHOME/inversion/bin/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV

For TRMM VIRS-only processing, execute the following command:

cd $CERESHOME/inversion/bin
compile_4.5-6.1P1.csh

For Terra processing, execute the following command:

cd $CERESHOME/inversion/CER4.5-6.1P2/rcf
compile_4.5-6.1P2.pl

The following files will be created in **$CERESHOME/inversion/CER4.5-6.1P2/bin**:
invsurf_p2_ppc64.exe for *P6* processors
invsurf_p2_x86_64.exe for *x86* processors
ssf2hdf_1p2_ppc64.exe for *P6* processors
ssf2hdf_1p2_x86_64.exe for *x86* processors

For Aqua processing, execute the following command:

cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
compile_4.5-6.1P3.pl

The following files will be created in **$CERESHOME/inversion/CER4.5-6.1P3/bin**:
invsurf_1p3_ppc64.exe for *P6* processors
invsurf_1p3_x86_64.exe for *x86* processors
ssf2hdf_1p3_ppc64.exe for *P6* processors
ssf2hdf_1p3_x86_64.exe for *x86* processors

2.2.2 Compiling PGE CER4.5-6.1P4

To create the Main and Post Processor executables on directory **$CERESHOME/inversion/CER4.5-6.1P4/rcf/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.1P4/rcf

For Terra processing, execute the following command:

compile_4.5-6.1P4.csh

The following files will be created in **$CERESHOME/inversion/CER4.5-6.1P4/bin**:

invsurf_p4_ppc64.exe for *P6* processor
ssf2hdf_ed4_ppc64.exe for *P6* processor

2.2.3 Compiling PGE CER4.5-6.1P5

To create the Main and Post Processor executables on directory **$CERESHOME/inversion/CER4.5-6.1P5/rcf/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

```
source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
```

For Aqua processing, execute the following command:

```
compile_4.5-6.1P5.csh
```

The following files will be created in **$CERESHOME/inversion/CER4.5-6.1P5/bin**:

invsurf_p5_ppc64.exe for *P6* processor
ssf2hdf_ed4 _ppc64.exe for *P6* processor

2.2.4 Compiling PGE CER4.5-6.2P1 and PGE CER4.5-6.2P2

To create the SSF Subset Post Processor executable for PGE CER4.5-6.2P1 and the SSF Subset Post Processor and HDF Post Processor for PGE CER4.5-6.2P2 on directory **$CERESHOME/inversion/bin/** and to create the comparison software executable on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

```
source $CERESENV
```

For TRMM VIRS-only processing, execute the following command:

```
cd $CERESHOME/inversion/bin
compile_4.5-6.2P1.csh
```

For Terra and Aqua processing, execute the following command:

```
cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
compile_4.5-6.2P2.pl
```

The following files will be created in **$CERESHOME/inversion/CER4.5-6.2P2/bin**:

ssf2hdf_2p2_ppc64.exe for *P6* processor
ssf2hdf_2p2_x86_64.exe for *x86* processor
subset_ssf_2p2_ppc64.exe for *P6* processor
subset_ssf_2p2_x86_64.exe for *x86* processor

2.2.5 Compiling PGE CER4.5-6.2P3

To create the SSF Subset Post Processor and HDF Post Processor for PGE CER4.5-6.2P3 on directory **$CERESHOME/inversion/CER4.5-6.2P3/rcf/** and to create the comparison software executable on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.2P3/rcf

For Terra and Aqua processing, execute the following command:

compile_4.5-6.2P3.csh

The following files will be created in **$CERESHOME/inversion/CER4.5-6.2P3/bin**:
ssf2hdf_ed4_ppc64.exe for *P6* processor
subset_ssf_2p3_ppc64.exe for *P6* processor

2.2.6 Compiling PGE CER4.5-6.2P4

To create the SSF Subset Post Processor and HDF Post Processor for PGE CER4.5-6.2P4 on directory **$CERESHOME/inversion/CER4.5-6.2P4/rcf/** and to create the comparison software executable on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.2P4/rcf

For Terra and Aqua processing, execute the following command:

compile_4.5-6.2P4.pl

The following files will be created in **$CERESHOME/inversion/CER4.5-6.2P4/bin**:
ssf2hdf_2p4_ppc64.exe for *P6* processors
subset_ssf_2p4_ppc64.exe for *P6* processors
ssf2hdf_2p4_x86_64.exe for *x86* processors
subset_ssf_2p4_x86_64.exe for *x86* processors

2.2.7 Compiling PGE CER4.5-6.3P1

To create the Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/bin/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/bin
compile_4.5-6.3P1.csh

2.2.8 Compiling PGE CER4.5-6.3P2

To create the Terra Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/bin/**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.3P2/rcf
compile_4.5-6.3P2.csh

The following files will be created in **$CERESHOME/inversion/CER4.5-6.3P2/bin**:
invsurf-3P2.exe
ssf2hdf_3p2.exe

2.2.9 Compiling PGE CER4.5-6.3P3

To create the Aqua Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/bin/**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.3P3/rcf
compile_4.5-6.3P3.csh

The following files will be created in **$CERESHOME/inversion/CER4.5-6.3P3/bin**:
invsurf-3p3.exe
ssf2hdf_3p3.exe

2.2.10 Compiling PGE CER4.5-6.4P1

To create the Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/CER4.5-6.4P1/bin/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
compile_4.5-6.4P1.pl

The following file will be created in **$CERESHOME/inversion/CER4.5-6.4P1/bin**:
monthly_val_ssf_ppc64.exe for *P6* processors
monthly_val_ssf_x86_64.exe for *x86* processors

2.2.11 Compiling PGE CER4.5-6.4P2

To create the Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/CER4.5-6.4P2/rcf/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
compile_4.5-6.4P2.csh

The following files will be created in **$CERESHOME/inversion/CER4.5-6.4P2/bin**:
monthly_val_ssf.exe

2.2.12 Compiling PGE CER4.5-6.5P2

To create the Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/bin/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.5P2/rcf
compile_4.5-6.5P2.csh

The following files will be created in **$CERESHOME/inversion/CER4.5-6.5P2/bin**:
invsurf_5p2.exe
ssf2hdf_ed3.exe

2.2.13 Compiling PGE CER4.5-6.5P3

To create the Daily Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/bin/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.5P3/rcf
compile_4.5-6.5P3.csh

The following files will be created in **$CERESHOME/inversion/CER4.5-6.5P3/bin**:
invsurf_5p3.exe
ssf2hdf_ed3.exe

2.2.14 Compiling PGE CER4.5-6.5P4

To create the Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/CER4.5-6.5P4/bin/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.5P4/rcf
compile_4.5-6.5P4.pl

The following files will be created in **$CERESHOME/inversion/CER4.5-6.5P4/bin**:
invsurf-5P4_ppc64.exe for *P6* processors
ssf2hdf_5p4_ppc64.exe for *P6* processors
invsurf-5P4_x86_64.exe for *x86* processors
ssf2hdf_5p4_x86_64.exe for *x86* processors

2.2.15 Compiling PGE CER4.5-6.5P5

To create the Daily Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/CER4.5-6.5P5/bin/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.5P5/rcf
compile_4.5-6.5P5.pl

The following files will be created in **$CERESHOME/inversion/CER4.5-6.5P5/bin**:
invsurf-5P5_ppc64.exe for *P6* processors
ssf2hdf_5p5_ppc64.exe for *P6* processors
invsurf-5P5_x86_64.exe for *x86* processors
ssf2hdf_5p5_x86_64.exe for *x86* processors

2.2.16 Compiling PGE CER4.5-6.6P2

To create the Daily Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/bin/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.6P2/rcf
compile_4.5-6.6P2.csh

The following files will be created in **$CERESHOME/inversion/CER4.5-6.6P2/bin**:
invsurf-6P2.exe
ssf2hdf_6p2.exe

2.2.17 Compiling PGE CER4.5-6.6P3

To create the Daily Alternate Main and Post Processor executables on directory **$CERESHOME/inversion/bin/** and to create the comparison software executables on **$CERESHOME/inversion/test_suites/bin**, type the following commands:

source $CERESENV
cd $CERESHOME/inversion/CER4.5-6.6P3/rcf
compile_4.5-6.6P3.csh

The following files will be created in **$CERESHOME/inversion/CER4.5-6.6P3/bin**:
invsurf-6P3.exe
ssf2hdf_6p3.exe

3.0 Test and Evaluation Procedures

This section provides general information on how to execute Subsystems 4.5 and 4.6 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 CER4_5-6.1P1 Main and Post Processors for TRMM VIRS-only Processing

3.1.1 Stand Alone Test Procedures

3.1.1.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.1P1.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P1.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/bin
setenv DATE_1P1 1998050101
source $CERESHOME/inversion/bin/inversion-test-env.csh
setenv INSTANCE_1P1 $SS4_5\_$PS4_5\_$CC4_5\.$DATE_1P1
setenv INSTANCE_cld $SS4_4\_$PS4_1\_$CC4_4\.$DATE_1P1
$CERESHOME/inversion/bin/pcfgen_4.5-6.1P1.csh $DATE_1P1
```

The following files will be generated:

$CERESHOME/inversion/rcf/CER4.5-6.1P1_PCFin_$INSTANCE_1P1
$CERESHOME/inversion/rcf/CER4.5-6.1P1_PCF_$INSTANCE_1P1

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER_MOA_CERES_ECMWF-
    GEOS2_$CC12.1998050100
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER_MOA_CERES_ECMWF-
    GEOS2_$CC12.1998050106
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER_SSFI_$INSTANCE_cld
    $CERESHOME/clouds/data/out_comp/data/SSF_Int/
cp $CERESHOME/inversion/data/input/CER_FQCI_$INSTANCE_cld
    $CERESHOME/clouds/data/out_comp/QA_Reports/
```

3.1.1.2 Execution

Execute the production script by typing the script name, **run_4.5-6.1P1.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use $INSTANCE_1P1, defined in Section 3.1.1.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P1:

cd $CERESHOME/inversion/bin
$CERESHOME/inversion/bin/run_4.5-6.1P1.csh $INSTANCE_1P1

The script, **list_4.5-6.1P1.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/bin/list_4.5-6.1P1.csh $INSTANCE_1P1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.1.1.3 Exit Codes

All CER4.5-6.1P1 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.

3.1.1.4 Test Summary

Test Summary:

Total Run Time:	2:34 minutes
Memory:	203520 K
Required Disk Space:	679 Megabytes

3.1.2 Evaluation Procedures

When running the production script, **run_4.5-6.1P1.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data from the clouds directory:

rm
$CERESHOME/clouds/data/out_comp/data/SSF_Int/CER_SSFI_$INSTANCE_cld
rm
$CERESHOME/clouds/data/out_comp/QA_Reports/CER_FQCI_$INSTANCE_cld

If testing of CER4.5-6.3P1 will not be run, then remove MOA input files:

rm
$CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS2_$CC12.1998050100
rm
$CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS2_$CC12.1998050106

3.1.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P1_LogReport_$INSTANCE_1P1**, is located in directory **$CERESHOME/inversion/data/runlogs** after CER4.5-6.1P1 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P1 has been executed. Metadata files, **CER_GQCA_$INSTANCE_1P1.met** and **CER_GQCI_$INSTANCE_1P1.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/QC**. Metadata files, **CER_SSFB_$INSTANCE_1P1.met** and **CER_SSF_$INSTANCE_1P1.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data/out_exp/comp_data** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data/out_exp/comp_data**, using the following **diff_4.5-6.1P1.csh** script:

cd $CERESHOME/inversion/bin
$CERESHOME/inversion/bin/diff_4.5-6.1P1.csh $INSTANCE_1P1

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

3.1.2.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will copy all of the parameters that were written to the binary SSF by PGE CER4.5-6.1P1 into a file and will compare those parameter values to the values in a comparison file provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare $INSTANCE_1P1

   One file will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P1

3.1.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P1 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P1

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.1.2.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

source $CERESENV
cd $CERESHOME/inversion/test_suites/bin
hcmp.exe
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_1P1
$CERESHOME/inversion/data/out_exp/data/CER_SSF_$INSTANCE_1P1

The executable, **hcmp.exe**, compares each Vdata and each SDS on the SSF HDF output file. If the SDS data or Vdata field data on the newly created HDF file, **$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_1P1**, matches the data on the provided SSF HDF file of the same name on **$CERESHOME/inversion/data/out_exp/data**, '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: "SSF_DATE" on the "SSF_Header" 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.

3.1.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P1 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.1P1.csh**, is located in directory **$CERESHOME/inversion/bin**. Note: the output from CER4.5-6.1P1 will be used as input for testing PGE CER4.5-6.3P1. To use the clean-up script:

   $CERESHOME/inversion/bin/cleanup_4.5-6.1P1.csh $INSTANCE_1P1

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.2 CER4_5-6.1P2 Main and Post Processors for Terra Processing for both *P6* and *x86* processors.

3.2.1 Stand Alone Test Procedures for FM1

3.2.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P2/rcf
setenv YEAR 2001
setenv MONTH 04
setenv DAY 10
setenv HOUR 01
setenv DATE_1P2 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P2 Terra-FM1-MODIS_SSIT_000000.$DATE_1P2
setenv SCC_1P2 Terra-FM1_Test_000024.20010415
source $CERESHOME/inversion/CER4.5-6.1P2/rcf/inversion-FM1-test.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P2/CER_MOA_CERES_ECMWF-GEOS3_015019.2001041000
    $InputArchive/MOA/CERES_ECMWF-GEOS3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P2/CER_MOA_CERES_ECMWF-GEOS3_015019.2001041006
    $InputArchive/MOA/CERES_ECMWF-GEOS3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P2/CER_SSFI_$INSTANCE_1P2 $InputArchiveInt/SSF_Int/Terra-FM1-
    MODIS_SSIT/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P2/CER_SSFAI_$INSTANCE_1P2 $InputArchiveInt/SSF_Int/Terra-
    FM1-MODIS_SSIT/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P2/CER_SSFAI_$INSTANCE_1P2.met $InputArchiveInt/SSF_Int/Terra-
    FM1-MODIS_SSIT/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P2/CER_FQCI_$INSTANCE_1P2 $InputArchiveInt/FQC/Terra-FM1-
    MODIS_SSIT/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P2/CER_SCCD_$SCC_1P2
    $InputArchive/SCCD/Terra-FM1_Test/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P2/CER_SCCN_$SCC_1P2
    $InputArchive/SCCN/Terra-FM1_Test/2001/04/
```

3.2.1.2 Execution

Execute the production script by typing the script name, **CER4.5-6.1P2-SGE_Driver.pl**, followed by the date and hour options, the cleanup option and the platform option selecting either *p6* or *x86*.

cd $CERESHOME/inversion/CER4.5-6.1P2/rcf
$CERESHOME/inversion/CER4.5-6.1P2/rcf/CER4.5-6.1P2-SGE_Driver.pl -date 20010410 -hour 01 -clean -platform p6/x86

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P2/rcf/pcf/CER4.5-6.1P2_PCF_$INSTANCE_1P2
The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P2/CER4.5-6.1P2_$INSTANCE_1P2.o*

Output file generation test:

The script, **list_4.5-6.1P2.pl**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P2/rcf/list_4.5-6.1P2.pl $INSTANCE_1P2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.2.1.3 Exit Codes

All CER4.5-6.1P2 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.

3.2.1.4 Test Summary

Test Summary:

Total Run Time:	4:20 minutes
Memory:	298143 K
Required Disk Space:	679 Megabytes

3.2.2 Evaluation Procedures

Remove input files:

rm $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_SSIT/2001/04/CER_SSFI_$INSTANCE_1P2
rm $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_SSIT/2001/04/CER_SSFAI_$INSTANCE_1P2
rm $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_SSIT/2001/04/CER_SSFAI_$INSTANCE_1P2.met

rm $InputArchiveInt/FQC/Terra-FM1-MODIS_SSIT/2001/04/CER_FQCI_$INSTANCE_1P2
rm $InputArchive/SCCD/Terra-FM1_Test/2001/04/CER_SCCD_$SCC_1P2
rm $InputArchive/SCCN/Terra-FM1_Test/2001/04/CER_SCCN_$SCC_1P2
rm $InputArchive/MOA/CERES_ECMWF-GEOS3/2001/04/CER_MOA_CERES_ECMWF-GEOS3_015019.2001041000
rm $InputArchive/MOA/CERES_ECMWF-GEOS3/2001/04/CER_MOA_CERES_ECMWF-GEOS3_015019.2001041006

3.2.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P2_LogReport_$INSTANCE_1P2**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P2 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P2 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P2** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P2**, using the following **diff_4.5-6.1P2.pl** script:

cd $CERESHOME/inversion/CER4.5-6.1P2/rcf
$CERESHOME/inversion/CER4.5-6.1P2/rcf/diff_4.5-6.1P2.pl $INSTANCE_1P2

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

3.2.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p2 $INSTANCE_1P2

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P2
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P2

3.2.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P2 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P2
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P2

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.2.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM1-MODIS_SSIT/2001/04/CER_SSF_$INSTANCE_1P2 $CERESHOME/inversion/data_exp/CER4.5-6.1P2/CER_SSF_$INSTANCE_1P2

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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. Differences in the third to sixth decimal places for the data fields are acceptable.

3.2.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P2 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P2.pl**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P2/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.1P2/rcf
   $CERESHOME/inversion/CER4.5-6.1P2/rcf/cleanup_4.5-6.1P2.pl $DATE_1P2

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.3 CER4_5-6.1P3 Main and Post Processors for Aqua Processing

3.3.1 Stand Alone Test Procedures for FM3

3.3.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
setenv YEAR 2002
setenv MONTH 08
setenv DAY 07
setenv HOUR 00
setenv DATE_FM3 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_FM3 Aqua-FM3-MODIS_SSIT_000000.$DATE_FM3
source $CERESHOME/inversion/CER4.5-6.1P3/rcf/inversion-FM3-test.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_MOA_CERES_DAO-GEOS4_016023.2002080700
    $InputArchive/MOA/CERES_DAO-GEOS4/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_SSFI_$INSTANCE_FM3 $InputArchiveInt/SSF_Int/Aqua-
    FM3-MODIS_SSIT/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_SSFAI_$INSTANCE_FM3 $InputArchiveInt/SSF_Int/Aqua-
    FM3-MODIS_SSIT/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_SSFAI_$INSTANCE_FM3.met
    $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_FQCI_$INSTANCE_FM3 $InputArchiveInt/FQC/Aqua-FM3-
    MODIS_SSIT/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P3/CER_SCCD_Aqua-
    FM3_Edition2_026023.20020815 $InputArchive/SCCD/Aqua-
    FM3_Edition2/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P3/CER_SCCN_Aqua-
    FM3_Edition2_026023.20020815 $InputArchive/SCCN/Aqua-
    FM3_Edition2/2002/08/
```

3.3.1.2 Execution

Execute the production script by typing the script name, **CER4.5-6.1P3-SGE_Driver.pl**, followed by the date and hour options, the cleanup option and the platform option selecting either *p6* or *x86*.

cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
$CERESHOME/inversion/CER4.5-6.1P3/rcf/CER4.5-6.1P3-SGE_Driver.pl -date 20020807 -hour 00 -clean -platform p6/x86

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P3/rcf/pcf/CER4.5-6.1P3_PCF_$INSTANCE_FM3

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P3/CER4.5-6.1P3_$INSTANCE_FM3.o*

Output file generation test:

The script, **list_4.5-6.1P3.pl**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P3/rcf/list_4.5-6.1P3.pl $INSTANCE_FM3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.3.1.3 Exit Codes

All CER4.5-6.1P3 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.

3.3.1.4 Test Summary

Test Summary:

Total Run Time:	2:20 minutes
Memory:	296009 K
Required Disk Space:	679 Megabytes

3.3.2 Evaluation Procedures

When running the production script, **run_4.5-6.1P3.pl**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input files:

rm $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2002/08/CER_SSFI_$INSTANCE_FM3
rm $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2002/08/CER_SSFAI_$INSTANCE_FM3
rm $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2002/08/CER_SSFAI_$INSTANCE_FM3.met
rm $InputArchiveInt/FQC/Aqua-FM3-MODIS_SSIT/2002/08/CER_FQCI_$INSTANCE_FM3
rm $InputArchive/MOA/CERES_DAO-GEOS4/2002/08/CER_MOA_CERES_DAO-GEOS4_016023.2002080700
rm $InputArchive/SCCD/Aqua-FM3_Edition2/2002/08/CER_SCCD_Aqua-FM3_Edition2_026023.20020815
rm $InputArchive/SCCN/Aqua-FM3_Edition2/2002/08/CER_SCCN_Aqua-FM3_Edition2_026023.20020815

3.3.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P3_LogReport_$INSTANCE_FM3**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P3 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P3 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P3** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P3**, using the following **diff_4.5-6.1P3.pl** script:

cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
$CERESHOME/inversion/CER4.5-6.1P3/rcf/diff_4.5-6.1P3.pl $INSTANCE_FM3

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

3.3.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p3 $INSTANCE_FM3

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_FM3
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_FM3

3.3.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P3 comparison software.

Examine the comparison reports files by typing:

```
cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_FM3
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_FM3
```

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.3.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

```
cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
hdiff $CERESHOME/inversion/data/SSF/Aqua-FM3-
    MODIS_SSIT/2002/08/CER_SSF_$INSTANCE_FM3
    $CERESHOME/inversion/data_exp/CER4.5-
    6.1P3/CER_SSF_$INSTANCE_FM3
```

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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. Differences in the third to sixth decimal places for the data fields are acceptable.

3.3.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P3 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P3.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P3/rcf**. To use the clean-up script:

   ```
   cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
   $CERESHOME/inversion/CER4.5-6.1P3/rcf/cleanup_4.5-6.1P3.pl $DATE_FM3
   ```

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.3.5 Stand Alone Test Procedures for FM4

3.3.5.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
setenv YEAR 2002
setenv MONTH 08
setenv DAY 07
setenv HOUR 00
setenv DATE_FM4 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_FM4 Aqua-FM4-MODIS_SSIT_000000.$DATE_FM4
source $CERESHOME/inversion/CER4.5-6.1P3/rcf/inversion-FM4-test.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_MOA_CERES_DAO-GEOS4_016023.2002080700
    $InputArchive/MOA/CERES_DAO-GEOS4/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_SSFI_$INSTANCE_FM4 $InputArchiveInt/SSF_Int/Aqua-
    FM4-MODIS_SSIT/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_SSFAI_$INSTANCE_FM4 $InputArchiveInt/SSF_Int/Aqua-
    FM4-MODIS_SSIT/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_SSFAI_$INSTANCE_FM4.met
    $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P3/CER_FQCI_$INSTANCE_FM4  $InputArchiveInt/FQC/Aqua-FM4-
    MODIS_SSIT/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P3/CER_SCCD_Aqua-
    FM4_Edition2_026023.20020815 $InputArchive/SCCD/Aqua-
    FM4_Edition2/2002/08/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P3/CER_SCCN_Aqua-
    FM4_Edition2_026023.20020815 $InputArchive/SCCN/Aqua-
    FM4_Edition2/2002/08/
```

3.3.5.2 Execution

Execute the production script by typing the script name, **CER4.5-6.1P3-SGE_Driver.pl**, followed by the date and hour options, the cleanup option and the platform option selecting either *p6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
$CERESHOME/inversion/CER4.5-6.1P3/rcf/CER4.5-6.1P3-SGE_Driver.pl -date
    20020807 -hour 00 -clean -platform p6/x86
```

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P3/rcf/pcf/CER4.5-6.1P3_PCF_$INSTANCE_FM4

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P3/CER4.5-6.1P3_$INSTANCE_FM4.o*

Output file generation test:

The script, **list_4.5-6.1P3.pl**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P3/rcf/list_4.5-6.1P3.pl $INSTANCE_FM4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.3.5.3 Exit Codes

All CER4.5-6.1P3 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.

3.3.5.4 Test Summary

Test Summary:

Total Run Time:	2:20 minutes
Memory:	296009 K
Required Disk Space:	679 Megabytes

3.3.6 Evaluation Procedures

When running the production script, **run_4.5-6.1P3.pl**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input files:

rm $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2002/08/CER_SSFI_$INSTANCE_FM4
rm $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2002/08/CER_SSFAI_$INSTANCE_FM4

rm $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2002/08/CER_SSFAI_$INSTANCE_FM4.met
rm $InputArchiveInt/FQC/Aqua-FM4-MODIS_SSIT/2002/08/CER_FQCI_$INSTANCE_FM4
rm $InputArchive/MOA/CERES_DAO-GEOS4/2002/08/CER_MOA_CERES_DAO-GEOS4_016023.2002080700
rm $InputArchive/SCCD/Aqua-FM4_Edition2/2002/08/CER_SCCD_Aqua-FM4_Edition2_026023.20020815
rm $InputArchive/SCCN/Aqua-FM4_Edition2/2002/08/CER_SCCN_Aqua-FM4_Edition2_026023.20020815

3.3.7 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P3_LogReport_$INSTANCE_FM4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P3 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P3 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P3** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P3**, using the following **diff_4.5-6.1P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
$CERESHOME/inversion/CER4.5-6.1P3/rcf/diff_4.5-6.1P3.pl $INSTANCE_FM4

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

3.3.7.1 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p3 $INSTANCE_FM4

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_FM4
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_FM4

3.3.7.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P3 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_FM4
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_FM4

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.3.7.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
hdiff $CERESHOME/inversion/data/SSF/Aqua-FM4-MODIS_SSIT/2002/08/CER_SSF_$INSTANCE_FM4 $CERESHOME/inversion/data_exp/CER4.5-6.1P3/CER_SSF_$INSTANCE_FM4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file. The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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. Differences in the third to sixth decimal places for the data fields are acceptable.

3.3.8 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P3 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P3.pl**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P3/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.1P3/rcf
   $CERESHOME/inversion/CER4.5-6.1P3/rcf/cleanup_4.5-6.1P3.pl $DATE_FM4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.4 CER4_5-6.1P4 Main and Post Processors for Terra Edition4 Processing

3.4.1 Stand Alone Test Procedures for FM1, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no'

3.4.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
setenv YEAR 2008
setenv MONTH 07
setenv DAY 15
setenv HOUR 15
setenv DATE_1P4 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P4 Terra-FM1-MODIS_Ed4Test_000000.$DATE_1P4
setenv SCC_1P4 Terra-FM1_Edition3_300300.20080715
source $CERESHOME/inversion/CER4.5-6.1P4/rcf/inversion-FM1-test1-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFI_Terra-FM1-
    MODIS_Ed4Test_000000.2008071515 $InputArchiveInt/SSF_Int/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFAI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515
    $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFAI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515.met
    $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_FQCI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchiveInt/FQC/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCD_$SCC_1P4
    $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCN_$SCC_1P4
    $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/MATCH_TERRA_AOTS_MODIS.C5.20080715
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/
```

3.4.1.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P4.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P4.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcfgen_4.5-6.1P4.csh $DATE_1P4

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

Execute the production script by typing the script name, **run_4.5-6.1P4.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P4**, defined in Section 3.4.1.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P4:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/run_4.5-6.1P4.csh $INSTANCE_1P4

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P4-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/CER4.5-6.1P4-SGE_Driver.pl -date 20080715 -hour 15 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P4/CER4.5-6.1P4_$INSTANCE_1P4.o*

Output file generation test:

The script, **list_4.5-6.1P4.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/list_4.5-6.1P4.csh $INSTANCE_1P4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.4.1.3 Exit Codes

All CER4.5-6.1P4 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.4.1.4 Test Summary

Test Summary:

Total Run Time:	4:50 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.4.2 Evaluation Procedures

When running the production script, **run_4.5-6.1P4.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFI_$INSTANCE_1P4
rm $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFAI_$INSTANCE_1P4

rm $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFAI_$INSTANCE_1P4.met
rm $InputArchiveInt/FQC/Terra-FM1-MODIS_Ed4Test/2008/07/CER_FQCI_$INSTANCE_1P4
rm $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/CER_SCCD_$SCC_1P4
rm $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/CER_SCCN_$SCC_1P4
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/MATCH_TERRA_AOTS_MODIS.C5.20080715

3.4.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P4_LogReport_$INSTANCE_1P4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P4 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P4 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4**, using the following **diff_4.5-6.1P4.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/diff_4.5-6.1P4.csh $INSTANCE_1P4

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

3.4.2.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p4 $INSTANCE_1P4

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

3.4.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P4 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.4.2.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSF_$INSTANCE_1P4 $CERESHOME/inversion/data_exp/CER4.5-6.1P4/CER_SSF_$INSTANCE_1P4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.4.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P4 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P4.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P4/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P4/rcf/cleanup_4.5-6.1P4.csh $INSTANCE_1P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.4.4 Stand Alone, command line, Test Procedures for FM1, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no'

3.4.4.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
setenv YEAR 2008
setenv MONTH 07
setenv DAY 15
setenv HOUR 15
setenv DATE_1P4 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P4 Terra-FM1-MODIS_Ed4Test-
    reproc_000000.$DATE_1P4
setenv SCC_1P4 Terra-FM1_Edition3_300300.20080715
source $CERESHOME/inversion/CER4.5-6.1P4/rcf/inversion-FM1-test2-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFB_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/SSFB/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFA_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/SSFA/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFA_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515.met $InputArchive/SSFA/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_GQCI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/GQCI/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCD_$SCC_1P4
    $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCN_$SCC_1P4
    $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/MATCH_TERRA_AOTS_MODIS.C5.20080715
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/
```

3.4.4.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P4.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P4.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcfgen_4.5-6.1P4.csh $DATE_1P4

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

Execute the production script by typing the script name, **run_4.5-6.1P4.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P4**, defined in Section 3.4.4.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P4:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/run_4.5-6.1P4.csh $INSTANCE_1P4

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P4-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/CER4.5-6.1P4-SGE_Driver.pl -date 20080715 -hour 15 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P4/CER4.5-6.1P4_$INSTANCE_1P4.o*

Output file generation test:

The script, **list_4.5-6.1P4.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/list_4.5-6.1P4.csh $INSTANCE_1P4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.4.4.3 Exit Codes

All CER4.5-6.1P4 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.4.4.4 Test Summary

Test Summary:

Total Run Time:	4:49 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.4.5 Evaluation Procedures

When running the production script, **run_4.5-6.1P4.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFB_Terra-FM1-MODIS_Ed4Test_000000.2008071515

rm $InputArchive/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA_Terra-FM1-MODIS_Ed4Test_000000.2008071515.met
rm $InputArchive/GQCI/Terra-FM1-MODIS_Ed4Test/2008/07/CER_GQCI_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/CER_SCCD_$SCC_1P4
rm $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/CER_SCCN_$SCC_1P4
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/MATCH_TERRA_AOTS_MODIS.C5.20080715

3.4.5.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P4_LogReport_$INSTANCE_1P4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P4 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P4 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4**, using the following **diff_4.5-6.1P4.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/diff_4.5-6.1P4.csh $INSTANCE_1P4

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

3.4.5.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

cd $CERESHOME/inversion/test_suites/bin
run_compare_1p4 $INSTANCE_1P4

Two files will be created:
$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

3.4.5.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P4 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.4.5.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM1-MODIS_Ed4Test-reproc/2008/07/CER_SSF_$INSTANCE_1P4
$CERESHOME/inversion/data_exp/CER4.5-6.1P4/CER_SSF_$INSTANCE_1P4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.4.6 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P4 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P4.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P4/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P4/rcf/cleanup_4.5-6.1P4.csh $INSTANCE_1P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.4.7 Stand Alone, command line, Test Procedures for FM1, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES'

3.4.7.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
setenv YEAR 2008
setenv MONTH 07
setenv DAY 15
setenv HOUR 15
setenv DATE_1P4 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P4 Terra-FM1-MODIS_Ed4Test-reproc-
    ies_000000.$DATE_1P4
setenv SCC_1P4 Terra-FM1_Edition3_300300.20080715
source $CERESHOME/inversion/CER4.5-6.1P4/rcf/inversion-FM1-test3-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFB_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/SSFB/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFA_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/SSFA/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFA_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515.met $InputArchive/SSFA/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_GQCI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/GQCI/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCD_$SCC_1P4
    $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCN_$SCC_1P4
    $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/MATCH_TERRA_AOTS_MODIS.C5.20080715
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_IES_Terra-FM1_Edition3_032040.2008071515 $InputArchive/IES/Terra-FM1_Edition3/2008/07/

3.4.7.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P4.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P4.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcfgen_4.5-6.1P4.csh $DATE_1P4

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

Execute the production script by typing the script name, **run_4.5-6.1P4.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P4**, defined in Section 3.4.7.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P4:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/run_4.5-6.1P4.csh $INSTANCE_1P4

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P4-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/CER4.5-6.1P4-SGE_Driver.pl -date 20080715 -hour 15 -clean

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P4/CER4.5-6.1P4_$INSTANCE_1P4.o*

Output file generation test:

The script, **list_4.5-6.1P4.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/list_4.5-6.1P4.csh $INSTANCE_1P4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.4.7.3 Exit Codes

All CER4.5-6.1P4 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.4.7.4 Test Summary

Test Summary:

Total Run Time:	4:49 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.4.8 Evaluation Procedures

When running the production script, **run_4.5-6.1P4.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFB_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA_Terra-FM1-MODIS_Ed4Test_000000.2008071515.met
rm $InputArchive/GQCI/Terra-FM1-MODIS_Ed4Test/2008/07/CER_GQCI_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/CER_SCCD_$SCC_1P4
rm $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/CER_SCCN_$SCC_1P4
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/MATCH_TERRA_AOTS_MODIS.C5.20080715
rm $InputArchive/IES/Terra-FM1_Edition3/2008/07/CER_IES_Terra-FM1_Edition3_032040.2008071515

3.4.8.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P4_LogReport_$INSTANCE_1P4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P4 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P4 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4**, using the following **diff_4.5-6.1P4.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/diff_4.5-6.1P4.csh $INSTANCE_1P4

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

3.4.8.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p4 $INSTANCE_1P4

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

3.4.8.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P4 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.4.8.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM1-MODIS_Ed4Test-reproc-ies/2008/07/CER_SSF_$INSTANCE_1P4
$CERESHOME/inversion/data_exp/CER4.5-6.1P4/CER_SSF_$INSTANCE_1P4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.4.9 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P4 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P4.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P4/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P4/rcf/cleanup_4.5-6.1P4.csh $INSTANCE_1P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.4.10 Stand Alone Test Procedures for FM2, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no'

3.4.10.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
setenv YEAR 2001
setenv MONTH 04
setenv DAY 15
setenv HOUR 15
setenv DATE_1P4 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P4 Terra-FM2-MODIS_SSIT2_000000.$DATE_1P4
setenv SCC_1P4 Terra-FM2_Edition3_300300.20010415
source $CERESHOME/inversion/CER4.5-6.1P4/rcf/inversion-FM2-test1-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFI_Terra-FM2-
    MODIS_SSIT2_000000.2001041515 $InputArchiveInt/SSF_Int/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFAI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchiveInt/SSF_Int/Terra-
    FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFAI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515.met
    $InputArchiveInt/SSF_Int/Terra-FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_FQCI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchiveInt/FQC/Terra-
    FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCD_$SCC_1P4
    $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCN_$SCC_1P4
    $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/MATCH_TERRA_AOTS_MODIS.20010415
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/
```

3.4.10.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P4.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P4.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcfgen_4.5-6.1P4.csh $DATE_1P4

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

Execute the production script by typing the script name, **run_4.5-6.1P4.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P4**, defined in Section 3.4.10.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P4:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/run_4.5-6.1P4.csh $INSTANCE_1P4

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P4-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/CER4.5-6.1P4-SGE_Driver.pl -date 20010415 -hour 15 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P4/CER4.5-6.1P4_$INSTANCE_1P4.o*

Output file generation test:

The script, **list_4.5-6.1P4.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/list_4.5-6.1P4.csh $INSTANCE_1P4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.4.10.3 Exit Codes

All CER4.5-6.1P4 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.4.10.4 Test Summary

Test Summary:

Total Run Time:	7:12 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.4.11 Evaluation Procedures

When running the production script, **run_4.5-6.1P4.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchiveInt/SSF_Int/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFI_$INSTANCE_1P4
rm $InputArchiveInt/SSF_Int/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFAI_$INSTANCE_1P4

rm $InputArchiveInt/SSF_Int/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFAI_$INSTANCE_1P4.met
rm $InputArchiveInt/FQC/Terra-FM2-MODIS_SSIT2/2001/04/CER_FQCI_$INSTANCE_1P4
rm $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/CER_SCCD_$SCC_1P4
rm $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/CER_SCCN_$SCC_1P4
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/MATCH_TERRA_AOTS_MODIS.20010415

3.4.11.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P4_LogReport_$INSTANCE_1P4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P4 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P4 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4**, using the following **diff_4.5-6.1P4.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/diff_4.5-6.1P4.csh $INSTANCE_1P4

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

3.4.11.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p4 $INSTANCE_1P4

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

3.4.11.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P4 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.4.11.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSF_$INSTANCE_1P4 $CERESHOME/inversion/data_exp/CER4.5-6.1P4/CER_SSF_$INSTANCE_1P4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.4.12 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P4 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P4.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P4/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P4/rcf/cleanup_4.5-6.1P4.csh $INSTANCE_1P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.4.13 Stand Alone, command line, Test Procedures for FM2, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no'

3.4.13.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
setenv YEAR 2001
setenv MONTH 04
setenv DAY 15
setenv HOUR 15
setenv DATE_1P4 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P4 Terra-FM2-MODIS_Ed4Test-
    reproc_000000.$DATE_1P4
setenv SCC_1P4 Terra-FM2_Edition3_300300.20010415
source $CERESHOME/inversion/CER4.5-6.1P4/rcf/inversion-FM2-test2-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFB_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/SSFB/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFA_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/SSFA/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFA_Terra-
    FM2-MODIS_SSIT2_000000.2001041515.met $InputArchive/SSFA/Terra-
    FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_GQCI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/GQCI/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCD_$SCC_1P4
    $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCN_$SCC_1P4
    $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/MATCH_TERRA_AOTS_MODIS.20010415
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/
```

3.4.13.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P4.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P4.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcfgen_4.5-6.1P4.csh $DATE_1P4

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

Execute the production script by typing the script name, **run_4.5-6.1P4.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P4**, defined in Section 3.4.13.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P4:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/run_4.5-6.1P4.csh $INSTANCE_1P4

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P4-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/CER4.5-6.1P4-SGE_Driver.pl -date 20010415 -hour 15 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P4/CER4.5-6.1P4_$INSTANCE_1P4.o*

Output file generation test:

The script, **list_4.5-6.1P4.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/list_4.5-6.1P4.csh $INSTANCE_1P4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.4.13.3 Exit Codes

All CER4.5-6.1P4 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.4.13.4 Test Summary

Test Summary:

Total Run Time:	7:12 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.4.14 Evaluation Procedures

When running the production script, **run_4.5-6.1P4.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFB_Terra-FM2-MODIS_SSIT2_000000.2001041515

rm $InputArchive/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515.met
rm $InputArchive/GQCI/Terra-FM2-MODIS_SSIT2/2001/04/CER_GQCI_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/CER_SCCD_$SCC_1P4
rm $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/CER_SCCN_$SCC_1P4
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/MATCH_TERRA_AOTS_MODIS.20010415

3.4.14.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P4_LogReport_$INSTANCE_1P4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P4 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P4 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4**, using the following **diff_4.5-6.1P4.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/diff_4.5-6.1P4.csh $INSTANCE_1P4

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

3.4.14.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

cd $CERESHOME/inversion/test_suites/bin
run_compare_1p4 $INSTANCE_1P4

Two files will be created:
$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

3.4.14.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P4 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.4.14.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM2-MODIS_Ed4Test-reproc/2001/04/CER_SSF_$INSTANCE_1P4 $CERESHOME/inversion/data_exp/CER4.5-6.1P4/CER_SSF_$INSTANCE_1P4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.4.15 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P4 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P4.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P4/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P4/rcf/cleanup_4.5-6.1P4.csh $INSTANCE_1P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.4.16 Stand Alone, command line, Test Procedures for FM2, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES'

3.4.16.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
setenv YEAR 2001
setenv MONTH 04
setenv DAY 15
setenv HOUR 15
setenv DATE_1P4 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P4 Terra-FM2-MODIS_Ed4Test-reproc-
    ies_000000.$DATE_1P4
setenv SCC_1P4 Terra-FM2_Edition3_300300.20010415
source $CERESHOME/inversion/CER4.5-6.1P4/rcf/inversion-FM2-test3-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFB_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/SSFB/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFA_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/SSFA/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SSFA_Terra-
    FM2-MODIS_SSIT2_000000.2001041515.met $InputArchive/SSFA/Terra-
    FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_GQCI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/GQCI/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCD_$SCC_1P4
    $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_SCCN_$SCC_1P4
    $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P4/MATCH_TERRA_AOTS_MODIS.20010415
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.1P4/CER_IES_Terra-FM2_Edition3_032040.2001041515 $InputArchive/IES/Terra-FM2_Edition3/2001/04/

3.4.16.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P4.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P4.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcfgen_4.5-6.1P4.csh $DATE_1P4

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

Execute the production script by typing the script name, **run_4.5-6.1P4.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P4**, defined in Section 3.4.16.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P4:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/run_4.5-6.1P4.csh $INSTANCE_1P4

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P4-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/CER4.5-6.1P4-SGE_Driver.pl -date 20010415 -hour 15 -clean

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P4/rcf/pcf/CER4.5-6.1P4_PCF_$INSTANCE_1P4

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P4/CER4.5-6.1P4_$INSTANCE_1P4.o*

Output file generation test:

The script, **list_4.5-6.1P4.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P4/rcf/list_4.5-6.1P4.csh $INSTANCE_1P4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.4.16.3 Exit Codes

All CER4.5-6.1P4 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.4.16.4 Test Summary

Test Summary:

Total Run Time:	6:56 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.4.17 Evaluation Procedures

When running the production script, **run_4.5-6.1P4.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFB_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515.met
rm $InputArchive/GQCI/Terra-FM2-MODIS_SSIT2/2001/04/CER_GQCI_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/CER_SCCD_$SCC_1P4
rm $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/CER_SCCN_$SCC_1P4
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/MATCH_TERRA_AOTS_MODIS.20010415
rm $InputArchive/IES/Terra-FM2_Edition3/2001/04/CER_IES_Terra-FM2_Edition3_032040.2001041515

3.4.17.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P4_LogReport_$INSTANCE_1P4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P4 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P4 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P4**, using the following **diff_4.5-6.1P4.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P4/rcf
$CERESHOME/inversion/CER4.5-6.1P4/rcf/diff_4.5-6.1P4.csh $INSTANCE_1P4

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

3.4.17.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p4 $INSTANCE_1P4

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

3.4.17.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P4 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P4
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P4

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.4.17.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM2-MODIS_Ed4Test-reproc-ies/2001/04/CER_SSF_$INSTANCE_1P4
$CERESHOME/inversion/data_exp/CER4.5-6.1P4/CER_SSF_$INSTANCE_1P4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.4.18 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P4 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P4.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P4/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P4/rcf/cleanup_4.5-6.1P4.csh $INSTANCE_1P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.5 CER4_5-6.1P5 Main and Post Processors for Aqua Edition4 Processing

3.5.1 Stand Alone Test Procedures for FM3, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no'

3.5.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P5 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P5 Aqua-FM3-MODIS_SSIT_000000.$DATE_1P5
setenv SCC_1P5 Aqua-FM3_Edition3_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P5/rcf/inversion-FM3-test1-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFI_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchiveInt/SSF_Int/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFAI_Aqua-
    FM3-MODIS_SSIT_000000.2008101507 $InputArchiveInt/SSF_Int/Aqua-
    FM3-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFAI_Aqua-
    FM3-MODIS_SSIT_000000.2008101507.met
    $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_FQCI_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchiveInt/FQC/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCD_$SCC_1P5
    $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCN_$SCC_1P5
    $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

3.5.1.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P5.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P5.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcfgen_4.5-6.1P5.csh $DATE_1P5

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

Execute the production script by typing the script name, **run_4.5-6.1P5.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P5**, defined in Section 3.5.1.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P5:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/run_4.5-6.1P5.csh $INSTANCE_1P5

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P5-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/CER4.5-6.1P5-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P5/CER4.5-6.1P5_$INSTANCE_1P5.o*

Output file generation test:

The script, **list_4.5-6.1P5.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/list_4.5-6.1P5.csh $INSTANCE_1P5

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.5.1.3 Exit Codes

All CER4.5-6.1P5 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.5.1.4 Test Summary

Test Summary:

Total Run Time:	6:58 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.5.2 Evaluation Procedures

When running the production script, **run_4.5-6.1P5.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFI_$INSTANCE_1P5
rm $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFAI_$INSTANCE_1P5

rm $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFAI_$INSTANCE_1P5.met
rm $InputArchiveInt/FQC/Aqua-FM3-MODIS_SSIT/2008/10/CER_FQCI_$INSTANCE_1P5
rm $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/CER_SCCD_$SCC_1P5
rm $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/CER_SCCN_$SCC_1P5
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015

3.5.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P5_LogReport_$INSTANCE_1P5**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P5 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P5 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5**, using the following **diff_4.5-6.1P5.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/diff_4.5-6.1P5.csh $INSTANCE_1P5

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

3.5.2.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p5 $INSTANCE_1P5

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

3.5.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P5 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.5.2.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSF_$INSTANCE_1P5 $CERESHOME/inversion/data_exp/CER4.5-6.1P5/CER_SSF_$INSTANCE_1P5

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.5.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P5 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P5.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P5/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P5/rcf/cleanup_4.5-6.1P5.csh $INSTANCE_1P5

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.5.4 Stand Alone, command line, Test Procedures for FM3, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no'

3.5.4.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P5 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P5 Aqua-FM3-MODIS_Ed4Test-
    reproc_000000.$DATE_1P5
setenv SCC_1P5 Aqua-FM3_Edition3_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P5/rcf/inversion-FM3-test2-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFB_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchive/SSFB/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFA_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchive/SSFA/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFA_Aqua-FM3-
    MODIS_SSIT_000000.2008101507.met $InputArchive/SSFA/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_GQCI_Aqua-
    FM3-MODIS_SSIT_000000.2008101507 $InputArchive/GQCI/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCD_$SCC_1P5
    $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCN_$SCC_1P5
    $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

3.5.4.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P5.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P5.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcfgen_4.5-6.1P5.csh $DATE_1P5

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

Execute the production script by typing the script name, **run_4.5-6.1P5.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P5**, defined in Section 3.5.4.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P5:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/run_4.5-6.1P5.csh $INSTANCE_1P5

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P5-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/CER4.5-6.1P5-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P5/CER4.5-6.1P5_$INSTANCE_1P5.o*

Output file generation test:

The script, **list_4.5-6.1P5.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/list_4.5-6.1P5.csh $INSTANCE_1P5

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.5.4.3 Exit Codes

All CER4.5-6.1P5 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.5.4.4 Test Summary

Test Summary:

Total Run Time:	6:53 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.5.5 Evaluation Procedures

When running the production script, **run_4.5-6.1P5.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFB_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507

rm $InputArchive/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507.met
rm $InputArchive/GQCI/Aqua-FM3-MODIS_SSIT/2008/10/CER_GQCI_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/CER_SCCD_$SCC_1P5
rm $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/CER_SCCN_$SCC_1P5
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015

3.5.5.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P5_LogReport_$INSTANCE_1P5**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P5 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P5 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5**, using the following **diff_4.5-6.1P5.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/diff_4.5-6.1P5.csh $INSTANCE_1P5

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

3.5.5.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p5 $INSTANCE_1P5

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

3.5.5.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P5 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.5.5.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM3-MODIS_Ed4Test-reproc/2008/10/CER_SSF_$INSTANCE_1P5 $CERESHOME/inversion/data_exp/CER4.5-6.1P5/CER_SSF_$INSTANCE_1P5

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.5.6 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P5 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P5.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P5/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P5/rcf/cleanup_4.5-6.1P5.csh $INSTANCE_1P5

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.5.7 Stand Alone, command line, Test Procedures for FM3, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES'

3.5.7.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P5 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P5 Aqua-FM3-MODIS_Ed4Test-reproc-
    ies_000000.$DATE_1P5
setenv SCC_1P5 Aqua-FM3_Edition3_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P5/rcf/inversion-FM3-test3-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFB_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchive/SSFB/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFA_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchive/SSFA/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFA_Aqua-FM3-
    MODIS_SSIT_000000.2008101507.met $InputArchive/SSFA/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_GQCI_Aqua-
    FM3-MODIS_SSIT_000000.2008101507 $InputArchive/GQCI/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCD_$SCC_1P5
    $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCN_$SCC_1P5
    $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_IES_Aqua-FM3_Edition3_032040.2008101507 $InputArchive/IES/Aqua-FM3_Edition3/2008/10/

3.5.7.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P5.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P5.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcfgen_4.5-6.1P5.csh $DATE_1P5

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

Execute the production script by typing the script name, **run_4.5-6.1P5.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P5**, defined in Section 3.5.7.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P5:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/run_4.5-6.1P5.csh $INSTANCE_1P5

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P5-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/CER4.5-6.1P5-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P5/CER4.5-6.1P5_$INSTANCE_1P5.o*

Output file generation test:

The script, **list_4.5-6.1P5.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/list_4.5-6.1P5.csh $INSTANCE_1P5

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.5.7.3 Exit Codes

All CER4.5-6.1P5 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.5.7.4 Test Summary

Test Summary:

Total Run Time:	6:53 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.5.8 Evaluation Procedures

When running the production script, **run_4.5-6.1P5.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFB_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507.met
rm $InputArchive/GQCI/Aqua-FM3-MODIS_SSIT/2008/10/CER_GQCI_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/CER_SCCD_$SCC_1P5
rm $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/CER_SCCN_$SCC_1P5
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015
rm $InputArchive/IES/Aqua-FM3_Edition3/2008/10/CER_IES_Aqua-FM3_Edition3_032040.2008101507

3.5.8.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P5_LogReport_$INSTANCE_1P5**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P5 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P5 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5**, using the following **diff_4.5-6.1P5.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/diff_4.5-6.1P5.csh $INSTANCE_1P5

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

3.5.8.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p5 $INSTANCE_1P5

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

3.5.8.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P5 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.5.8.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM3-MODIS_Ed4Test-reproc-ies/2008/10/CER_SSF_$INSTANCE_1P5
$CERESHOME/inversion/data_exp/CER4.5-6.1P5/CER_SSF_$INSTANCE_1P5

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.5.9 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P5 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P5.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P5/rcf**. To use the clean-up script:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/cleanup_4.5-6.1P5.csh $INSTANCE_1P5

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.5.10 Stand Alone Test Procedures for FM4, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no'

3.5.10.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P5 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P5 Aqua-FM4-MODIS_SSIT-NoSW_000000.$DATE_1P5
setenv INSTANCE1_1P5 Aqua-FM4-MODIS_SSIT_000000.$DATE_1P5
setenv SCC_1P5 Aqua-FM4_Ed3-NoSW_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P5/rcf/inversion-FM4-test1-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFI_Aqua-FM4-
    MODIS_SSIT_000000.2008101507 $InputArchiveInt/SSF_Int/Aqua-FM4-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFAI_Aqua-
    FM4-MODIS_SSIT_000000.2008101507 $InputArchiveInt/SSF_Int/Aqua-
    FM4-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFAI_Aqua-
    FM4-MODIS_SSIT_000000.2008101507.met
    $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_FQCI_Aqua-FM4-
    MODIS_SSIT_000000.2008101507 $InputArchiveInt/FQC/Aqua-FM4-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCD_$SCC_1P5
    $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCN_$SCC_1P5
    $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

3.5.10.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P5.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P5.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcfgen_4.5-6.1P5.csh $DATE_1P5

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

Execute the production script by typing the script name, **run_4.5-6.1P5.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P5**, defined in Section 3.5.10.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P5:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/run_4.5-6.1P5.csh $INSTANCE_1P5

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P5-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/CER4.5-6.1P5-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P5/CER4.5-6.1P5_$INSTANCE_1P5.o*

Output file generation test:

The script, **list_4.5-6.1P5.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/list_4.5-6.1P5.csh $INSTANCE_1P5

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.5.10.3 Exit Codes

All CER4.5-6.1P5 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.5.10.4 Test Summary

Test Summary:

Total Run Time:	7:04 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.5.11 Evaluation Procedures

When running the production script, **run_4.5-6.1P5.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2008/10/CER_SSFI_$INSTANCE1_1P5
rm $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2008/10/CER_SSFAI_$INSTANCE1_1P5

rm $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2008/10/CER_SSFAI_$INSTANCE1_1P5.met
rm $InputArchiveInt/FQC/Aqua-FM4-MODIS_SSIT/2008/10/CER_FQCI_$INSTANCE1_1P5
rm $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCD_$SCC_1P5
rm $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCN_$SCC_1P5
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015

3.5.11.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P5_LogReport_$INSTANCE_1P5**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P5 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P5 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5**, using the following **diff_4.5-6.1P5.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/diff_4.5-6.1P5.csh $INSTANCE_1P5

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

3.5.11.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

cd $CERESHOME/inversion/test_suites/bin
run_compare_1p5 $INSTANCE_1P5

Two files will be created:
$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

3.5.11.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P5 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.5.11.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSF_$INSTANCE_1P5
$CERESHOME/inversion/data_exp/CER4.5-6.1P5/CER_SSF_$INSTANCE_1P5

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.5.12 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P5 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P5.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P5/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P5/rcf/cleanup_4.5-6.1P5.csh $INSTANCE_1P5

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.5.13 Stand Alone, command line, Test Procedures for FM4, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no'

3.5.13.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P5 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P5 Aqua-FM4-MODIS_Ed4Test-NoSW-
    reproc_000000.$DATE_1P5
setenv SCC_1P5 Aqua-FM4_Ed3-NoSW_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P5/rcf/inversion-FM4-test2-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFB_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/SSFB/Aqua-FM4-
    MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFA_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/SSFA/Aqua-FM4-
    MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFA_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507.met $InputArchive/SSFA/Aqua-
    FM4-MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_GQCI_Aqua-
    FM4-MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/GQCI/Aqua-
    FM4-MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCD_$SCC_1P5
    $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCN_$SCC_1P5
    $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

3.5.13.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P5.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P5.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcfgen_4.5-6.1P5.csh $DATE_1P5

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

Execute the production script by typing the script name, **run_4.5-6.1P5.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P5**, defined in Section 3.5.13.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P5:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/run_4.5-6.1P5.csh $INSTANCE_1P5

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P5-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/CER4.5-6.1P5-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P5/CER4.5-6.1P5_$INSTANCE_1P5.o*

Output file generation test:

The script, **list_4.5-6.1P5.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/list_4.5-6.1P5.csh $INSTANCE_1P5

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.5.13.3 Exit Codes

All CER4.5-6.1P5 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.5.13.4 Test Summary

Test Summary:

Total Run Time:	6:43 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.5.14 Evaluation Procedures

When running the production script, **run_4.5-6.1P5.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFB_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507

rm $InputArchive/SSFA/Aqua-FM4-MODIS_SSIT2/2001/04/CER_SSFA_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFA_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507.met
rm $InputArchive/GQCI/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_GQCI_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCD_$SCC_1P5
rm $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCN_$SCC_1P5
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015

3.5.14.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P5_LogReport_$INSTANCE_1P5**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P5 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P5 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5**, using the following **diff_4.5-6.1P5.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/diff_4.5-6.1P5.csh $INSTANCE_1P5

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

3.5.14.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.

2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p5 $INSTANCE_1P5

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

3.5.14.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P5 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.5.14.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM4-MODIS_Ed4Test-NoSW-reproc/2008/10/CER_SSF_$INSTANCE_1P5 $CERESHOME/inversion/data_exp/CER4.5-6.1P5/CER_SSF_$INSTANCE_1P5

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.5.15 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P5 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P5.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P5/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P5/rcf/cleanup_4.5-6.1P5.csh $INSTANCE_1P5

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.5.16 Stand Alone, command line, Test Procedures for FM4, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES'

3.5.16.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P5 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P5 Aqua-FM4-MODIS_Ed4Test-NoSW-reproc-
    ies_000000.$DATE_1P5
setenv SCC_1P5 Aqua-FM4_Ed3-NoSW_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P5/rcf/inversion-FM4-test3-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFB_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/SSFB/Aqua-FM4-
    MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFA_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/SSFA/Aqua-FM4-
    MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SSFA_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507.met $InputArchive/SSFA/Aqua-
    FM4-MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_GQCI_Aqua-
    FM4-MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/GQCI/Aqua-
    FM4-MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCD_$SCC_1P5
    $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_SCCN_$SCC_1P5
    $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P5/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.1P5/CER_IES_Aqua-FM4_Ed3-NoSW_032040.2008101507 $InputArchive/IES/Aqua-FM4_Ed3-NoSW/2008/10/

3.5.16.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P5.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P5.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcfgen_4.5-6.1P5.csh $DATE_1P5

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

Execute the production script by typing the script name, **run_4.5-6.1P5.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P5**, defined in Section 3.5.16.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P5:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/run_4.5-6.1P5.csh $INSTANCE_1P5

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P5-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/CER4.5-6.1P5-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P5/rcf/pcf/CER4.5-6.1P5_PCF_$INSTANCE_1P5

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P5/CER4.5-6.1P5_$INSTANCE_1P5.o*

Output file generation test:

The script, **list_4.5-6.1P5.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P5/rcf/list_4.5-6.1P5.csh $INSTANCE_1P5

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.5.16.3 Exit Codes

All CER4.5-6.1P5 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.5.16.4 Test Summary

Test Summary:

Total Run Time:	6:47 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.5.17 Evaluation Procedures

When running the production script, **run_4.5-6.1P5.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFB_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFA_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFA_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507.met
rm $InputArchive/GQCI/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_GQCI_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCD_$SCC_1P5
rm $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCN_$SCC_1P5
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015
rm $InputArchive/IES/Aqua-FM4_Ed3-NoSW/2008/10/CER_IES_Aqua-FM4_Ed3-NoSW_032040.2008101507

3.5.17.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P5_LogReport_$INSTANCE_1P5**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P5 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P5 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P5**, using the following **diff_4.5-6.1P5.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P5/rcf
$CERESHOME/inversion/CER4.5-6.1P5/rcf/diff_4.5-6.1P5.csh $INSTANCE_1P5

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

3.5.17.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p5 $INSTANCE_1P5

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

3.5.17.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P5 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P5
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P5

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.5.17.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM4-MODIS_Ed4Test-NoSW-reproc-ies/2008/10/CER_SSF_$INSTANCE_1P5 $CERESHOME/inversion/data_exp/CER4.5-6.1P5/CER_SSF_$INSTANCE_1P5

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.5.18 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P5 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P5.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P5/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P5/rcf/cleanup_4.5-6.1P5.csh $INSTANCE_1P5

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6 CER4_5-6.1P6 Main and Post Processors for Terra and Aqua Edition4 Processing

3.6.1 Stand Alone Test Procedures for FM1, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no'

3.6.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2008
setenv MONTH 07
setenv DAY 15
setenv HOUR 15
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Terra-FM1-MODIS_Ed4Test_000000.$DATE_1P6
setenv SCC_1P6 Terra-FM1_Edition3_300300.20080715
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM1-test1-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFI_Terra-FM1-
    MODIS_Ed4Test_000000.2008071515 $InputArchiveInt/SSF_Int/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFAI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515
    $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFAI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515.met
    $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_FQCI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchiveInt/FQC/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.C5.20080715
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/
```

3.6.1.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.1.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20080715 -hour 15 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.1.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.1.4 Test Summary

Test Summary:

Total Run Time:	4:50 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.2 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFI_$INSTANCE_1P6
rm $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFAI_$INSTANCE_1P6

rm $InputArchiveInt/SSF_Int/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFAI_$INSTANCE_1P6.met
rm $InputArchiveInt/FQC/Terra-FM1-MODIS_Ed4Test/2008/07/CER_FQCI_$INSTANCE_1P6
rm $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/MATCH_TERRA_AOTS_MODIS.C5.20080715

3.6.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.2.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p6 $INSTANCE_1P6

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.2.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSF_$INSTANCE_1P6 $CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.6.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.4 Stand Alone, command line, Test Procedures for FM1, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no'

3.6.4.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2008
setenv MONTH 07
setenv DAY 15
setenv HOUR 15
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Terra-FM1-MODIS_Ed4Test-
    reproc_000000.$DATE_1P6
setenv SCC_1P6 Terra-FM1_Edition3_300300.20080715
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM1-test2-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFB_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/SSFB/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/SSFA/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515.met $InputArchive/SSFA/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_GQCI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/GQCI/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.C5.20080715
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/
```

3.6.4.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.4.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20080715 -hour 15 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.4.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.4.4 Test Summary

Test Summary:

Total Run Time:	4:49 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.5 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFB_Terra-FM1-MODIS_Ed4Test_000000.2008071515

rm $InputArchive/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA_Terra-FM1-MODIS_Ed4Test_000000.2008071515.met
rm $InputArchive/GQCI/Terra-FM1-MODIS_Ed4Test/2008/07/CER_GQCI_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/MATCH_TERRA_AOTS_MODIS.C5.20080715

3.6.5.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.5.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

cd $CERESHOME/inversion/test_suites/bin
run_compare_1p6 $INSTANCE_1P6

Two files will be created:
$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.5.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.5.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM1-MODIS_Ed4Test-reproc/2008/07/CER_SSF_$INSTANCE_1P6
$CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.6.6 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.7 Stand Alone, command line, Test Procedures for FM1, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES'

3.6.7.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2008
setenv MONTH 07
setenv DAY 15
setenv HOUR 15
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Terra-FM1-MODIS_Ed4Test-reproc-
    ies_000000.$DATE_1P6
setenv SCC_1P6 Terra-FM1_Edition3_300300.20080715
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM1-test3-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
    $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFB_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/SSFB/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/SSFA/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515.met $InputArchive/SSFA/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_GQCI_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515 $InputArchive/GQCI/Terra-
    FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.C5.20080715
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_IES_Terra-FM1_Edition3_032040.2008071515 $InputArchive/IES/Terra-FM1_Edition3/2008/07/

3.6.7.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.7.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20080715 -hour 15 -clean

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.7.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.7.4 Test Summary

Test Summary:

Total Run Time:	4:49 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.8 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFB_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA_Terra-FM1-MODIS_Ed4Test_000000.2008071515.met
rm $InputArchive/GQCI/Terra-FM1-MODIS_Ed4Test/2008/07/CER_GQCI_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $InputArchive/SCCD/Terra-FM1_Edition3/2008/07/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Terra-FM1_Edition3/2008/07/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071512
rm $InputArchive/MOA/CERES_DAO-G5-CERES/2008/07/CER_MOA_CERES_DAO-G5-CERES_020032.2008071518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/07/MATCH_TERRA_AOTS_MODIS.C5.20080715
rm $InputArchive/IES/Terra-FM1_Edition3/2008/07/CER_IES_Terra-FM1_Edition3_032040.2008071515

3.6.8.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.8.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p6 $INSTANCE_1P6

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.8.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.8.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM1-MODIS_Ed4Test-reproc-ies/2008/07/CER_SSF_$INSTANCE_1P6
$CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.6.9 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.10 Stand Alone Test Procedures for FM2, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no'

3.6.10.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2001
setenv MONTH 04
setenv DAY 15
setenv HOUR 15
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Terra-FM2-MODIS_SSIT2_000000.$DATE_1P6
setenv SCC_1P6 Terra-FM2_Edition3_300300.20010415
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM2-test1-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFI_Terra-FM2-
    MODIS_SSIT2_000000.2001041515 $InputArchiveInt/SSF_Int/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFAI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchiveInt/SSF_Int/Terra-
    FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFAI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515.met
    $InputArchiveInt/SSF_Int/Terra-FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_FQCI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchiveInt/FQC/Terra-
    FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.20010415
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/
```

3.6.10.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.10.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20010415 -hour 15 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.10.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.10.4 Test Summary

Test Summary:

Total Run Time:	7:12 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.11 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchiveInt/SSF_Int/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFI_$INSTANCE_1P6
rm $InputArchiveInt/SSF_Int/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFAI_$INSTANCE_1P6

rm $InputArchiveInt/SSF_Int/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFAI_$INSTANCE_1P6.met
rm $InputArchiveInt/FQC/Terra-FM2-MODIS_SSIT2/2001/04/CER_FQCI_$INSTANCE_1P6
rm $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/MATCH_TERRA_AOTS_MODIS.20010415

3.6.11.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.11.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p6 $INSTANCE_1P6

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.11.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.11.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSF_$INSTANCE_1P6 $CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.6.12 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.13 Stand Alone, command line, Test Procedures for FM2, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no'

3.6.13.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2001
setenv MONTH 04
setenv DAY 15
setenv HOUR 15
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Terra-FM2-MODIS_Ed4Test-
    reproc_000000.$DATE_1P6
setenv SCC_1P6 Terra-FM2_Edition3_300300.20010415
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM2-test2-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFB_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/SSFB/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/SSFA/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Terra-
    FM2-MODIS_SSIT2_000000.2001041515.met $InputArchive/SSFA/Terra-
    FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_GQCI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/GQCI/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.20010415
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/
```

3.6.13.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.13.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20010415 -hour 15 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.13.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.13.4 Test Summary

Test Summary:

Total Run Time:	7:12 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.14 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFB_Terra-FM2-MODIS_SSIT2_000000.2001041515

rm $InputArchive/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515.met
rm $InputArchive/GQCI/Terra-FM2-MODIS_SSIT2/2001/04/CER_GQCI_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/MATCH_TERRA_AOTS_MODIS.20010415

3.6.14.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.14.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

cd $CERESHOME/inversion/test_suites/bin
run_compare_1p6 $INSTANCE_1P6

Two files will be created:
$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.14.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.14.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM2-MODIS_Ed4Test-reproc/2001/04/CER_SSF_$INSTANCE_1P6
$CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.6.15 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.16 Stand Alone, command line, Test Procedures for FM2, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES'

3.6.16.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2001
setenv MONTH 04
setenv DAY 15
setenv HOUR 15
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Terra-FM2-MODIS_Ed4Test-reproc-
    ies_000000.$DATE_1P6
setenv SCC_1P6 Terra-FM2_Edition3_300300.20010415
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM2-test3-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
    $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFB_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/SSFB/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/SSFA/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Terra-
    FM2-MODIS_SSIT2_000000.2001041515.met $InputArchive/SSFA/Terra-
    FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_GQCI_Terra-
    FM2-MODIS_SSIT2_000000.2001041515 $InputArchive/GQCI/Terra-FM2-
    MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.20010415
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_IES_Terra-FM2_Edition3_032040.2001041515 $InputArchive/IES/Terra-FM2_Edition3/2001/04/

3.6.16.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.16.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20010415 -hour 15 -clean

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.16.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.16.4 Test Summary

Test Summary:

Total Run Time:	6:56 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.17 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFB_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515.met
rm $InputArchive/GQCI/Terra-FM2-MODIS_SSIT2/2001/04/CER_GQCI_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $InputArchive/SCCD/Terra-FM2_Edition3/2001/04/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Terra-FM2_Edition3/2001/04/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041512
rm $InputArchive/MOA/CERES_GMAO-G541-Ed4/2001/04/CER_MOA_CERES_GMAO-G541-Ed4_400400.2001041518
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2001/04/MATCH_TERRA_AOTS_MODIS.20010415
rm $InputArchive/IES/Terra-FM2_Edition3/2001/04/CER_IES_Terra-FM2_Edition3_032040.2001041515

3.6.17.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.17.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p6 $INSTANCE_1P6

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.17.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.17.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM2-MODIS_Ed4Test-reproc-ies/2001/04/CER_SSF_$INSTANCE_1P6
$CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.6.18 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.19 Stand Alone Test Procedures for FM3, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no'

3.6.19.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Aqua-FM3-MODIS_SSIT_000000.$DATE_1P6
setenv SCC_1P6 Aqua-FM3_Edition3_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM3-test1-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFI_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchiveInt/SSF_Int/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFAI_Aqua-
    FM3-MODIS_SSIT_000000.2008101507 $InputArchiveInt/SSF_Int/Aqua-
    FM3-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFAI_Aqua-
    FM3-MODIS_SSIT_000000.2008101507.met
    $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_FQCI_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchiveInt/FQC/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

3.6.19.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.19.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.19.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.19.4 Test Summary

Test Summary:

Total Run Time:	6:58 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.20 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFI_$INSTANCE_1P6
rm $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFAI_$INSTANCE_1P6

rm $InputArchiveInt/SSF_Int/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFAI_$INSTANCE_1P6.met
rm $InputArchiveInt/FQC/Aqua-FM3-MODIS_SSIT/2008/10/CER_FQCI_$INSTANCE_1P6
rm $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015

3.6.20.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.20.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p6 $INSTANCE_1P6

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.20.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.20.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSF_$INSTANCE_1P6 $CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.6.21 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.22 Stand Alone, command line, Test Procedures for FM3, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no'

3.6.22.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Aqua-FM3-MODIS_Ed4Test-
    reproc_000000.$DATE_1P6
setenv SCC_1P6 Aqua-FM3_Edition3_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM3-test2-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFB_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchive/SSFB/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchive/SSFA/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Aqua-FM3-
    MODIS_SSIT_000000.2008101507.met $InputArchive/SSFA/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_GQCI_Aqua-
    FM3-MODIS_SSIT_000000.2008101507 $InputArchive/GQCI/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

3.6.22.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.22.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.22.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.22.4 Test Summary

Test Summary:

Total Run Time:	6:53 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.23 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFB_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507

rm $InputArchive/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507.met
rm $InputArchive/GQCI/Aqua-FM3-MODIS_SSIT/2008/10/CER_GQCI_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015

3.6.23.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.23.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p6 $INSTANCE_1P6

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.23.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.23.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM3-MODIS_Ed4Test-reproc/2008/10/CER_SSF_$INSTANCE_1P6 $CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.6.24 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.25 Stand Alone, command line, Test Procedures for FM3, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES'

3.6.25.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Aqua-FM3-MODIS_Ed4Test-reproc-
    ies_000000.$DATE_1P6
setenv SCC_1P6 Aqua-FM3_Edition3_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM3-test3-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFB_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchive/SSFB/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Aqua-FM3-
    MODIS_SSIT_000000.2008101507 $InputArchive/SSFA/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Aqua-FM3-
    MODIS_SSIT_000000.2008101507.met $InputArchive/SSFA/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_GQCI_Aqua-
    FM3-MODIS_SSIT_000000.2008101507 $InputArchive/GQCI/Aqua-FM3-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_IES_Aqua-FM3_Edition3_032040.2008101507 $InputArchive/IES/Aqua-FM3_Edition3/2008/10/

3.6.25.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.25.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.25.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.25.4 Test Summary

Test Summary:

Total Run Time:	6:53 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.26 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFB_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507.met
rm $InputArchive/GQCI/Aqua-FM3-MODIS_SSIT/2008/10/CER_GQCI_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $InputArchive/SCCD/Aqua-FM3_Edition3/2008/10/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Aqua-FM3_Edition3/2008/10/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015
rm $InputArchive/IES/Aqua-FM3_Edition3/2008/10/CER_IES_Aqua-FM3_Edition3_032040.2008101507

3.6.26.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.26.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p6 $INSTANCE_1P6

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.26.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.26.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM3-MODIS_Ed4Test-reproc-ies/2008/10/CER_SSF_$INSTANCE_1P6
$CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.6.27 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.28 Stand Alone Test Procedures for FM4, Environment variables: REPROCESS = 'NO', READ_IES = 'NO' and PROD = 'no'

3.6.28.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Aqua-FM4-MODIS_SSIT-NoSW_000000.$DATE_1P6
setenv INSTANCE1_1P6 Aqua-FM4-MODIS_SSIT_000000.$DATE_1P6
setenv SCC_1P6 Aqua-FM4_Ed3-NoSW_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM4-test1-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFI_Aqua-FM4-
    MODIS_SSIT_000000.2008101507 $InputArchiveInt/SSF_Int/Aqua-FM4-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFAI_Aqua-
    FM4-MODIS_SSIT_000000.2008101507 $InputArchiveInt/SSF_Int/Aqua-
    FM4-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFAI_Aqua-
    FM4-MODIS_SSIT_000000.2008101507.met
    $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_FQCI_Aqua-FM4-
    MODIS_SSIT_000000.2008101507 $InputArchiveInt/FQC/Aqua-FM4-
    MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

3.6.28.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.28.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.28.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.28.4 Test Summary

Test Summary:

Total Run Time:	7:04 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.29 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2008/10/CER_SSFI_$INSTANCE1_1P6
rm $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2008/10/CER_SSFAI_$INSTANCE1_1P6

rm $InputArchiveInt/SSF_Int/Aqua-FM4-MODIS_SSIT/2008/10/CER_SSFAI_$INSTANCE1_1P6.met
rm $InputArchiveInt/FQC/Aqua-FM4-MODIS_SSIT/2008/10/CER_FQCI_$INSTANCE1_1P6
rm $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015

3.6.29.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.29.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

cd $CERESHOME/inversion/test_suites/bin
run_compare_1p6 $INSTANCE_1P6

Two files will be created:
$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.29.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.29.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSF_$INSTANCE_1P6
$CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.6.30 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.31 Stand Alone, command line, Test Procedures for FM4, Environment Variables REPROCESS = 'YES', READ_IES = 'NO' and PROD = 'no'

3.6.31.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Aqua-FM4-MODIS_Ed4Test-NoSW-
    reproc_000000.$DATE_1P6
setenv SCC_1P6 Aqua-FM4_Ed3-NoSW_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM4-test2-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFB_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/SSFB/Aqua-FM4-
    MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/SSFA/Aqua-FM4-
    MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507.met $InputArchive/SSFA/Aqua-
    FM4-MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_GQCI_Aqua-
    FM4-MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/GQCI/Aqua-
    FM4-MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

3.6.31.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.31.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.31.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.31.4 Test Summary

Test Summary:

Total Run Time:	6:43 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.32 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFB_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507

rm $InputArchive/SSFA/Aqua-FM4-MODIS_SSIT2/2001/04/CER_SSFA_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFA_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507.met
rm $InputArchive/GQCI/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_GQCI_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015

3.6.32.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.32.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.

2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p6 $INSTANCE_1P6

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.32.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.32.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM4-MODIS_Ed4Test-NoSW-reproc/2008/10/CER_SSF_$INSTANCE_1P6
$CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.6.33 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.6.34 Stand Alone, command line, Test Procedures for FM4, Environment Variables REPROCESS = 'YES' and READ_IES = 'YES'

3.6.34.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv HOUR 07
setenv DATE_1P6 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE_1P6 Aqua-FM4-MODIS_Ed4Test-NoSW-reproc-
    ies_000000.$DATE_1P6
setenv SCC_1P6 Aqua-FM4_Ed3-NoSW_300300.20081015
source $CERESHOME/inversion/CER4.5-6.1P6/rcf/inversion-FM4-test3-
    env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
    $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFB_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/SSFB/Aqua-FM4-
    MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/SSFA/Aqua-FM4-
    MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SSFA_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507.met $InputArchive/SSFA/Aqua-
    FM4-MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_GQCI_Aqua-
    FM4-MODIS_SSIT-NoSW_000000.2008101507 $InputArchive/GQCI/Aqua-
    FM4-MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCD_$SCC_1P6
    $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_SCCN_$SCC_1P6
    $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.1P6/MATCH_TERRA_AOTS_MODIS.C5.20081015
    $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.1P6/CER_IES_Aqua-FM4_Ed3-NoSW_032040.2008101507 $InputArchive/IES/Aqua-FM4_Ed3-NoSW/2008/10/

3.6.34.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The Main and Post Processor production script, **run_4.5-6.1P6.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test case and production runs, the PCF generator, **pcfgen_4.5-6.1P6.csh**, must be executed to create the PCF input file for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcfgen_4.5-6.1P6.csh $DATE_1P6

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

Execute the production script by typing the script name, **run_4.5-6.1P6.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE_1P6**, defined in Section 3.6.34.1, and type the following commands to execute the Main and Post Processor Product Generation Executive (PGE), CER4.5-6.1P6:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/run_4.5-6.1P6.csh $INSTANCE_1P6

SGE Test Instructions:

Execute the production script by typing the script name, **CER4.5-6.1P6-SGE_Driver.pl**, followed by the date and hour options and the cleanup option.

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/CER4.5-6.1P6-SGE_Driver.pl -date 20081015 -hour 07 -clean

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.1P6/rcf/pcf/CER4.5-6.1P6_PCF_$INSTANCE_1P6

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.1P6/CER4.5-6.1P6_$INSTANCE_1P6.o*

Output file generation test:

The script, **list_4.5-6.1P6.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.1P6/rcf/list_4.5-6.1P6.csh $INSTANCE_1P6

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.6.34.3 Exit Codes

All CER4.5-6.1P6 software terminates using the CERES defined EXIT CODES. Successful completion is indicated by an exit code of 0. This test should complete with an exit code of 0 for each of the executables.

3.6.34.4 Test Summary

Test Summary:

Total Run Time:	6:47 minutes
Memory:	297100 K
Required Disk Space:	232 Megabytes

3.6.35 Evaluation Procedures

When running the production script, **run_4.5-6.1P6.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input data:

rm $InputArchive/SSFB/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFB_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFA_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SSFA/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFA_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507.met
rm $InputArchive/GQCI/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_GQCI_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $InputArchive/SCCD/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCD_$SCC_1P6
rm $InputArchive/SCCN/Aqua-FM4_Ed3-NoSW/2008/10/CER_SCCN_$SCC_1P6
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101506
rm $InputArchive/MOA/CERES_GMAO-G5-Edition3-54/2008/10/CER_MOA_CERES_GMAO-G5-Edition3-54_999999.2008101512
rm $CERESHOME/sarb/ancillary/MATCH/Edition2Sage/aot/2008/10/MATCH_TERRA_AOTS_MODIS.C5.20081015
rm $InputArchive/IES/Aqua-FM4_Ed3-NoSW/2008/10/CER_IES_Aqua-FM4_Ed3-NoSW_032040.2008101507

3.6.35.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.1P6_LogReport_$INSTANCE_1P6**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.1P6 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.1P6 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.1P6**, using the following **diff_4.5-6.1P6.csh** script:

cd $CERESHOME/inversion/CER4.5-6.1P6/rcf
$CERESHOME/inversion/CER4.5-6.1P6/rcf/diff_4.5-6.1P6.csh $INSTANCE_1P6

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

3.6.35.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will compare all of the parameters on the binary SSF and the binary SSFA (if it exists) to the values in comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and binary SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_1p6 $INSTANCE_1P6

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

3.6.35.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P6 comparison software.

Examine the comparison reports files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_1P6
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_1P6

The final line of these files will report the status of the comparison between the generated data and the expected output.

3.6.35.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Aqua-FM4-MODIS_Ed4Test-NoSW-reproc-ies/2008/10/CER_SSF_$INSTANCE_1P6 $CERESHOME/inversion/data_exp/CER4.5-6.1P6/CER_SSF_$INSTANCE_1P6

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.6.36 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.1P6 software. These files must be removed before rerunning these test procedures. A script which removes PGE created files, **cleanup_4.5-6.1P6.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.1P6/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.1P6/rcf/cleanup_4.5-6.1P6.csh $INSTANCE_1P6

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.7 CER4_5-6.2P1 Daily SSF Subset Post Processor for TRMM VIRS-only SSF Subsetting

3.7.1 Stand Alone Test Procedures

3.7.1.1 PCF Generator

The SSF subset processor production script, **run_4.5-6.2P1.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF generator, **pcfgen_4.5-6.2P1.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one command-line argument, YYYYMMDD, which consists of a, 4-digit year, 2-digit month, and 2-digit day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/bin
setenv DATE_2P1 20000225
setenv INSTANCE_2P1 TRMM-PFM-VIRS_SSIT_000001.$DATE_2P1
source $CERESHOME/inversion/bin/inversion-test-subset-env.csh
$CERESHOME/inversion/bin/pcfgen_4.5-6.2P1.csh $DATE_2P1

The following files will be generated:
$CERESHOME/inversion/rcf/CER4.5-6.2P1_PCFin_$INSTANCE_2P1
$CERESHOME/inversion/rcf/CER4.5-6.2P1_PCF_$INSTANCE_2P1

3.7.1.2 Execution

Execute the production script by typing the script name, **run_4.5-6.2P1.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/bin
$CERESHOME/inversion/bin/run_4.5-6.2P1.csh $INSTANCE_2P1

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P1, will be executed and will create the files printed out by the **list_4.5-6.2P1.csh** script:

$CERESHOME/inversion/bin/list_4.5-6.2P1.csh $INSTANCE_2P1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.7.1.3 Exit Codes

All CER4.5-6.2P1 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.

3.7.1.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	1:30 minutes
Memory:	5952 K
Required Disk Space:	200 Megabytes

3.7.2 Evaluation Procedures

When running the production script, **run_4.5-6.2P1.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

3.7.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P1_LogReport_$INSTANCE_2P1** is located in directory **$CERESHOME/inversion/data/runlogs** after CER4.5-6.2P1 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P1 has been executed. Metadata files, **CER_SSFS-DAY_$INSTANCE_2P1.met** and **CER_SSFS-NIT_$INSTANCE_2P1.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data.** Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data/out_exp/comp_data**, using the following **diff_4.5-6.2P1.csh** script:

```
cd $CERESHOME/inversion/bin
$CERESHOME/inversion/bin/diff_4.5-6.2P1.csh $INSTANCE_2P1
```

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

3.7.2.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P1, type the following commands:

   ```
   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare $INSTANCE_2P1
   ```

   A comparison output file will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P1

3.7.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P1 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P1

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.7.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P1 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P1.csh**, is located in directory **$CERESHOME/inversion/bin**. To use the clean-up script:

   $CERESHOME/inversion/bin/cleanup_4.5-6.2P1.csh $INSTANCE_2P1

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.8 CER4_5-6.2P2 Terra SSF Subsetting Post Processor Producing Daily SSF and SSFA subset files, and Nadir SSF, Validation SSF, Validation SSFA and SCOOL SSF subset products for Edition1 and Edition2 for both *P6* and *x86* processors.

3.8.1 Stand Alone Test Procedures for FM1

3.8.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
setenv YEAR 2001
setenv MONTH 01
setenv DAY 03
setenv DATE_2P2 $YEAR$MONTH$DAY
setenv INSTANCE2_FM1 Terra-FM1-MODIS_Edition2B_026030.$DATE_2P2
source $CERESHOME/inversion/CER4.5-6.2P2/rcf/inversion-terra-test-FM1-
    subset.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P2/CER_SSF_SCOOLRegions_011000.200101
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P2/CER_SSFA_Terra-
    FM1-MODIS_Edition2B_026030.2001010301
    $CERESHOME/inversion/data/SSFA/Terra-FM1-
    MODIS_Edition2B/2001/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P2/CER_SSFB_Terra-
    FM1-MODIS_Edition2B_026030.2001010301
    $CERESHOME/inversion/data/SSFB/Terra-FM1-
    MODIS_Edition2B/2001/01/
```

3.8.1.2 Execution

Execute the production script by typing the script name, **CER4.5-6.2P2-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either P*6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
$CERESHOME/inversion/CER4.5-6.2P2/rcf/CER4.5-6.2P2-SGE_Driver.pl -
    date $DATE_2P2 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.2P2/rcf/pcf/CER4.5-
    6.2P2_PCF_$INSTANCE2_FM1
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P2/CER4.5-6.2P2_$INSTANCE2_FM1.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P2, will be executed and will create the files printed out by the **list_4.5-6.2P2.pl** script:

$CERESHOME/inversion/CER4.5-6.2P2/rcf/list_4.5-6.2P2.pl $INSTANCE2_FM1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.8.1.3 Exit Codes

All CER4.5-6.2P2 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.

3.8.1.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:30 minutes
Memory:	36688 K
Required Disk Space:	200 Megabytes

3.8.2 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200101
rm $CERESHOME/inversion/data/SSFA/Terra-FM1-MODIS_Edition2B/2001/01/CER_SSFA_Terra-FM1-MODIS_Edition2B_026030.2001010301
rm $CERESHOME/inversion/data/SSFB/Terra-FM1-MODIS_Edition2B/2001/01/CER_SSFB_Terra-FM1-MODIS_Edition2B_026030.2001010301

3.8.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P2_LogReport_$INSTANCE2_FM1** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P2 has been executed. Metadata

files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P2 has been executed.

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P2**, using the following **diff_4.5-6.2P2.pl** script:

cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
$CERESHOME/inversion/CER4.5-6.2P2/rcf/diff_4.5-6.2P2.pl $INSTANCE2_FM1

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

3.8.2.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P2, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare_2p2 $INSTANCE2_FM1
   run_subset_aerosol_compare_2p2 $INSTANCE2_FM1
   run_nadir_compare_2p2 $INSTANCE2_FM1
   run_validation_compare_2p2 $INSTANCE2_FM1
   run_validation_aero_compare_2p2 $INSTANCE2_FM1
   run_subset_scool_compare_2p2 $INSTANCE2_FM1

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P2

3.8.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P2

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.8.2.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Terra-FM1-MODIS_Edition2B/2001/01/CER_SSF-nadir_$INSTANCE2_FM1 $CERESHOME/inversion/data_exp/CER4.5-6.2P2/CER_SSF-nadir_$INSTANCE2_FM1

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.8.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P2 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P2.pl**, is located in directory **$CERESHOME/inversion/CER4.5-6.2P2/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
   $CERESHOME/inversion/CER4.5-6.2P2/rcf/cleanup_4.5-6.2P2.pl $DATE_2P2

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.8.4 Stand Alone Test Procedures for FM2

3.8.4.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
setenv YEAR 2001
setenv MONTH 01
setenv DAY 03
setenv DATE_2P2 $YEAR$MONTH$DAY
setenv INSTANCE2_FM2 Terra-FM2-MODIS_Edition2B_026030.$DATE_2P2
source $CERESHOME/inversion/CER4.5-6.2P2/rcf/inversion-terra-test-FM2-
    subset.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P2/CER_SSF_SCOOLRegions_011000.200101
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P2/CER_SSFA_Terra-
    FM2-MODIS_Edition2B_026030.2001010301
    $CERESHOME/inversion/data/SSFA/Terra-FM2-
    MODIS_Edition2B/2001/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P2/CER_SSFB_Terra-
    FM2-MODIS_Edition2B_026030.2001010301
    $CERESHOME/inversion/data/SSFB/Terra-FM2-
    MODIS_Edition2B/2001/01/
```

3.8.4.2 Execution

Execute the production script by typing the script name, **CER4.5-6.2P2-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
$CERESHOME/inversion/CER4.5-6.2P2/rcf/CER4.5-6.2P2-SGE_Driver.pl -date
    $DATE_2P2 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.2P2/rcf/pcf/CER4.5-
    6.2P2_PCF_$INSTANCE2_FM2
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P2/CER4.5-6.2P2_$INSTANCE2_FM2.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P2, will be executed and will create the files printed out by the **list_4.5-6.2P2.pl** script:

$CERESHOME/inversion/CER4.5-6.2P2/rcf/list_4.5-6.2P2.pl $INSTANCE2_FM2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.8.4.3 Exit Codes

All CER4.5-6.2P2 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.

3.8.4.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:30 minutes
Memory:	36688 K
Required Disk Space:	200 Megabytes

3.8.5 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200101
rm $CERESHOME/inversion/data/SSFA/Terra-FM2-MODIS_Edition2B/2001/01/CER_SSFA_Terra-FM2-MODIS_Edition2B_026030.2001010301
rm $CERESHOME/inversion/data/SSFB/Terra-FM2-MODIS_Edition2B/2001/01/CER_SSFB_Terra-FM2-MODIS_Edition2B_026030.2001010301

3.8.5.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P2_LogReport_$INSTANCE2_FM2** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P2 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P2 has been executed.

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P2**, using the following **diff_4.5-6.2P2.pl** script:

cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
$CERESHOME/inversion/CER4.5-6.2P2/rcf/diff_4.5-6.2P2.pl $INSTANCE2_FM2

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

3.8.5.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P2, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare_2p2 $INSTANCE2_FM2
   run_subset_aerosol_compare_2p2 $INSTANCE2_FM2
   run_nadir_compare_2p2 $INSTANCE2_FM2
   run_validation_compare_2p2 $INSTANCE2_FM2
   run_validation_aero_compare_2p2 $INSTANCE2_FM2
   run_subset_scool_compare_2p2 $INSTANCE2_FM2

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P2

3.8.5.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P2

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.8.5.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Terra-FM2-MODIS_Edition2B/2001/01/CER_SSF-nadir_$INSTANCE2_FM2 $CERESHOME/inversion/data_exp/CER4.5-6.2P2/CER_SSF-nadir_$INSTANCE2_FM2

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.8.6 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P2 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P2.pl**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P2/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
   $CERESHOME/inversion/CER4.5-6.2P2/rcf/cleanup_4.5-6.2P2.pl $DATE_2P2

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.8.7 Stand Alone Test Procedures for FM3

3.8.7.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
setenv YEAR 2003
setenv MONTH 01
setenv DAY 03
setenv DATE_2P2 $YEAR$MONTH$DAY
setenv INSTANCE2_FM3 Aqua-FM3-MODIS_Edition1B_030034.$DATE_2P2
source $CERESHOME/inversion/CER4.5-6.2P2/rcf/inversion-aqua-test-FM3-
    subset.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P2/CER_SSF_SCOOLRegions_011000.200301
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P2/CER_SSFA_Aqua-FM3-
    MODIS_Edition1B_030034.2003010301
    $CERESHOME/inversion/data/SSFA/Aqua-FM3-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P2/CER_SSFB_Aqua-FM3-
    MODIS_Edition1B_030034.2003010301
    $CERESHOME/inversion/data/SSFB/Aqua-FM3-
    MODIS_Edition1B/2003/01/
```

3.8.7.2 Execution

Execute the production script by typing the script name, **CER4.5-6.2P2-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *p6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
$CERESHOME/inversion/CER4.5-6.2P2/rcf/CER4.5-6.2P2-SGE_Driver.pl -
    date $DATE_2P2 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.2P2/rcf/pcf/CER4.5-
    6.2P2_PCF_$INSTANCE2_FM3
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P2/CER4.5-6.2P2_$INSTANCE2_FM3.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P2, will be executed and will create the files printed out by the **list_4.5-6.2P2.pl** script:

$CERESHOME/inversion/CER4.5-6.2P2/rcf/list_4.5-6.2P2.pl $INSTANCE2_FM3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.8.7.3 Exit Codes

All CER4.5-6.2P2 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.

3.8.7.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:30 minutes
Memory:	36688 K
Required Disk Space:	200 Megabytes

3.8.8 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200301
rm $CERESHOME/inversion/data/SSFA/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSFA_Aqua-FM3-MODIS_Edition1B_030034.2003010301
rm $CERESHOME/inversion/data/SSFB/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSFB_Aqua-FM3-MODIS_Edition1B_030034.2003010301

3.8.8.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P2_LogReport_$INSTANCE2_FM3** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P2 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P2 has been executed.

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P2**, using the following **diff_4.5-6.2P2.pl** script:

cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
$CERESHOME/inversion/CER4.5-6.2P2/rcf/diff_4.5-6.2P2.pl $INSTANCE2_FM3

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

3.8.8.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P2, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare_2p2 $INSTANCE2_FM3
   run_subset_aerosol_compare_2p2 $INSTANCE2_FM3
   run_nadir_compare_2p2 $INSTANCE2_FM3
   run_validation_compare_2p2 $INSTANCE2_FM3
   run_validation_aero_compare_2p2 $INSTANCE2_FM3
   run_subset_scool_compare_2p2 $INSTANCE2_FM3

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P2

3.8.8.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P2

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.8.8.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSF-nadir_$INSTANCE2_FM3 $CERESHOME/inversion/data_exp/CER4.5-6.2P2/CER_SSF-nadir_$INSTANCE2_FM3

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.8.9 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P2 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P2.pl**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P2/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
   $CERESHOME/inversion/CER4.5-6.2P2/rcf/cleanup_4.5-6.2P2.pl $DATE_2P2

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.8.10 Stand Alone Test Procedures for FM4

3.8.10.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
setenv YEAR 2003
setenv MONTH 01
setenv DAY 03
setenv DATE_2P2 $YEAR$MONTH$DAY
setenv INSTANCE2_FM4 Aqua-FM4-MODIS_Edition1B_030034.$DATE_2P2
source $CERESHOME/inversion/CER4.5-6.2P2/rcf/inversion-aqua-test-FM4-
    subset.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P2/CER_SSF_SCOOLRegions_011000.200301
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P2/CER_SSFA_Aqua-FM4-
    MODIS_Edition1B_030034.2003010301
    $CERESHOME/inversion/data/SSFA/Aqua-FM4-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P2/CER_SSFB_Aqua-FM4-
    MODIS_Edition1B_030034.2003010301
    $CERESHOME/inversion/data/SSFB/Aqua-FM4-
    MODIS_Edition1B/2003/01/
```

3.8.10.2 Execution

Execute the production script by typing the script name, **CER4.5-6.2P2-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
$CERESHOME/inversion/CER4.5-6.2P2/rcf/CER4.5-6.2P2-SGE_Driver.pl -
    date $DATE_2P2 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.2P2/rcf/pcf/CER4.5-
    6.2P2_PCF_$INSTANCE2_FM4
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P2/CER4.5-6.2P2_$INSTANCE2_FM4.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P2, will be executed and will create the files printed out by the **list_4.5-6.2P2.pl** script:

$CERESHOME/inversion/CER4.5-6.2P2/rcf/list_4.5-6.2P2.pl $INSTANCE2_FM4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.8.10.3 Exit Codes

All CER4.5-6.2P2 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.

3.8.10.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:30 minutes
Memory:	36688 K
Required Disk Space:	200 Megabytes

3.8.11 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200301
rm $CERESHOME/inversion/data/SSFA/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSFA_Aqua-FM4-MODIS_Edition1B_030034.2003010301
rm $CERESHOME/inversion/data/SSFB/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSFB_Aqua-FM4-MODIS_Edition1B_030034.2003010301

3.8.11.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P2_LogReport_$INSTANCE2_FM4** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P2 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P2 has been executed.

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P2**, using the following **diff_4.5-6.2P2.pl** script:

cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
$CERESHOME/inversion/CER4.5-6.2P2/rcf/diff_4.5-6.2P2.pl $INSTANCE2_FM4

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

3.8.11.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P2, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare_2p2 $INSTANCE2_FM4
   run_subset_aerosol_compare_2p2 $INSTANCE2_FM4
   run_nadir_compare_2p2 $INSTANCE2_FM4
   run_validation_compare_2p2 $INSTANCE2_FM4
   run_validation_aero_compare_2p2 $INSTANCE2_FM4
   run_subset_scool_compare_2p2 $INSTANCE2_FM4

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P2

3.8.11.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P2

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.8.11.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSF-nadir_$INSTANCE2_FM4 $CERESHOME/inversion/data_exp/CER4.5-6.2P2/CER_SSF-nadir_$INSTANCE2_FM4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.8.12 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P2 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P2.pl**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P2/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.2P2/rcf
   $CERESHOME/inversion/CER4.5-6.2P2/rcf/cleanup_4.5-6.2P2.pl $DATE_2P2

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.9 CER4_5-6.2P3 Terra and Aqua Edition4 SSF Subsetting Post Processor Producing Daily SSF and SSFA Subset Files, and Nadir SSF, Validation SSF, Validation SSFA and SCOOL SSF Subset Products

3.9.1 Stand Alone Test Procedures for FM1

3.9.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
setenv YEAR 2008
setenv MONTH 07
setenv DAY 15
setenv DATE_2P3 $YEAR$MONTH$DAY
setenv INSTANCE2_2P3 Terra-FM1-MODIS_Ed4Test_000000.$DATE_2P3
source $CERESHOME/inversion/CER4.5-6.2P3/rcf/inversion-terra-test-FM1-
    subset-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P3/CER_SSF_SCOOLRegions_011000.200807
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSFA_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515
    $CERESHOME/inversion/data/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSFB_Terra-
    FM1-MODIS_Ed4Test_000000.2008071515
    $CERESHOME/inversion/data/SSFB/Terra-FM1-MODIS_Ed4Test/2008/07/
```

3.9.1.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The SSF subset processor production script, **run_4.5-6.2P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF generator, **pcfgen_4.5-6.2P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one command-line argument, YYYYMMDD, which consists of a 4-digit year, 2-digit month, and 2-digit day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcfgen_4.5-6.2P3.csh $DATE_2P3
```

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcf/CER4.5-6.2P3_PCF_$INSTANCE2_2P3

Execute the production script by typing the script name, **run_4.5-6.2P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/run_4.5-6.2P3.csh $INSTANCE2_2P3

SGE Test Instructions:

Execute the cleanup script by typing the script name **cleanup_4.5-6.2P3.pl**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/cleanup_4.5-6.2P3.pl $DATE_2P3

The production script is run by typing the script name, **CER4.5-6.2P3-SGE_Driver.pl**, followed by the "-date" option and a date string. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/CER4.5-6.2P3-SGE_Driver.pl -date $DATE_2P3

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcf/CER4.5-6.2P3_PCF_$INSTANCE2_2P3

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P3/CER4.5-6.2P3_$INSTANCE2_2P3.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P3, will be executed and will create the files printed out by the **list_4.5-6.2P3csh** script:

$CERESHOME/inversion/CER4.5-6.2P3/rcf/list_4.5-6.2P3.csh $INSTANCE2_2P3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.9.1.3 Exit Codes

All CER4.5-6.2P3 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 executables.

3.9.1.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:10 minutes
Memory:	5422 K
Required Disk Space:	60.5 Megabytes

3.9.2 Evaluation Procedures

When running the production script, **run_4.5-6.2P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200807
rm $CERESHOME/inversion/data/SSFA/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA_Terra-FM1-MODIS_Ed4Test_000000.2008071515
rm $CERESHOME/inversion/data/SSFB/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFB_Terra-FM1-MODIS_Ed4Test_000000.2008071515

3.9.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P3_LogReport_$INSTANCE2_2P3** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P3 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P3 has been executed.

Metadata files:

CER_SSFS-DAY_$INSTANCE2_2P3.met
CER_SSFS-NIT_$INSTANCE2_2P3.met
CER_SSFAS-DAY_$INSTANCE2_2P3.met
CER_SSFB-nadir_$INSTANCE2_2P3.met
CER_SSFB-val_$INSTANCE2_2P3.met
CER_SSF-nadir_$INSTANCE2_2P3.met
CER_SSFS-scool-DAY_$INSTANCE2_2P3.met
CER_SSFS-scool-NIT_$INSTANCE2_2P3.met

are written to directory, **$CERESHOME/inversion/data/out_comp/data.**

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P3**, using the following **diff_4.5-6.2P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/diff_4.5-6.2P3.csh $INSTANCE2_2P3

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

3.9.2.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P3, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare $INSTANCE2_2P3
   run_subset_aerosol_compare $INSTANCE2_2P3
   run_nadir_compare $INSTANCE2_2P3
   run_validation_compare $INSTANCE2_2P3
   run_validation_aero_compare $INSTANCE2_2P3
   run_subset_scool_compare $INSTANCE2_2P3

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P3

$CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P3
$CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P3

3.9.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P3 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P3

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.9.2.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSF-nadir_$INSTANCE2_2P3 $CERESHOME/inversion/data_exp/CER4.5-6.2P3/CER_SSF-nadir_$INSTANCE2_2P3

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.9.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P3 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P3.csh**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P3/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.2P3/rcf/cleanup_4.5-6.2P3.csh $INSTANCE2_2P3

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.9.4 Stand Alone Test Procedures for FM2

3.9.4.1 Environment setup and file preparation

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
setenv YEAR 2001
setenv MONTH 04
setenv DAY 15
setenv DATE_2P3 $YEAR$MONTH$DAY
setenv INSTANCE2_2P3 Terra-FM2-MODIS_SSIT2_000000.$DATE_2P3
source $CERESHOME/inversion/CER4.5-6.2P3/rcf/inversion-terra-test-FM2-subset-env.csh

Copy the input files to appropriate locations:

cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSF_SCOOLRegions_011000.200104 $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515 $CERESHOME/inversion/data/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSFB_Terra-FM2-MODIS_SSIT2_000000.2001041515 $CERESHOME/inversion/data/SSFB/Terra-FM2-MODIS_SSIT2/2001/04/

3.9.4.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The SSF subset processor production script, **run_4.5-6.2P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF generator, **pcfgen_4.5-6.2P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one command-line argument, YYYYMMDD, which consists of a 4-digit year, 2-digit month, and 2-digit day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcfgen_4.5-6.2P3.csh $DATE_2P3

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcf/CER4.5-6.2P3_PCF_$INSTANCE2_2P3

Execute the production script by typing the script name, **run_4.5-6.2P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/run_4.5-6.2P3.csh $INSTANCE2_2P3

SGE Test Instructions:

Execute the cleanup script by typing the script name **cleanup_4.5-6.2P3.pl**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/cleanup_4.5-6.2P3.pl $DATE_2P3

The production script is run by typing the script name, **CER4.5-6.2P3-SGE_Driver.pl**, followed by the "-date" option and a date string. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/CER4.5-6.2P3-SGE_Driver.pl -date $DATE_2P3

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcf/CER4.5-6.2P3_PCF_$INSTANCE2_2P3

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P3/CER4.5-6.2P3_$INSTANCE2_2P3.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P3, will be executed and will create the files printed out by the **list_4.5-6.2P3csh** script:

$CERESHOME/inversion/CER4.5-6.2P3/rcf/list_4.5-6.2P3.csh $INSTANCE2_2P3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.9.4.3 Exit Codes

All CER4.5-6.2P3 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 executables.

3.9.4.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:10 minutes
Memory:	5422 K
Required Disk Space:	60.5 Megabytes

3.9.5 Evaluation Procedures

When running the production script, **run_4.5-6.2P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200104
rm $CERESHOME/inversion/data/SSFA/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA_Terra-FM2-MODIS_SSIT2_000000.2001041515
rm $CERESHOME/inversion/data/SSFB/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFB_Terra-FM2-MODIS_SSIT2_000000.2001041515

3.9.5.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P3_LogReport_$INSTANCE2_2P3** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P3 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P3 has been executed.

Metadata files:

CER_SSFS-DAY_$INSTANCE2_2P3.met
CER_SSFS-NIT_$INSTANCE2_2P3.met
CER_SSFAS-DAY_$INSTANCE2_2P3.met
CER_SSFB-nadir_$INSTANCE2_2P3.met
CER_SSFB-val_$INSTANCE2_2P3.met

CER_SSF-nadir_$INSTANCE2_2P3.met
CER_SSFS-scool-DAY_$INSTANCE2_2P3.met
CER_SSFS-scool-NIT_$INSTANCE2_2P3.met

are written to directory, **$CERESHOME/inversion/data/out_comp/data.**

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P3**, using the following **diff_4.5-6.2P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/diff_4.5-6.2P3.csh $INSTANCE2_2P3

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

3.9.5.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P3, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare $INSTANCE2_2P3
   run_subset_aerosol_compare $INSTANCE2_2P3
   run_nadir_compare $INSTANCE2_2P3
   run_validation_compare $INSTANCE2_2P3
   run_validation_aero_compare $INSTANCE2_2P3
   run_subset_scool_compare $INSTANCE2_2P3

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P3

3.9.5.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P3 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P3

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.9.5.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSF-nadir_$INSTANCE2_2P3 $CERESHOME/inversion/data_exp/CER4.5-6.2P3/CER_SSF-nadir_$INSTANCE2_2P3

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.9.6 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P3 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P3.csh**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P3/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.2P3/rcf/cleanup_4.5-6.2P3.csh $INSTANCE2_2P3

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.9.7 Stand Alone Test Procedures for FM3

3.9.7.1 Environment setup and file preparation

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv DATE_2P3 $YEAR$MONTH$DAY
setenv INSTANCE2_2P3 Aqua-FM3-MODIS_SSIT_000000.$DATE_2P3
source $CERESHOME/inversion/CER4.5-6.2P3/rcf/inversion-aqua-test-FM3-subset-env.csh

Copy the input files to appropriate locations:

cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSF_SCOOLRegions_011000.200810 $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507 $CERESHOME/inversion/data/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSFB_Aqua-FM3-MODIS_SSIT_000000.2008101507 $CERESHOME/inversion/data/SSFB/Aqua-FM3-MODIS_SSIT/2008/10/

3.9.7.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The SSF subset processor production script, **run_4.5-6.2P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF generator, **pcfgen_4.5-6.2P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one command-line argument, YYYYMMDD, which consists of a 4-digit year, 2-digit month, and 2-digit day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcfgen_4.5-6.2P3.csh $DATE_2P3

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcf/CER4.5-6.2P3_PCF_$INSTANCE2_2P3

Execute the production script by typing the script name, **run_4.5-6.2P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/run_4.5-6.2P3.csh $INSTANCE2_2P3

SGE Test Instructions:

Execute the cleanup script by typing the script name **cleanup_4.5-6.2P3.pl**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/cleanup_4.5-6.2P3.pl $DATE_2P3

The production script is run by typing the script name, **CER4.5-6.2P3-SGE_Driver.pl**, followed by the "-date" option and a date string. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/CER4.5-6.2P3-SGE_Driver.pl -date $DATE_2P3

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcf/CER4.5-6.2P3_PCF_$INSTANCE2_2P3

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P3/CER4.5-6.2P3_$INSTANCE2_2P3.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P3, will be executed and will create the files printed out by the **list_4.5-6.2P3csh** script:

$CERESHOME/inversion/CER4.5-6.2P3/rcf/list_4.5-6.2P3.csh $INSTANCE2_2P3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.9.7.3 Exit Codes

All CER4.5-6.2P3 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 executables.

3.9.7.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:10 minutes
Memory:	5422 K
Required Disk Space:	60.5 Megabytes

3.9.8 Evaluation Procedures

When running the production script, **run_4.5-6.2P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200810
rm $CERESHOME/inversion/data/SSFA/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFA_Aqua-FM3-MODIS_SSIT_000000.2008101507
rm $CERESHOME/inversion/data/SSFB/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSFB_Aqua-FM3-MODIS_SSIT_000000.2008101507

3.9.8.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P3_LogReport_$INSTANCE2_2P3** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P3 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P3 has been executed.

Metadata files:

CER_SSFS-DAY_$INSTANCE2_2P3.met
CER_SSFS-NIT_$INSTANCE2_2P3.met
CER_SSFAS-DAY_$INSTANCE2_2P3.met
CER_SSFB-nadir_$INSTANCE2_2P3.met
CER_SSFB-val_$INSTANCE2_2P3.met

CER_SSF-nadir_$INSTANCE2_2P3.met
CER_SSFS-scool-DAY_$INSTANCE2_2P3.met
CER_SSFS-scool-NIT_$INSTANCE2_2P3.met

are written to directory, **$CERESHOME/inversion/data/out_comp/data.**

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P3**, using the following **diff_4.5-6.2P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/diff_4.5-6.2P3.csh $INSTANCE2_2P3

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

3.9.8.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P3, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare $INSTANCE2_2P3
   run_subset_aerosol_compare $INSTANCE2_2P3
   run_nadir_compare $INSTANCE2_2P3
   run_validation_compare $INSTANCE2_2P3
   run_validation_aero_compare $INSTANCE2_2P3
   run_subset_scool_compare $INSTANCE2_2P3

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P3

3.9.8.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P3 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P3

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.9.8.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Aqua-FM3-MODIS_SSIT/2008/10/CER_SSF-nadir_$INSTANCE2_2P3 $CERESHOME/inversion/data_exp/CER4.5-6.2P3/CER_SSF-nadir_$INSTANCE2_2P3

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.9.9 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P3 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P3.csh**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P3/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.2P3/rcf/cleanup_4.5-6.2P3.csh $INSTANCE2_2P3

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.9.10 Stand Alone Test Procedures for FM4

3.9.10.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DAY 15
setenv DATE_2P3 $YEAR$MONTH$DAY
setenv INSTANCE2_2P3 Aqua-FM4-MODIS_SSIT-NoSW_000000.$DATE_2P3
source $CERESHOME/inversion/CER4.5-6.2P3/rcf/inversion-aqua-test-FM4-
    subset-env.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P3/CER_SSF_SCOOLRegions_011000.200810
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSFA_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507
    $CERESHOME/inversion/data/SSFA/Aqua-FM4-MODIS_SSIT-
    NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P3/CER_SSFB_Aqua-FM4-
    MODIS_SSIT-NoSW_000000.2008101507
    $CERESHOME/inversion/data/SSFB/Aqua-FM4-MODIS_SSIT-
    NoSW/2008/10/
```

3.9.10.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The SSF subset processor production script, **run_4.5-6.2P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF generator, **pcfgen_4.5-6.2P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one command-line argument, YYYYMMDD, which consists of a 4-digit year, 2-digit month, and 2-digit day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcfgen_4.5-6.2P3.csh $DATE_2P3
```

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcf/CER4.5-6.2P3_PCF_$INSTANCE2_2P3

Execute the production script by typing the script name, **run_4.5-6.2P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/run_4.5-6.2P3.csh $INSTANCE2_2P3

SGE Test Instructions:

Execute the cleanup script by typing the script name **cleanup_4.5-6.2P3.pl**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/cleanup_4.5-6.2P3.pl $DATE_2P3

The production script is run by typing the script name, **CER4.5-6.2P3-SGE_Driver.pl**, followed by the "-date" option and a date string. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day of the data.

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/CER4.5-6.2P3-SGE_Driver.pl -date $DATE_2P3

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.2P3/rcf/pcf/CER4.5-6.2P3_PCF_$INSTANCE2_2P3

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P3/CER4.5-6.2P3_$INSTANCE2_2P3.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P3, will be executed and will create the files printed out by the **list_4.5-6.2P3csh** script:

$CERESHOME/inversion/CER4.5-6.2P3/rcf/list_4.5-6.2P3.csh $INSTANCE2_2P3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found. THERE ARE NOT ANY SSFB-nadir OR SSF-nadir PRODUCTS WITH THIS TEST. THESE FILES WILL SHOW AS MISSING.

3.9.10.3 Exit Codes

All CER4.5-6.2P3 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 executables.

3.9.10.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:10 minutes
Memory:	5422 K
Required Disk Space:	60.5 Megabytes

3.9.11 Evaluation Procedures

When running the production script, **run_4.5-6.2P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200810
rm $CERESHOME/inversion/data/SSFA/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFA_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507
rm $CERESHOME/inversion/data/SSFB/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFB_Aqua-FM4-MODIS_SSIT-NoSW_000000.2008101507

3.9.11.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P3_LogReport_$INSTANCE2_2P3** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P3 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P3 has been executed.

Metadata files:

CER_SSFS-DAY_$INSTANCE2_2P3.met
CER_SSFS-NIT_$INSTANCE2_2P3.met
CER_SSFAS-DAY_$INSTANCE2_2P3.met
CER_SSFB-nadir_$INSTANCE2_2P3.met
CER_SSFB-val_$INSTANCE2_2P3.met
CER_SSF-nadir_$INSTANCE2_2P3.met
CER_SSFS-scool-DAY_$INSTANCE2_2P3.met
CER_SSFS-scool-NIT_$INSTANCE2_2P3.met

are written to directory, **$CERESHOME/inversion/data/out_comp/data.**

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P3**, using the following **diff_4.5-6.2P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.2P3/rcf
$CERESHOME/inversion/CER4.5-6.2P3/rcf/diff_4.5-6.2P3.csh $INSTANCE2_2P3

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

3.9.11.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P3, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare $INSTANCE2_2P3
   run_subset_aerosol_compare $INSTANCE2_2P3
   run_nadir_compare $INSTANCE2_2P3
   run_validation_compare $INSTANCE2_2P3
   run_validation_aero_compare $INSTANCE2_2P3
   run_subset_scool_compare $INSTANCE2_2P3

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P3
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P3

$CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P3
$CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P3

3.9.11.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P3 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P3
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P3

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.9.11.4 Evaluation of SSF HDF Product – THERE IS NO HDF PRODUCT WITH THIS TEST DATA.

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSF-nadir_$INSTANCE2_2P3 $CERESHOME/inversion/data_exp/CER4.5-6.2P3/CER_SSF-nadir_$INSTANCE2_2P3

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.9.12 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P3 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P3.csh**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P3/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.2P3/rcf/cleanup_4.5-6.2P3.csh $INSTANCE2_2P3

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.10 CER4_5-6.2P4 Terra and Aqua SSF Subsetting Post Processor Producing Daily SSF and SSFA subset files, and Nadir SSF, Validation SSF, Validation SSFA and SCOOL SSF subset products for Edition3 for both *P6* and *x86* processors.

3.10.1 Stand Alone Test Procedures for FM1

3.10.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
setenv YEAR 2001
setenv MONTH 01
setenv DAY 03
setenv DATE_2P4 $YEAR$MONTH$DAY
setenv INSTANCE2_FM1 Terra-FM1-MODIS_Edition2B_026030.$DATE_2P4
source $CERESHOME/inversion/CER4.5-6.2P4/rcf/inversion-terra-test-FM1-
    subset.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P4/CER_SSF_SCOOLRegions_011000.200101
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P4/CER_SSFA_Terra-
    FM1-MODIS_Edition2B_026030.2001010301
    $CERESHOME/inversion/data/SSFA/Terra-FM1-
    MODIS_Edition2B/2001/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P4/CER_SSFB_Terra-
    FM1-MODIS_Edition2B_026030.2001010301
    $CERESHOME/inversion/data/SSFB/Terra-FM1-
    MODIS_Edition2B/2001/01/
```

3.10.1.2 Execution

Execute the production script by typing the script name, **CER4.5-6.2P4-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
$CERESHOME/inversion/CER4.5-6.2P4/rcf/CER4.5-6.2P4-SGE_Driver.pl -
    date $DATE_2P4 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.2P4/rcf/pcf/CER4.5-
    6.2P4_PCF_$INSTANCE2_FM1
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P4/CER4.5-6.2P4_$INSTANCE2_FM1.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P4, will be executed and will create the files printed out by the **list_4.5-6.2P4.pl** script:
$CERESHOME/inversion/CER4.5-6.2P4/rcf/list_4.5-6.2P4.pl $INSTANCE2_FM1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.10.1.3 Exit Codes

All CER4.5-6.2P4 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.

3.10.1.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:30 minutes
Memory:	36688 K
Required Disk Space:	200 Megabytes

3.10.2 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200101
rm $CERESHOME/inversion/data/SSFA/Terra-FM1-MODIS_Edition2B/2001/01/CER_SSFA_Terra-FM1-MODIS_Edition2B_026030.2001010301
rm $CERESHOME/inversion/data/SSFB/Terra-FM1-MODIS_Edition2B/2001/01/CER_SSFB_Terra-FM1-MODIS_Edition2B_026030.2001010301

3.10.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P4_LogReport_$INSTANCE2_FM1** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P4 has been executed. Metadata

files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P4 has been executed.

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P4**, using the following **diff_4.5-6.2P4.pl** script:

cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
$CERESHOME/inversion/CER4.5-6.2P4/rcf/diff_4.5-6.2P4.pl $INSTANCE2_FM1

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

3.10.2.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P4, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare_2p4 $INSTANCE2_FM1
   run_subset_aerosol_compare_2p4 $INSTANCE2_FM1
   run_nadir_compare_2p4 $INSTANCE2_FM1
   run_validation_compare_2p4 $INSTANCE2_FM1
   run_validation_aero_compare_2p4 $INSTANCE2_FM1
   run_subset_scool_compare_2p4 $INSTANCE2_FM1

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P4

3.10.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P4 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P4

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P4

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.10.2.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Terra-FM1-MODIS_Edition2B/2001/01/CER_SSF-nadir_$INSTANCE2_FM1 $CERESHOME/inversion/data_exp/CER4.5-6.2P4/CER_SSF-nadir_$INSTANCE2_FM1

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.10.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P4 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P4.pl**, is located in directory **$CERESHOME/inversion/CER4.5-6.2P4/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
   $CERESHOME/inversion/CER4.5-6.2P4/rcf/cleanup_4.5-6.2P4.pl $DATE_2P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.10.4 Stand Alone Test Procedures for FM2

3.10.4.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
setenv YEAR 2001
setenv MONTH 01
setenv DAY 03
setenv DATE_2P4 $YEAR$MONTH$DAY
setenv INSTANCE2_FM2 Terra-FM2-MODIS_Edition2B_026030.$DATE_2P4
source $CERESHOME/inversion/CER4.5-6.2P4/rcf/inversion-terra-test-FM2-
    subset.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P4/CER_SSF_SCOOLRegions_011000.200101
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P4/CER_SSFA_Terra-
    FM2-MODIS_Edition2B_026030.2001010301
    $CERESHOME/inversion/data/SSFA/Terra-FM2-
    MODIS_Edition2B/2001/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P4/CER_SSFB_Terra-
    FM2-MODIS_Edition2B_026030.2001010301
    $CERESHOME/inversion/data/SSFB/Terra-FM2-
    MODIS_Edition2B/2001/01/
```

3.10.4.2 Execution

Execute the production script by typing the script name, **CER4.5-6.2P4-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
$CERESHOME/inversion/CER4.5-6.2P4/rcf/CER4.5-6.2P4-SGE_Driver.pl -
    date $DATE_2P4 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.2P4/rcf/pcf/CER4.5-
    6.2P4_PCF_$INSTANCE2_FM2
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P4/CER4.5-6.2P4_$INSTANCE2_FM2.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P4, will be executed and will create the files printed out by the **list_4.5-6.2P4.pl** script:

$CERESHOME/inversion/CER4.5-6.2P4/rcf/list_4.5-6.2P4.pl $INSTANCE2_FM2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.10.4.3 Exit Codes

All CER4.5-6.2P4 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.

3.10.4.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:30 minutes
Memory:	36688 K
Required Disk Space:	200 Megabytes

3.10.5 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200101
rm $CERESHOME/inversion/data/SSFA/Terra-FM2-MODIS_Edition2B/2001/01/CER_SSFA_Terra-FM2-MODIS_Edition2B_026030.2001010301
rm $CERESHOME/inversion/data/SSFB/Terra-FM2-MODIS_Edition2B/2001/01/CER_SSFB_Terra-FM2-MODIS_Edition2B_026030.2001010301

3.10.5.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P4_LogReport_$INSTANCE2_FM2** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P4 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P4 has been executed.

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P4**, using the following **diff_4.5-6.2P4.pl** script:

cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
$CERESHOME/inversion/CER4.5-6.2P4/rcf/diff_4.5-6.2P4.pl $INSTANCE2_FM2

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

3.10.5.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P4, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare_2p4 $INSTANCE2_FM2
   run_subset_aerosol_compare_2p4 $INSTANCE2_FM2
   run_nadir_compare_2p4 $INSTANCE2_FM2
   run_validation_compare_2p4 $INSTANCE2_FM2
   run_validation_aero_compare_2p4 $INSTANCE2_FM2
   run_subset_scool_compare_2p4 $INSTANCE2_FM2

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P4

3.10.5.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P4 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P4

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P4

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.10.5.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Terra-FM2-MODIS_Edition2B/2001/01/CER_SSF-nadir_$INSTANCE2_FM2 $CERESHOME/inversion/data_exp/CER4.5-6.2P4/CER_SSF-nadir_$INSTANCE2_FM2

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.10.6 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P4 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P4.pl**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P4/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
   $CERESHOME/inversion/CER4.5-6.2P4/rcf/cleanup_4.5-6.2P4.pl $DATE_2P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.10.7 Stand Alone Test Procedures for FM3

3.10.7.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
setenv YEAR 2003
setenv MONTH 01
setenv DAY 03
setenv DATE_2P4 $YEAR$MONTH$DAY
setenv INSTANCE2_FM3 Aqua-FM3-MODIS_Edition1B_030034.$DATE_2P4
source $CERESHOME/inversion/CER4.5-6.2P4/rcf/inversion-aqua-test-FM3-
    subset.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P4/CER_SSF_SCOOLRegions_011000.200301
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P4/CER_SSFA_Aqua-FM3-
    MODIS_Edition1B_030034.2003010301
    $CERESHOME/inversion/data/SSFA/Aqua-FM3-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P4/CER_SSFB_Aqua-FM3-
    MODIS_Edition1B_030034.2003010301
    $CERESHOME/inversion/data/SSFB/Aqua-FM3-
    MODIS_Edition1B/2003/01/
```

3.10.7.2 Execution

Execute the production script by typing the script name, **CER4.5-6.2P4-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
$CERESHOME/inversion/CER4.5-6.2P4/rcf/CER4.5-6.2P4-SGE_Driver.pl -
    date $DATE_2P4 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.2P4/rcf/pcf/CER4.5-
    6.2P4_PCF_$INSTANCE2_FM3
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P4/CER4.5-6.2P4_$INSTANCE2_FM3.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P4, will be executed and will create the files printed out by the **list_4.5-6.2P4.pl** script:

$CERESHOME/inversion/CER4.5-6.2P4/rcf/list_4.5-6.2P4.pl $INSTANCE2_FM3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.10.7.3 Exit Codes

All CER4.5-6.2P4 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.

3.10.7.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:30 minutes
Memory:	36688 K
Required Disk Space:	200 Megabytes

3.10.8 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200301
rm $CERESHOME/inversion/data/SSFA/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSFA_Aqua-FM3-MODIS_Edition1B_030034.2003010301
rm $CERESHOME/inversion/data/SSFB/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSFB_Aqua-FM3-MODIS_Edition1B_030034.2003010301

3.10.8.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P4_LogReport_$INSTANCE2_FM3** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P4 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P4 has been executed.

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P4**, using the following **diff_4.5-6.2P4.pl** script:

cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
$CERESHOME/inversion/CER4.5-6.2P4/rcf/diff_4.5-6.2P4.pl $INSTANCE2_FM3

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

3.10.8.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P4, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare_2p4 $INSTANCE2_FM3
   run_subset_aerosol_compare_2p4 $INSTANCE2_FM3
   run_nadir_compare_2p4 $INSTANCE2_FM3
   run_validation_compare_2p4 $INSTANCE2_FM3
   run_validation_aero_compare_2p4 $INSTANCE2_FM3
   run_subset_scool_compare_2p4 $INSTANCE2_FM3

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P4

3.10.8.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P4 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P4

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P4

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.10.8.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSF-nadir_$INSTANCE2_FM3 $CERESHOME/inversion/data_exp/CER4.5-6.2P4/CER_SSF-nadir_$INSTANCE2_FM3

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.10.9 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P4 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P4.pl**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P4/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
   $CERESHOME/inversion/CER4.5-6.2P4/rcf/cleanup_4.5-6.2P4.pl $DATE_2P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.10.10 Stand Alone Test Procedures for FM4

3.10.10.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
setenv YEAR 2003
setenv MONTH 01
setenv DAY 03
setenv DATE_2P4 $YEAR$MONTH$DAY
setenv INSTANCE2_FM4 Aqua-FM4-MODIS_Edition1B_030034.$DATE_2P4
source $CERESHOME/inversion/CER4.5-6.2P4/rcf/inversion-aqua-test-FM4-
    subset.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.2P4/CER_SSF_SCOOLRegions_011000.200301
    $CERESHOME/inversion/ancillary/SCOOL/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P4/CER_SSFA_Aqua-FM4-
    MODIS_Edition1B_030034.2003010301
    $CERESHOME/inversion/data/SSFA/Aqua-FM4-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.2P4/CER_SSFB_Aqua-FM4-
    MODIS_Edition1B_030034.2003010301
    $CERESHOME/inversion/data/SSFB/Aqua-FM4-
    MODIS_Edition1B/2003/01/
```

3.10.10.2 Execution

Execute the production script by typing the script name, **CER4.5-6.2P4-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
$CERESHOME/inversion/CER4.5-6.2P4/rcf/CER4.5-6.2P4-SGE_Driver.pl -
    date $DATE_2P4 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.2P4/rcf/pcf/CER4.5-
    6.2P4_PCF_$INSTANCE2_FM4
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.2P4/CER4.5-6.2P4_$INSTANCE2_FM4.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.2P4, will be executed and will create the files printed out by the **list_4.5-6.2P4.pl** script:

$CERESHOME/inversion/CER4.5-6.2P4/rcf/list_4.5-6.2P4.pl $INSTANCE2_FM4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.10.10.3 Exit Codes

All CER4.5-6.2P4 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.

3.10.10.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:30 minutes
Memory:	36688 K
Required Disk Space:	200 Megabytes

3.10.11 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/ancillary/SCOOL/CER_SSF_SCOOLRegions_011000.200301
rm $CERESHOME/inversion/data/SSFA/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSFA_Aqua-FM4-MODIS_Edition1B_030034.2003010301
rm $CERESHOME/inversion/data/SSFB/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSFB_Aqua-FM4-MODIS_Edition1B_030034.2003010301

3.10.11.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.2P4_LogReport_$INSTANCE2_FM4** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.2P4 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.2P4 has been executed.

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.2P4**, using the following **diff_4.5-6.2P4.pl** script:

cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
$CERESHOME/inversion/CER4.5-6.2P4/rcf/diff_4.5-6.2P4.pl $INSTANCE2_FM4

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

3.10.11.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Subset Post Processor will perform a single test. This test will compare the data on the two newly created SSF subset files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.2P4, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_subset_compare_2p4 $INSTANCE2_FM4
   run_subset_aerosol_compare_2p4 $INSTANCE2_FM4
   run_nadir_compare_2p4 $INSTANCE2_FM4
   run_validation_compare_2p4 $INSTANCE2_FM4
   run_validation_aero_compare_2p4 $INSTANCE2_FM4
   run_subset_scool_compare_2p4 $INSTANCE2_FM4

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P4
   $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P4

3.10.11.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.2P4 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubset_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSF2A_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFNadir_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFVal_$DATE_2P4

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAVal_$DATE_2P4
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSCOOL_$DATE_2P4

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.10.11.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF-nadir/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSF-nadir_$INSTANCE2_FM4 $CERESHOME/inversion/data_exp/CER4.5-6.2P4/CER_SSF-nadir_$INSTANCE2_FM4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.10.12 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.2P4 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.2P4.pl**, is located in directory $**CERESHOME/inversion/CER4.5-6.2P4/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.2P4/rcf
   $CERESHOME/inversion/CER4.5-6.2P4/rcf/cleanup_4.5-6.2P4.pl $DATE_2P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.11 CER4_5-6.3P1 Alternate Main and Post Processors

3.11.1 Stand Alone Test Procedures

3.11.1.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.3P1.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.3P1.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/bin
setenv DATE_3P1 1998050101
setenv INSTANCE3 TRMM-PFM-VIRS_SSIT2_000001.$DATE_3P1
source $CERESHOME/inversion/bin/inversion-test3-env.csh
$CERESHOME/inversion/bin/pcfgen_4.5-6.3P1.csh $DATE_3P1
```

The following files will be generated:

$CERESHOME/inversion/rcf/CER4.5-6.3P1_PCFin_$INSTANCE3
$CERESHOME/inversion/rcf/CER4.5-6.3P1_PCF_$INSTANCE3

If PGE CER4.5-6.1P1 was not tested, then copy the following input data files:.

```
cp $CERESHOME/inversion/data/input/CER_MOA_CERES_ECMWF-
    GEOS2_010012.1998050100
    $CERESHOME/sarb/data/out_comp/data/regridmoa
cp $CERESHOME/inversion/data/input/CER_MOA_CERES_ECMWF-
    GEOS2_010012.1998050106
    $CERESHOME/sarb/data/out_comp/data/regridmoa
```

3.11.1.2 Execution

Execute the production script by typing the script name, **run_4.5-6.3P1.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use $INSTANCE3, defined in Section 3.11.1.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.3P1:

```
cd $CERESHOME/inversion/bin
$CERESHOME/inversion/bin/run_4.5-6.3P1.csh $INSTANCE3
```

The script, **list_4.5-6.3P1.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/bin/list_4.5-6.3P1.csh $INSTANCE3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.11.1.3 Exit Codes

All CER4.5-6.3P1 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 for each of the two executables.

3.11.1.4 Test Summary

Test Summary:

Total Run Time:	5:05 minutes
Memory:	208496 K
Required Disk Space:	500 Megabytes

3.11.2 Evaluation Procedures

When running the production script, **run_4.5-6.3P1.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove MOA input files from the sarb directory:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS2_010012.1998050100

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS2_010012.1998050106

3.11.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.3P1_LogReport_$INSTANCE3**, is located in directory **$CERESHOME/inversion/data/runlogs** after CER4.5-6.3P1 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.3P1 has been executed. Metadata files, **CER_SSFB_$INSTANCE3.met** and **CER_SSF_$INSTANCE3.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data/out_exp/comp_data** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data/out_exp/comp_data**, using the following **diff_4.5-6.3P1.csh** script:

cd $CERESHOME/inversion/bin
$CERESHOME/inversion/bin/diff_4.5-6.3P1.csh $INSTANCE3

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

3.11.2.2 Execution of Comparison Software for the Main Processor

The evaluation software for the Subsystem Main Processor will perform a single test. This test will copy all of the parameters that were written to the binary SSF by PGE CER4.5-6.3P1 into a file and will compare those parameter values to the values in a comparison file provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare3 $INSTANCE3

   One file will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport3_$DATE_3P1

3.11.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.1P1 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport3_$DATE_3P1

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.11.2.4 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software was compiled when all software was compiled in a previous step. Execute the program by typing the following lines:

source $CERESENV
cd $CERESHOME/inversion/test_suites/bin
hcmp.exe $CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3
$CERESHOME/inversion/data/out_exp/data/CER_SSF_$INSTANCE3

The executable, **hcmp.exe**, compares each Vdata and each SDS on the SSF HDF output file. If the SDS data or Vdata field data on the newly created HDF file, **$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3**, matches the data on the provided SSF HDF file of the same name on

$CERESHOME/inversion/data/out_exp/data, '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: "SSF_DATE" on the "SSF_Header" 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.

3.11.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.3P1 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.3P1.csh**, is located in directory **$CERESHOME/inversion/bin**. To use the clean-up script:

   $CERESHOME/inversion/bin/cleanup_4.5-6.3P1.csh $INSTANCE3

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.12 CER4_5-6.3P2 Alternate Main and Post Processors for Terra

3.12.1 Stand Alone Test Procedures for FM1

3.12.1.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.3P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.3P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.3P2/rcf
setenv DATE_3P2 2000030100
setenv INSTANCE3_FM1 Terra-FM1-MODIS_SSIT_000000.$DATE_3P2
source $CERESHOME/inversion/CER4.5-6.3P2/rcf/inversion-terra-FM1-env-3p2.csh
$CERESHOME/inversion/CER4.5-6.3P2/rcf/pcfgen_4.5-6.3P2.csh $DATE_3P2

The following files will be generated:
$CERESHOME/inversion/CER4.5-6.3P2/rcf/pcf/CER4.5-6.3P2_PCFin_$INSTANCE3_FM1
$CERESHOME/inversion/CER4.5-6.3P2/rcf/pcf/CER4.5-6.3P2_PCF_$INSTANCE3_FM1

Copy the following input data files:.

cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_MOA_CERES_DAO-GEOS4_016023.2000030100 $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SCCD_Terra-FM1_Edition2_025022.20000315 $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SCCN_Terra-FM1_Edition2_025022.20000315 $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SSFA_Terra-FM1-MODIS_Edition2A_025029.2000030100 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SSFA_Terra-FM1-MODIS_Edition2A_025029.2000030100.met $CERESHOME/inversion/data/out_comp/data/

cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SSFB_Terra-FM1-MODIS_Edition2A_025029.2000030100 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_GQCI_Terra-FM1-MODIS_Edition2A_025029.2000030100 $CERESHOME/inversion/data/out_comp/QC/

3.12.1.2 Execution

Execute the production script by typing the script name, **run_4.5-6.3P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use $INSTANCE3_FM1, defined in Section 3.12.1.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.3P2:

cd $CERESHOME/inversion/CER4.5-6.3P2/rcf
$CERESHOME/inversion/CER4.5-6.3P2/rcf/run_4.5-6.3P2.csh $INSTANCE3_FM1

The script, **list_4.5-6.3P2.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.3P2/rcf/list_4.5-6.3P2.csh $INSTANCE3_FM1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.12.1.3 Exit Codes

All CER4.5-6.3P2 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.

3.12.1.4 Test Summary

Test Summary:

Total Run Time:	1:30 minutes
Memory:	296050 K
Required Disk Space:	500 Megabytes

3.12.2 Evaluation Procedures

When running the production script, **run_4.5-6.3P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove MOA input files from the sarb directory:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2000030100
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Terra-FM1_Edition2_025022.20000315
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Terra-FM1_Edition2_025022.20000315

3.12.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.3P2_LogReport_$INSTANCE3_FM1**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.3P2 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.3P2 has been executed. Metadata files, **CER_SSFB_$INSTANCE3_FM1.met, CER_SSFA_$INSTANCE3_FM1.met,** and **CER_SSF_$INSTANCE3_FM1.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.3P2** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.3P2**, using the following **diff_4.5-6.3P2.csh** script:

cd $CERESHOME/inversion/CER4.5-6.3P2/rcf
$CERESHOME/inversion/CER4.5-6.3P2/rcf/diff_4.5-6.3P2.csh $INSTANCE3_FM1

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

3.12.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_3p2 $INSTANCE3_FM1

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_3P2
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_3P2

Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.12.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.3P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_3P2
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_3P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.12.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3_FM1
$CERESHOME/inversion/data_exp/CER4.5-6.3P2/CER_SSF_$INSTANCE3_FM1

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.12.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.3P2 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.3P2.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.3P2/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.3P2/rcf/cleanup_4.5-6.3P2.csh $INSTANCE3_FM1

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.12.5 Stand Alone Test Procedures for FM2

3.12.5.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.3P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.3P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.3P2/rcf
setenv DATE_3P2 2000030100
setenv INSTANCE3_FM2 Terra-FM2-MODIS_SSIT_000000.$DATE_3P2
source $CERESHOME/inversion/CER4.5-6.3P2/rcf/inversion-terra-FM2-env-
    3p2.csh
$CERESHOME/inversion/CER4.5-6.3P2/rcf/pcfgen_4.5-6.3P2.csh $DATE_3P2
```

The following files will be generated:

```
$CERESHOME/inversion/CER4.5-6.3P2/rcf/pcf/CER4.5-
    6.3P2_PCFin_$INSTANCE3_FM2
$CERESHOME/inversion/CER4.5-6.3P2/rcf/pcf/CER4.5-
    6.3P2_PCF_$INSTANCE3_FM2
```

Copy the following input data files:.

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.3P2/CER_MOA_CERES_DAO-GEOS4_016023.2000030100
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SCCD_Terra-
    FM2_Edition2_023019.20000315
    $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SCCN_Terra-
    FM2_Edition2_023019.20000315
    $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SSFA_Terra-
    FM2-MODIS_Edition2A_025029.2000030100
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SSFA_Terra-
    FM2-MODIS_Edition2A_025029.2000030100.met
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_SSFB_Terra-
    FM2-MODIS_Edition2A_025029.2000030100
    $CERESHOME/inversion/data/out_comp/data/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.3P2/CER_GQCI_Terra-FM2-MODIS_Edition2A_025029.2000030100 $CERESHOME/inversion/data/out_comp/QC/

3.12.5.2 Execution

Execute the production script by typing the script name, **run_4.5-6.3P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use $INSTANCE3_FM2, defined in Section 3.12.5.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.3P2:

cd $CERESHOME/inversion/CER4.5-6.3P2/rcf
$CERESHOME/inversion/CER4.5-6.3P2/rcf/run_4.5-6.3P2.csh $INSTANCE3_FM2

The script, **list_4.5-6.3P2.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.3P2/rcf/list_4.5-6.3P2.csh $INSTANCE3_FM2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.12.5.3 Exit Codes

All CER4.5-6.3P2 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.

3.12.5.4 Test Summary

Test Summary:

Total Run Time:	1:30 minutes
Memory:	296050 K
Required Disk Space:	500 Megabytes

3.12.6 Evaluation Procedures

When running the production script, **run_4.5-6.3P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove MOA input files from the sarb directory:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2000030100
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Terra-FM2_Edition2_023019.20000315
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Terra-FM2_Edition2_023019.20000315

3.12.7 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.3P2_LogReport_$INSTANCE3_FM2**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.3P2 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.3P2 has been executed. Metadata files, **CER_SSFB_$INSTANCE3_FM2.met, CER_SSFA_$INSTANCE3_FM2.met,** and **CER_SSF_$INSTANCE3_FM2.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.3P2** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.3P2**, using the following **diff_4.5-6.3P2.csh** script:

cd $CERESHOME/inversion/CER4.5-6.3P2/rcf
$CERESHOME/inversion/CER4.5-6.3P2/rcf/diff_4.5-6.3P2.csh $INSTANCE3_FM2

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

3.12.7.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_3p2 $INSTANCE3_FM2

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_3P2
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_3P2

Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.12.7.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.3P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_3P2
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_3P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.12.7.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3_FM2
$CERESHOME/inversion/data_exp/CER4.5-6.3P2/CER_SSF_$INSTANCE3_FM2

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.12.8 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.3P2 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.3P2.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.3P2/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.3P2/rcf/cleanup_4.5-6.3P2.csh $INSTANCE3_FM2

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.13 CER4_5-6.3P3 Alternate Main and Post Processors for Aqua

3.13.1 Stand Alone Test Procedures for FM3

3.13.1.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.3P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.3P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.3P3/rcf
setenv DATE_3P3 2004060100
source $CERESHOME/inversion/CER4.5-6.3P3/rcf/inversion-FM3-test-env-
    3p3.csh
setenv INSTANCE3_FM3 $SS4_5\_$PS4_5\_$CC4_5\.$DATE_3P3
$CERESHOME/inversion/CER4.5-6.3P3/rcf/pcfgen_4.5-6.3P3.csh $DATE_3P3
```

The following files will be generated:

```
$CERESHOME/inversion/CER4.5-6.3P3/rcf/pcf/CER4.5-
    6.3P3_PCFin_$INSTANCE3_FM3
$CERESHOME/inversion/CER4.5-6.3P3/rcf/pcf/CER4.5-
    6.3P3_PCF_$INSTANCE3_FM3
```

Copy the following input data files:.

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.3P3/CER_MOA_CERES_DAO-GEOS4_016025.2004060100
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SCCD_Aqua-
    FM3_Edition2_026024.20040615
    $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SCCN_Aqua-
    FM3_Edition2_026024.20040615
    $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SSFA_Aqua-FM3-
    MODIS_Edition1B_029033.2004060100
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SSFA_Aqua-FM3-
    MODIS_Edition1B_029033.2004060100.met
    $CERESHOME/inversion/data/out_comp/data/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SSFB_Aqua-FM3-MODIS_Edition1B_029033.2004060100 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_GQCI_Aqua-FM3-MODIS_Edition1B_029033.2004060100 $CERESHOME/inversion/data/out_comp/QC/

3.13.1.2 Execution

Execute the production script by typing the script name, **run_4.5-6.3P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use $INSTANCE3_FM3, defined in Section 3.13.1.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.3P3:

cd $CERESHOME/inversion/CER4.5-6.3P3/rcf
$CERESHOME/inversion/CER4.5-6.3P3/rcf/run_4.5-6.3P3.csh $INSTANCE3_FM3

The script, **list_4.5-6.3P3.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.3P3/rcf/list_4.5-6.3P3.csh $INSTANCE3_FM3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.13.1.3 Exit Codes

All CER4.5-6.3P3 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.

3.13.1.4 Test Summary

Test Summary:

Total Run Time:	2:50 minutes
Memory:	296008 K
Required Disk Space:	500 Megabytes

3.13.2 Evaluation Procedures

When running the production script, **run_4.5-6.3P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove MOA input files from the sarb directory:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016025.2004060100
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Aqua-FM3_Edition2_026024.20040615
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Aqua-FM3_Edition2_026024.20040615

3.13.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.3P3_LogReport_$INSTANCE3_FM3**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.3P3 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.3P3 has been executed. Metadata files, **CER_SSFB_$INSTANCE3.met, CER_SSFA_$INSTANCE3_FM3.met,** and **CER_SSF_$INSTANCE3_FM3.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.3P3** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.3P3**, using the following **diff_4.5-6.3P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.3P3/rcf
$CERESHOME/inversion/CER4.5-6.3P3/rcf/diff_4.5-6.3P3.csh $INSTANCE3_FM3

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

3.13.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_3p3 $INSTANCE3_FM3

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_3P3
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_3P3

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.13.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.3P3 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_3P3
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_3P3

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.13.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3_FM3
$CERESHOME/inversion/data_exp/CER4.5-6.3P3/CER_SSF_$INSTANCE3_FM3

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.13.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.3P3 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.3P3.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.3P3/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.3P3/rcf/cleanup_4.5-6.3P3.csh $INSTANCE3_FM3

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation

3.13.5 Stand Alone Test Procedures for FM4

3.13.5.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.3P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.3P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.3P3/rcf
setenv DATE_3P3 2004060100
source $CERESHOME/inversion/CER4.5-6.3P3/rcf/inversion-FM4-test-env-
    3p3.csh
setenv INSTANCE3_FM4 $SS4_5\_$PS4_5\_$CC4_5\.$DATE_3P3
$CERESHOME/inversion/CER4.5-6.3P3/rcf/pcfgen_4.5-6.3P3.csh $DATE_3P3
```

The following files will be generated:

```
$CERESHOME/inversion/CER4.5-6.3P3/rcf/pcf/CER4.5-
    6.3P3_PCFin_$INSTANCE3_FM4
$CERESHOME/inversion/CER4.5-6.3P3/rcf/pcf/CER4.5-
    6.3P3_PCF_$INSTANCE3_FM4
```

Copy the following input data files:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.3P3/CER_MOA_CERES_DAO-GEOS4_016025.2004060100
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SCCD_Aqua-
    FM4_Edition2_026024.20040615
    $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SCCN_Aqua-
    FM4_Edition2_026024.20040615
    $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SSFA_Aqua-FM4-
    MODIS_Edition1B_029033.2004060100
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SSFA_Aqua-FM4-
    MODIS_Edition1B_029033.2004060100.met
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_SSFB_Aqua-FM4-
    MODIS_Edition1B_029033.2004060100
    $CERESHOME/inversion/data/out_comp/data/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.3P3/CER_GQCI_Aqua-FM4-MODIS_Edition1B_029033.2004060100 $CERESHOME/inversion/data/out_comp/QC/

3.13.5.2 Execution

Execute the production script by typing the script name, **run_4.5-6.3P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use $INSTANCE3_FM4, defined in Section 3.13.5.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.3P3:

cd $CERESHOME/inversion/CER4.5-6.3P3/rcf
$CERESHOME/inversion/CER4.5-6.3P3/rcf/run_4.5-6.3P3.csh $INSTANCE3_FM4

The script, **list_4.5-6.3P3.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.3P3/rcf/list_4.5-6.3P3.csh $INSTANCE3_FM4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.13.5.3 Exit Codes

All CER4.5-6.3P3 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.

3.13.5.4 Test Summary

Test Summary:

Total Run Time:	2:50 minutes
Memory:	296008 K
Required Disk Space:	500 Megabytes

3.13.6 Evaluation Procedures

When running the production script, **run_4.5-6.3P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove MOA input files from the sarb directory:

rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Aqua-FM4_Edition2_026024.20040615
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Aqua-FM4_Edition2_026024.20040615
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016025.2004060100

3.13.7 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.3P3_LogReport_$INSTANCE3_FM4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.3P3 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.3P3 has been executed. Metadata files, **CER_SSFB_$INSTANCE3_FM4.met, CER_SSFA_$INSTANCE3_FM4.met,** and **CER_SSF_$INSTANCE3_FM4.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.3P3** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.3P3**, using the following **diff_4.5-6.3P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.3P3/rcf
$CERESHOME/inversion/CER4.5-6.3P3/rcf/diff_4.5-6.3P3.csh $INSTANCE3_FM4

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

3.13.7.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_3p3 $INSTANCE3_FM4

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_3P3
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_3P3

Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.13.7.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.3P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_3P3
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_3P3

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.13.7.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3_FM4
$CERESHOME/inversion/data_exp/CER4.5-6.3P3/CER_SSF_$INSTANCE3_FM4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.13.8 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.3P3 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.3P3.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.3P3/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.3P3/rcf/cleanup_4.5-6.3P3.csh $INSTANCE3_FM4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.14 CER4_5-6.4P1 Terra and Aqua SSF Post Processor producing Monthly SSF and SSFA Validation subset files for both *P6* and *x86* processors.

3.14.1 Stand Alone Test Procedures for FM1

3.14.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
setenv YEAR 2000
setenv MONTH 11
setenv DATE_4P1 $YEAR$MONTH
setenv INSTANCE_4P1 Terra-FM1-MODIS_Edition1A_020021.$DATE_4P1
source $CERESHOME/inversion/CER4.5-6.4P1/rcf/inversion-terra-valmm-
    subset-FM1.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFA-val_Terra-
    FM1-MODIS_Edition1A_020021.20001101
    $CERESHOME/inversion/data/SSFA-val/Terra-FM1-
    MODIS_Edition1A/2000/11/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFA-val_Terra-
    FM1-MODIS_Edition1A_020021.20001102
    $CERESHOME/inversion/data/SSFA-val/Terra-FM1-
    MODIS_Edition1A/2000/11/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFB-val_Terra-
    FM1-MODIS_Edition1A_020021.20001101
    $CERESHOME/inversion/data/SSFB-val/Terra-FM1-
    MODIS_Edition1A/2000/11/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFB-val_Terra-
    FM1-MODIS_Edition1A_020021.20001102
    $CERESHOME/inversion/data/SSFB-val/Terra-FM1-
    MODIS_Edition1A/2000/11/
```

3.14.1.2 Execution

Execute the production script by typing the script name, **CER4.5-6.4P1-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
$CERESHOME/inversion/CER4.5-6.4P1/rcf/CER4.5-6.4P1-SGE_Driver.pl -
    date $DATE_4P1 -clean -platform p6/x86
```

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.4P1/rcf/pcf/CER4.5-6.4P1_PCF_$INSTANCE_4P1

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.4P1/CER4.5-6.4P1_$INSTANCE_4P1.o*

Output file generation test:

The SSF Processor Product Generation Executive (PGE), CER4.5-6.4P1, will be executed and will create the files printed out by the **list_4.5-6.4P1.pl** script:

$CERESHOME/inversion/CER4.5-6.4P1/rcf/list_4.5-6.4P1.pl $INSTANCE_4P1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.14.1.3 Exit Codes

All CER4.5-6.4P1 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 for each of the two executables.

3.14.1.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:10 minutes
Memory:	3654 K
Required Disk Space:	1150 Megabytes

3.14.2 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/data/SSFA-val/Terra-FM1-MODIS_Edition1A/2000/11/CER_SSFA-val_Terra-FM1-MODIS_Edition1A_020021.20001101
rm $CERESHOME/inversion/data/SSFA-val/Terra-FM1-MODIS_Edition1A/2000/11/CER_SSFA-val_Terra-FM1-MODIS_Edition1A_020021.20001102
rm $CERESHOME/inversion/data/SSFB-val/Terra-FM1-MODIS_Edition1A/2000/11/CER_SSFB-val_Terra-FM1-MODIS_Edition1A_020021.20001101

rm $CERESHOME/inversion/data/SSFB-val/Terra-FM1-MODIS_Edition1A/2000/11/CER_SSFB-val_Terra-FM1-MODIS_Edition1A_020021.20001102

3.14.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.4P1_LogReport_$INSTANCE_4P1** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.4P1 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.4P1 has been executed.

Compare the metadata files and the quality control report with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.4P1**, using the following **diff_4.5-6.4P1.pl** script:

cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
$CERESHOME/inversion/CER4.5-6.4P1/rcf/diff_4.5-6.4P1.pl $INSTANCE_4P1

The only differences between the *.met files should be the production times and differences in the directory paths where the tests were run. The only differences between the quality control files should be the production date.

3.14.2.2 Execution of Comparison Software for the SSF Monthly Post Processor

The evaluation software for this SSF Post Processor will perform a single test. This test will compare the data on the two newly created monthly validation site SSF files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.4P1, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_valmm_compare_4p1 $INSTANCE_4P1
   run_valmm_a_compare_4p1 $INSTANCE_4P1

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P1
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P1

3.14.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.4P1 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P1
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P1

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.14.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.4P1 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.4P1.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.4P1/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
   $CERESHOME/inversion/CER4.5-6.4P1/rcf/cleanup_4.5-6.4P1.pl $DATE_4P1

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.14.4 Stand Alone Test Procedures for FM2

3.14.4.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
setenv YEAR 2000
setenv MONTH 11
setenv DATE_4P1 $YEAR$MONTH
setenv INSTANCE_4P1 Terra-FM2-MODIS_Edition1A_020021.$DATE_4P1
source $CERESHOME/inversion/CER4.5-6.4P1/rcf/inversion-terra-valmm-
    subset-FM2.env
```

Copy the following input data files:

```
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFA-val_Terra-
    FM2-MODIS_Edition1A_020021.20001101
    $CERESHOME/inversion/data/SSFA-val/Terra-FM2-
    MODIS_Edition1A/2000/11/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFA-val_Terra-
    FM2-MODIS_Edition1A_020021.20001102
    $CERESHOME/inversion/data/SSFA-val/Terra-FM2-
    MODIS_Edition1A/2000/11/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFB-val_Terra-
    FM2-MODIS_Edition1A_020021.20001101
    $CERESHOME/inversion/data/SSFB-val/Terra-FM2-
    MODIS_Edition1A/2000/11/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFB-val_Terra-
    FM2-MODIS_Edition1A_020021.20001102
    $CERESHOME/inversion/data/SSFB-val/Terra-FM2-
    MODIS_Edition1A/2000/11/
```

3.14.4.2 Execution

Execute the production script by typing the script name, **CER4.5-6.4P1-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
$CERESHOME/inversion/CER4.5-6.4P1/rcf/CER4.5-6.4P1-SGE_Driver.pl -
    date $DATE_4P1 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.4P1/rcf/pcf/CER4.5-
    6.4P1_PCF_$INSTANCE_4P1
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.4P1/CER4.5-6.4P1_$INSTANCE_4P1.o*

Output file generation test:

The SSF Processor Product Generation Executive (PGE), CER4.5-6.4P1, will be executed and will create the files printed out by the **list_4.5-6.4P1.pl** script:

$CERESHOME/inversion/CER4.5-6.4P1/rcf/list_4.5-6.4P1.pl $INSTANCE_4P1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.14.4.3 Exit Codes

All CER4.5-6.4P1 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 for each of the two executables.

3.14.4.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:10 minutes
Memory:	3654 K
Required Disk Space:	1150 Megabytes

3.14.5 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/data/SSFA-val/Terra-FM2-MODIS_Edition1A/2000/11/CER_SSFA-val_Terra-FM2-MODIS_Edition1A_020021.20001101
rm $CERESHOME/inversion/data/SSFA-val/Terra-FM2-MODIS_Edition1A/2000/11/CER_SSFA-val_Terra-FM2-MODIS_Edition1A_020021.20001102
rm $CERESHOME/inversion/data/SSFB-val/Terra-FM2-MODIS_Edition1A/2000/11/CER_SSFB-val_Terra-FM2-MODIS_Edition1A_020021.20001101
rm $CERESHOME/inversion/data/SSFB-val/Terra-FM2-MODIS_Edition1A/2000/11/CER_SSFB-val_Terra-FM2-MODIS_Edition1A_020021.20001102

3.14.5.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.4P1_LogReport_$INSTANCE_4P1** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.4P1 has been executed. Metadata

files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.4P1 has been executed.

Compare the metadata files and the quality control report with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.4P1**, using the following **diff_4.5-6.4P1.pl** script:

cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
$CERESHOME/inversion/CER4.5-6.4P1/rcf/diff_4.5-6.4P1.pl $INSTANCE_4P1

The only differences between the *.met files should be the production times and differences in the directory paths where the tests were run. The only differences between the quality control files should be the production date.

3.14.5.2 Execution of Comparison Software for the SSF Monthly Post Processor

The evaluation software for this SSF Post Processor will perform a single test. This test will compare the data on the two newly created monthly validation site SSF files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.4P1, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_valmm_compare_4p1 $INSTANCE_4P1
   run_valmm_a_compare_4p1 $INSTANCE_4P1

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P1
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P1

3.14.5.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.4P1 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P1
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P1

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.14.6 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.4P1 software. These files must be removed before running these test procedures. A script, which removes PGE

created files, **cleanup_4.5-6.4P1.pl**, is located in directory $**CERESHOME/inversion/CER4.5-6.4P1/rcf**. To use the clean-up script:

cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
$CERESHOME/inversion/CER4.5-6.4P1/rcf/cleanup_4.5-6.4P1.pl $DATE_4P1

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.14.7 Stand Alone Test Procedures for FM3

3.14.7.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
setenv YEAR 2003
setenv MONTH 01
setenv DATE_4P1 $YEAR$MONTH
setenv INSTANCE_4P1 Aqua-FM3-MODIS_Edition1B_023028.$DATE_4P1
source $CERESHOME/inversion/CER4.5-6.4P1/rcf/inversion-aqua-valmm-
    subset-FM3.env
```

Copy the following input data files:

```
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFA-val_Aqua-
    FM3-MODIS_Edition1B_023028.20030101
    $CERESHOME/inversion/data/SSFA-val/Aqua-FM3-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFA-val_Aqua-
    FM3-MODIS_Edition1B_023028.20030102
    $CERESHOME/inversion/data/SSFA-val/Aqua-FM3-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFB-val_Aqua-
    FM3-MODIS_Edition1B_023028.20030101
    $CERESHOME/inversion/data/SSFB-val/Aqua-FM3-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFB-val_Aqua-
    FM3-MODIS_Edition1B_023028.20030102
    $CERESHOME/inversion/data/SSFB-val/Aqua-FM3-
    MODIS_Edition1B/2003/01/
```

3.14.7.2 Execution

Execute the production script by typing the script name, **CER4.5-6.4P1-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
$CERESHOME/inversion/CER4.5-6.4P1/rcf/CER4.5-6.4P1-SGE_Driver.pl -
    date $DATE_4P1 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.4P1/rcf/pcf/CER4.5-
    6.4P1_PCF_$INSTANCE_4P1
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.4P1/CER4.5-6.4P1_$INSTANCE_4P1.o*

Output file generation test:

The SSF Processor Product Generation Executive (PGE), CER4.5-6.4P1, will be executed and will create the files printed out by the **list_4.5-6.4P1.pl** script:

$CERESHOME/inversion/CER4.5-6.4P1/rcf/list_4.5-6.4P1.pl $INSTANCE_4P1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.14.7.3 Exit Codes

All CER4.5-6.4P1 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 for each of the two executables.

3.14.7.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:10 minutes
Memory:	3654 K
Required Disk Space:	1150 Megabytes

3.14.8 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/data/SSFA-val/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSFA-val_Aqua-FM3-MODIS_Edition1B_023028.20030101
rm $CERESHOME/inversion/data/SSFA-val/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSFA-val_Aqua-FM3-MODIS_Edition1B_023028.20030102
rm $CERESHOME/inversion/data/SSFB-val/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSFB-val_Aqua-FM3-MODIS_Edition1B_023028.20030101
rm $CERESHOME/inversion/data/SSFB-val/Aqua-FM3-MODIS_Edition1B/2003/01/CER_SSFB-val_Aqua-FM3-MODIS_Edition1B_023028.20030102

3.14.8.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.4P1_LogReport_$INSTANCE_4P1** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.4P1 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.4P1 has been executed.

Compare the metadata files and the quality control report with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.4P1**, using the following **diff_4.5-6.4P1.pl** script:

cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
$CERESHOME/inversion/CER4.5-6.4P1/rcf/diff_4.5-6.4P1.pl $INSTANCE_4P1

The only differences between the *.met files should be the production times and differences in the directory paths where the tests were run. The only differences between the quality control files should be the production date.

3.14.8.2 Execution of Comparison Software for the SSF Monthly Post Processor

The evaluation software for this SSF Post Processor will perform a single test. This test will compare the data on the two newly created monthly validation site SSF files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.4P1, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_valmm_compare_4p1 $INSTANCE_4P1
   run_valmm_a_compare_4p1 $INSTANCE_4P1

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P1
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P1

3.14.8.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.4P1 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P1
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P1

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.14.9 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.4P1 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.4P1.pl**, is located in directory **$CERESHOME/inversion/CER4.5-6.4P1/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
   $CERESHOME/inversion/CER4.5-6.4P1/rcf/cleanup_4.5-6.4P1.pl $DATE_4P1

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.14.10 Stand Alone Test Procedures for FM4

3.14.10.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
setenv YEAR 2003
setenv MONTH 01
setenv DATE_4P1 $YEAR$MONTH
setenv INSTANCE_4P1 Aqua-FM4-MODIS_Edition1B_023028.$DATE_4P1
source $CERESHOME/inversion/CER4.5-6.4P1/rcf/inversion-aqua-valmm-
    subset-FM4.env
```

Copy the following input data files:

```
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFA-val_Aqua-
    FM4-MODIS_Edition1B_023028.20030101
    $CERESHOME/inversion/data/SSFA-val/Aqua-FM4-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFA-val_Aqua-
    FM4-MODIS_Edition1B_023028.20030102
    $CERESHOME/inversion/data/SSFA-val/Aqua-FM4-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFB-val_Aqua-
    FM4-MODIS_Edition1B_023028.20030101
    $CERESHOME/inversion/data/SSFB-val/Aqua-FM4-
    MODIS_Edition1B/2003/01/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P1/CER_SSFB-val_Aqua-
    FM4-MODIS_Edition1B_023028.20030102
    $CERESHOME/inversion/data/SSFB-val/Aqua-FM4-
    MODIS_Edition1B/2003/01/
```

3.14.10.2 Execution

Execute the production script by typing the script name, **CER4.5-6.4P1-SGE_Driver.pl**, followed by the date option, the cleanup option and the platform option selecting either *P6* or *x86*.

```
cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
$CERESHOME/inversion/CER4.5-6.4P1/rcf/CER4.5-6.4P1-SGE_Driver.pl -
    date $DATE_4P1 -clean -platform p6/x86
```

The following file will be generated:

```
$CERESHOME/inversion/CER4.5-6.4P1/rcf/pcf/CER4.5-
    6.4P1_PCF_$INSTANCE_4P1
```

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.4P1/CER4.5-6.4P1_$INSTANCE_4P1.o*

Output file generation test:

The SSF Processor Product Generation Executive (PGE), CER4.5-6.4P1, will be executed and will create the files printed out by the **list_4.5-6.4P1.pl** script:

$CERESHOME/inversion/CER4.5-6.4P1/rcf/list_4.5-6.4P1.pl $INSTANCE_4P1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.14.10.3 Exit Codes

All CER4.5-6.4P1 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 for each of the two executables.

3.14.10.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time:	0:10 minutes
Memory:	3654 K
Required Disk Space:	1150 Megabytes

3.14.11 Evaluation Procedures

Clean up the input directories:

rm $CERESHOME/inversion/data/SSFA-val/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSFA-val_Aqua-FM4-MODIS_Edition1B_023028.20030101
rm $CERESHOME/inversion/data/SSFA-val/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSFA-val_Aqua-FM4-MODIS_Edition1B_023028.20030102
rm $CERESHOME/inversion/data/SSFB-val/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSFB-val_Aqua-FM4-MODIS_Edition1B_023028.20030101
rm $CERESHOME/inversion/data/SSFB-val/Aqua-FM4-MODIS_Edition1B/2003/01/CER_SSFB-val_Aqua-FM4-MODIS_Edition1B_023028.20030102

3.14.11.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.4P1_LogReport_$INSTANCE_4P1** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.4P1 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.4P1 has been executed.

Compare the metadata files and the quality control report with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.4P1**, using the following **diff_4.5-6.4P1.pl** script:

cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
$CERESHOME/inversion/CER4.5-6.4P1/rcf/diff_4.5-6.4P1.pl $INSTANCE_4P1

The only differences between the *.met files should be the production times and differences in the directory paths where the tests were run. The only differences between the quality control files should be the production date.

3.14.11.2 Execution of Comparison Software for the SSF Monthly Post Processor

The evaluation software for this SSF Post Processor will perform a single test. This test will compare the data on the two newly created monthly validation site SSF files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.4P1, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_valmm_compare_4p1 $INSTANCE_4P1
   run_valmm_a_compare_4p1 $INSTANCE_4P1

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P1
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P1

3.14.11.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.4P1 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P1
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P1

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.14.12 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.4P1 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.4P1.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.4P1/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.4P1/rcf
   $CERESHOME/inversion/CER4.5-6.4P1/rcf/cleanup_4.5-6.4P1.pl $DATE_4P1

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.15 CER4_5-6.4P2 Terra and Aqua Edition4 SSF Post Processor Producing Monthly SSF and SSFA Validation subset files

3.15.1 Stand Alone Test Procedures for FM1

3.15.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
setenv YEAR 2008
setenv MONTH 07
setenv DATE_4P2 $YEAR$MONTH
setenv INSTANCE2_4P2 Terra-FM1-MODIS_Ed4Test_000000.$DATE_4P2
source $CERESHOME/inversion/CER4.5-6.4P2/rcf/inversion-FM1-valmm-
    subset.csh
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-6.4P2/CER_SSFA-val_Terra-
    FM1-MODIS_Ed4Test_000000.20080715
    $CERESHOME/inversion/data/SSFA-val/Terra-FM1-
    MODIS_Ed4Test/2008/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P2/CER_SSFB-val_Terra-
    FM1-MODIS_Ed4Test_000000.20080715
    $CERESHOME/inversion/data/SSFB-val/Terra-FM1-
    MODIS_Ed4Test/2008/07/
```

3.15.1.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The SSF processor production script, **run_4.5-6.4P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF generator, **pcfgen_4.5-6.4P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one command-line argument, YYYYMM, which consists of a, 4-digit year, and 2-digit month.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcfgen_4.5-6.4P2.csh $DATE_4P2
```

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcf/CER4.5-6.4P2_PCF_$INSTANCE2_4P2

Execute the production script by typing the script name, **run_4.5-6.4P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year, MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/run_4.5-6.4P2.csh $INSTANCE2_4P2

SGE Test Instructions:

Execute the cleanup script by typing the script name **cleanup_4.5-6.4P2.pl**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/cleanup_4.5-6.4P2.pl $DATE_4P2

The production script is run by typing the script name, **CER4.5-6.4P2-SGE_Driver.pl**, followed by the "-date" option and a date string. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/CER4.5-6.4P2-SGE_Driver.pl -date $DATE_4P2

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcf/CER4.5-6.4P2_PCF_$INSTANCE2_4P2

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.4P2/CER4.5-6.4P2_$INSTANCE2_4P2.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.4P2, will be executed and will create the files printed out by the **list_4.5-6.4P2csh** script:

$CERESHOME/inversion/CER4.5-6.4P2/rcf/list_4.5-6.4P2.csh $INSTANCE2_4P2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.15.1.3 Exit Codes

All CER4.5-6.4P2 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 executables.

3.15.1.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time: 0:02 minutes
Memory: 4631 K
Required Disk Space: 2.0 Megabytes

3.15.2 Evaluation Procedures

When running the production script, **run_4.5-6.4P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Clean up the input directories:

rm $CERESHOME/inversion/data/SSFA-val/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFA-val_Terra-FM1-MODIS_Ed4Test_000000.20080715
rm $CERESHOME/inversion/data/SSFB-val/Terra-FM1-MODIS_Ed4Test/2008/07/CER_SSFB-val_Terra-FM1-MODIS_Ed4Test_000000.20080715

3.15.2.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.4P2_LogReport_$INSTANCE2_4P2** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.4P2 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.4P2 has been executed.

Metadata files:

CER_SSFB-valmm_$INSTANCE_4P2.met
CER_SSFA-valmm_$INSTANCE_4P2.met

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.4P2**, using the following **diff_4.5-6.4P2.csh** script:

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/diff_4.5-6.4P2.csh $INSTANCE2_4P2

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

3.15.2.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Post Processor will perform a single test. This test will compare the data on the two newly created monthly validation site SSF files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.4P2, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_valmm_compare $INSTANCE2_4P2
   run_valmm_a_compare $INSTANCE2_4P2

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P2

3.15.2.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.4P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.15.3 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.4P2 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.4P2.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.4P2/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.4P2/rcf/cleanup_4.5-6.4P2.csh $INSTANCE2_4P2

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.15.4 Stand Alone Test Procedures for FM2

3.15.4.1 Environment setup and file preparation

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
setenv YEAR 2001
setenv MONTH 04
setenv DATE_4P2 $YEAR$MONTH
setenv INSTANCE2_4P2 Terra-FM2-MODIS_SSIT2_000000.$DATE_4P2
source $CERESHOME/inversion/CER4.5-6.4P2/rcf/inversion-FM2-valmm-subset.csh

Copy the input files to appropriate locations:

cp $CERESHOME/inversion/data/input/CER4.5-6.4P2/CER_SSFA-val_Terra-FM2-MODIS_SSIT2_000000.20010415 $CERESHOME/inversion/data/SSFA-val/Terra-FM2-MODIS_SSIT2/2001/04/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P2/CER_SSFB-val_Terra-FM2-MODIS_SSIT2_000000.20010415 $CERESHOME/inversion/data/SSFB-val/Terra-FM2-MODIS_SSIT2/2001/04/

3.15.4.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The SSF processor production script, **run_4.5-6.4P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF generator, **pcfgen_4.5-6.4P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one command-line argument, YYYYMM, which consists of a, 4-digit year, and 2-digit month.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcfgen_4.5-6.4P2.csh $DATE_4P2

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcf/CER4.5-6.4P2_PCF_$INSTANCE2_4P2

Execute the production script by typing the script name, **run_4.5-6.4P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year, MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/run_4.5-6.4P2.csh $INSTANCE2_4P2

SGE Test Instructions:

Execute the cleanup script by typing the script name **cleanup_4.5-6.4P2.pl**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/cleanup_4.5-6.4P2.pl $DATE_4P2

The production script is run by typing the script name, **CER4.5-6.4P2-SGE_Driver.pl**, followed by the "-date" option and a date string. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/CER4.5-6.4P2-SGE_Driver.pl -date $DATE_4P2

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcf/CER4.5-6.4P2_PCF_$INSTANCE2_4P2

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.4P2/CER4.5-6.4P2_$INSTANCE2_4P2.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.4P2, will be executed and will create the files printed out by the **list_4.5-6.4P2csh** script:

$CERESHOME/inversion/CER4.5-6.4P2/rcf/list_4.5-6.4P2.csh $INSTANCE2_4P2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.15.4.3 Exit Codes

All CER4.5-6.4P2 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 executables.

3.15.4.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time: 0:02 minutes
Memory: 4631 K
Required Disk Space: 2.0 Megabytes

3.15.5 Evaluation Procedures

When running the production script, **run_4.5-6.4P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Clean up the input directories:

rm $CERESHOME/inversion/data/SSFA-val/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFA-val_Terra-FM2-MODIS_SSIT2_000000.20010415
rm $CERESHOME/inversion/data/SSFB-val/Terra-FM2-MODIS_SSIT2/2001/04/CER_SSFB-val_Terra-FM2-MODIS_SSIT2_000000.20010415

3.15.5.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.4P2_LogReport_$INSTANCE2_4P2** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.4P2 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.4P2 has been executed.

Metadata files:

CER_SSFB-valmm_$INSTANCE_4P2.met
CER_SSFA-valmm_$INSTANCE_4P2.met

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.4P2**, using the following **diff_4.5-6.4P2.csh** script:

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/diff_4.5-6.4P2.csh $INSTANCE2_4P2

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

3.15.5.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Post Processor will perform a single test. This test will compare the data on the two newly created monthly validation site SSF files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.4P2, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_valmm_compare $INSTANCE2_4P2
   run_valmm_a_compare $INSTANCE2_4P2

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P2

3.15.5.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.4P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.15.6 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.4P2 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.4P2.csh**, is located in directory $**CERESHOME/inversion/CER4.5-6.4P2/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.4P2/rcf/cleanup_4.5-6.4P2.csh $INSTANCE2_4P2
2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.15.7 Stand Alone Test Procedures for FM3

3.15.7.1 Environment setup and file preparation

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DATE_4P2 $YEAR$MONTH
setenv INSTANCE2_4P2 Aqua-FM3-MODIS_SSIT_000000.$DATE_4P2
source $CERESHOME/inversion/CER4.5-6.4P2/rcf/inversion-FM3-valmm-subset.csh

Copy the input files to appropriate locations:

cp $CERESHOME/inversion/data/input/CER4.5-6.4P2/CER_SSFA-val_Aqua-FM3-MODIS_SSIT_000000.20081015 $CERESHOME/inversion/data/SSFA-val/Aqua-FM3-MODIS_SSIT/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P2/CER_SSFB-val_Aqua-FM3-MODIS_SSIT_000000.20081015 $CERESHOME/inversion/data/SSFB-val/Aqua-FM3-MODIS_SSIT/2008/10/

3.15.7.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The SSF processor production script, **run_4.5-6.4P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF generator, **pcfgen_4.5-6.4P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one command-line argument, YYYYMM, which consists of a, 4-digit year, and 2-digit month.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcfgen_4.5-6.4P2.csh $DATE_4P2

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcf/CER4.5-6.4P2_PCF_$INSTANCE2_4P2

Execute the production script by typing the script name, **run_4.5-6.4P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year, MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/run_4.5-6.4P2.csh $INSTANCE2_4P2

SGE Test Instructions:

Execute the cleanup script by typing the script name **cleanup_4.5-6.4P2.pl**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/cleanup_4.5-6.4P2.pl $DATE_4P2

The production script is run by typing the script name, **CER4.5-6.4P2-SGE_Driver.pl**, followed by the "-date" option and a date string. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/CER4.5-6.4P2-SGE_Driver.pl -date $DATE_4P2

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcf/CER4.5-6.4P2_PCF_$INSTANCE2_4P2

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.4P2/CER4.5-6.4P2_$INSTANCE2_4P2.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.4P2, will be executed and will create the files printed out by the **list_4.5-6.4P2csh** script:

$CERESHOME/inversion/CER4.5-6.4P2/rcf/list_4.5-6.4P2.csh $INSTANCE2_4P2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.15.7.3 Exit Codes

All CER4.5-6.4P2 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 executables.

3.15.7.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time: 0:02 minutes
Memory: 4631 K
Required Disk Space: 2.0 Megabytes

3.15.8 Evaluation Procedures

When running the production script, **run_4.5-6.4P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Clean up the input directories:

```
rm $CERESHOME/inversion/data/SSFA-val/Aqua-FM3-
    MODIS_SSIT/2008/10/CER_SSFA-val_Aqua-FM3-
    MODIS_SSIT_000000.20081015
rm $CERESHOME/inversion/data/SSFB-val/Aqua-FM3-
    MODIS_SSIT/2008/10/CER_SSFB-val_Aqua-FM3-
    MODIS_SSIT_000000.20081015
```

3.15.8.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.4P2_LogReport_$INSTANCE2_4P2** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.4P2 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.4P2 has been executed.

Metadata files:

CER_SSFB-valmm_$INSTANCE_4P2.met
CER_SSFA-valmm_$INSTANCE_4P2.met

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.4P2**, using the following **diff_4.5-6.4P2.csh** script:

```
cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/diff_4.5-6.4P2.csh $INSTANCE2_4P2
```

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

3.15.8.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Post Processor will perform a single test. This test will compare the data on the two newly created monthly validation site SSF files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.4P2, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_valmm_compare $INSTANCE2_4P2
   run_valmm_a_compare $INSTANCE2_4P2

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P2

3.15.8.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.4P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.15.9 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.4P2 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.4P2.csh**, is located in directory $**CERESHOME/inversion/CER4.5-6.4P2/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.4P2/rcf/cleanup_4.5-6.4P2.csh $INSTANCE2_4P2
2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.15.10 Stand Alone Test Procedures for FM4

3.15.10.1 Environment setup and file preparation

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
setenv YEAR 2008
setenv MONTH 10
setenv DATE_4P2 $YEAR$MONTH
setenv INSTANCE2_4P2 Aqua-FM4-MODIS_SSIT-NoSW_000000.$DATE_4P2
source $CERESHOME/inversion/CER4.5-6.4P2/rcf/inversion-FM4-valmm-subset.csh

Copy the input files to appropriate locations:

cp $CERESHOME/inversion/data/input/CER4.5-6.4P2/CER_SSFA-val_Aqua-FM4-MODIS_SSIT-NoSW_000000.20081015 $CERESHOME/inversion/data/SSFA-val/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/
cp $CERESHOME/inversion/data/input/CER4.5-6.4P2/CER_SSFB-val_Aqua-FM4-MODIS_SSIT-NoSW_000000.20081015 $CERESHOME/inversion/data/SSFB-val/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/

3.15.10.2 Execution

Execute each of the two test sets, Command Line Test and SGE Test separately. Output file generation checking is the same each test.

Command Line Instructions:

The SSF processor production script, **run_4.5-6.4P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF generator, **pcfgen_4.5-6.4P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one command-line argument, YYYYMM, which consists of a, 4-digit year, and 2-digit month.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcfgen_4.5-6.4P2.csh $DATE_4P2

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcf/CER4.5-6.4P2_PCF_$INSTANCE2_4P2

Execute the production script by typing the script name, **run_4.5-6.4P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year, MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/run_4.5-6.4P2.csh $INSTANCE2_4P2

SGE Test Instructions:

Execute the cleanup script by typing the script name **cleanup_4.5-6.4P2.pl**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/cleanup_4.5-6.4P2.pl $DATE_4P2

The production script is run by typing the script name, **CER4.5-6.4P2-SGE_Driver.pl**, followed by the "-date" option and a date string. The date parameter is formatted, YYYYMM, where YYYY is the 4-digit year and MM is the 2-digit month of the data.

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/CER4.5-6.4P2-SGE_Driver.pl -date $DATE_4P2

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.4P2/rcf/pcf/CER4.5-6.4P2_PCF_$INSTANCE2_4P2

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.4P2/CER4.5-6.4P2_$INSTANCE2_4P2.o*

Output file generation test:

The SSF subset Processor Product Generation Executive (PGE), CER4.5-6.4P2, will be executed and will create the files printed out by the **list_4.5-6.4P2csh** script:

$CERESHOME/inversion/CER4.5-6.4P2/rcf/list_4.5-6.4P2.csh $INSTANCE2_4P2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.15.10.3 Exit Codes

All CER4.5-6.4P2 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 executables.

3.15.10.4 Test Summary

SSF Subset Postprocessor Test Summary:

Total Run Time: 0:02 minutes
Memory: 4631 K
Required Disk Space: 2.0 Megabytes

3.15.11 Evaluation Procedures

When running the production script, **run_4.5-6.4P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Clean up the input directories:

rm $CERESHOME/inversion/data/SSFA-val/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFA-val_Aqua-FM4-MODIS_SSIT-NoSW_000000.20081015
rm $CERESHOME/inversion/data/SSFB-val/Aqua-FM4-MODIS_SSIT-NoSW/2008/10/CER_SSFB-val_Aqua-FM4-MODIS_SSIT-NoSW_000000.20081015

3.15.11.1 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.4P2_LogReport_$INSTANCE2_4P2** is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.4P2 has been executed. Metadata files which end in extension, '.met', are located in the same directories as their corresponding output files after CER4.5-6.4P2 has been executed.

Metadata files:

CER_SSFB-valmm_$INSTANCE_4P2.met
CER_SSFA-valmm_$INSTANCE_4P2.met

Compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.4P2**, using the following **diff_4.5-6.4P2.csh** script:

cd $CERESHOME/inversion/CER4.5-6.4P2/rcf
$CERESHOME/inversion/CER4.5-6.4P2/rcf/diff_4.5-6.4P2.csh $INSTANCE2_4P2

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

3.15.11.2 Execution of Comparison Software for the SSF Subset Post Processor

The evaluation software for this SSF Post Processor will perform a single test. This test will compare the data on the two newly created monthly validation site SSF files to the comparison files provided with the software delivery.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the CER4.5-6.4P2, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_valmm_compare $INSTANCE2_4P2
   run_valmm_a_compare $INSTANCE2_4P2

   The following comparison output files will be created:
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P2
   $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P2

3.15.11.3 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.4P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFValmm_$DATE_4P2
cat $CERESHOME/inversion/test_suites/results/CmpSubsetSSFAValmm_$DATE_4P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.15.12 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.4P2 software. These files must be removed before running these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.4P2.csh**, is located in directory $**CERESHOME/inversion/CER4.5-6.4P2/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.4P2/rcf/cleanup_4.5-6.4P2.csh $INSTANCE2_4P2
2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.16 CER4_5-6.5P2 Alternate Main and Post Processors for Terra Using Instrument IES Data

3.16.1 Stand Alone Test Procedures for FM1

3.16.1.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.5P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.5P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day, and 2-digit hour of day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.5P2/rcf
setenv DATE_5P2 2004072012
setenv INSTANCE3_FM1 Terra-FM1-MODIS_SSIT_000000.$DATE_5P2
source $CERESHOME/inversion/CER4.5-6.5P2/rcf/inversion-FM1-test-env.csh
$CERESHOME/inversion/CER4.5-6.5P2/rcf/pcfgen_4.5-6.5P2.csh $DATE_5P2
```

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.5P2/rcf/pcf/CER4.5-6.5P2_PCF_$INSTANCE3_FM1

Copy the following input data files:.

```
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_MOA_CERES_DAO-GEOS4_016025.2004072012
   $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SCCD_Terra-FM1_Edition2_026025.20040715
   $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SCCN_Terra-FM1_Edition2_026025.20040715
   $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SSFA_Terra-FM1-MODIS_Edition2B_027031.2004072012
   $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SSFA_Terra-FM1-MODIS_Edition2B_027031.2004072012.met
   $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SSFB_Terra-FM1-MODIS_Edition2B_027031.2004072012
   $CERESHOME/inversion/data/out_comp/data/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_GQCI_Terra-FM1-MODIS_Edition2B_027031.2004072012 $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_IES_Terra-FM1_Edition3_032040.2004072012 $CERESHOME/instrument/data/int_prod/

3.16.1.2 Execution

Execute the production script by typing the script name, **run_4.5-6.5P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE3_FM1**, defined in Section 3.16.1.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.5P2:

cd $CERESHOME/inversion/CER4.5-6.5P2/rcf
$CERESHOME/inversion/CER4.5-6.5P2/rcf/run_4.5-6.5P2.csh $INSTANCE3_FM1

The script, **list_4.5-6.5P2.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.5P2/rcf/list_4.5-6.5P2.csh $INSTANCE3_FM1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.16.1.3 Exit Codes

All CER4.5-6.5P2 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.

3.16.1.4 Test Summary

Test Summary:

Total Run Time:	1:30 minutes
Memory:	296050 K
Required Disk Space:	500 Megabytes

3.16.2 Evaluation Procedures

When running the production script, **run_4.5-6.5P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input files:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016025.2004072012
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Terra-FM1_Edition2_026025.20040715
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Terra-FM1_Edition2_026025.20040715
rm $CERESHOME/instrument/data/int_prod/CER_IES_Terra-FM1_Edition3_032040.2004072012
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFA_Terra-FM1-MODIS_Edition2B_027031.2004072012
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFA_Terra-FM1-MODIS_Edition2B_027031.2004072012.met
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFB_Terra-FM1-MODIS_Edition2B_027031.2004072012
rm $CERESHOME/inversion/data/out_comp/QC/CER_GQCI_Terra-FM1-MODIS_Edition2B_027031.2004072012

3.16.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.5P2_LogReport_$INSTANCE3_FM1**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.5P2 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.5P2 has been executed. Metadata files, **CER_SSFB_$INSTANCE3_FM1.met, CER_SSFA_$INSTANCE3_FM1.met,** and **CER_SSF_$INSTANCE3_FM1.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P2** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P2**, using the following **diff_4.5-6.5P2.csh** script:

cd $CERESHOME/inversion/CER4.5-6.5P2/rcf
$CERESHOME/inversion/CER4.5-6.5P2/rcf/diff_4.5-6.5P2.csh $INSTANCE3_FM1

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

3.16.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.

2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_5p2 $INSTANCE3_FM1

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P2
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P2

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.16.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.5P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P2
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.16.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3_FM1
$CERESHOME/inversion/data_exp/CER4.5-6.5P2/CER_SSF_$INSTANCE3_FM1

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.16.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.5P2 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.5P2.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.5P2/rcf**. To use the clean-up script:

$CERESHOME/inversion/CER4.5-6.5P2/rcf/cleanup_4.5-6.5P2.csh $INSTANCE3_FM1

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.16.5 Stand Alone Test Procedures for FM2

3.16.5.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.5P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.5P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.5P2/rcf
setenv DATE_5P2 2004072012
setenv INSTANCE3_FM2 Terra-FM2-MODIS_SSIT_000000.$DATE_5P2
source $CERESHOME/inversion/CER4.5-6.5P2/rcf/inversion-FM2-test-env.csh
$CERESHOME/inversion/CER4.5-6.5P2/rcf/pcfgen_4.5-6.5P2.csh $DATE_5P2
```

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.5P2/rcf/pcf/CER4.5-6.5P2_PCF_$INSTANCE3_FM2

Copy the following input data files:.

```
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_MOA_CERES_DAO-GEOS4_016025.2004072012
   $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SCCD_Terra-FM2_Edition2_026025.20040715
   $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SCCN_Terra-FM2_Edition2_026025.20040715
   $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SSFA_Terra-FM2-MODIS_Edition2B_027031.2004072012
   $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SSFA_Terra-FM2-MODIS_Edition2B_027031.2004072012.met
   $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_SSFB_Terra-FM2-MODIS_Edition2B_027031.2004072012
   $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_GQCI_Terra-FM2-MODIS_Edition2B_027031.2004072012
   $CERESHOME/inversion/data/out_comp/QC/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.5P2/CER_IES_Terra-FM2_Edition3_032040.2004072012 $CERESHOME/instrument/data/int_prod/

3.16.5.2 Execution

Execute the production script by typing the script name, **run_4.5-6.5P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE3_FM2**, defined in Section 3.16.5.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.5P2:

cd $CERESHOME/inversion/CER4.5-6.5P2/rcf
$CERESHOME/inversion/CER4.5-6.5P2/rcf/run_4.5-6.5P2.csh $INSTANCE3_FM2

The script, **list_4.5-6.5P2.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.5P2/rcf/list_4.5-6.5P2.csh $INSTANCE3_FM2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.16.5.3 Exit Codes

All CER4.5-6.5P2 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.

3.16.5.4 Test Summary

Test Summary:

Total Run Time:	1:30 minutes
Memory:	296050 K
Required Disk Space:	500 Megabytes

3.16.6 Evaluation Procedures

When running the production script, **run_4.5-6.5P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input files:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016025.2004072012
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Terra-FM2_Edition2_026025.20040715
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Terra-FM2_Edition2_026025.20040715
rm $CERESHOME/instrument/data/int_prod/CER_IES_Terra-FM2_Edition3_032040.2004072012
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFA_Terra-FM2-MODIS_Edition2B_027031.2004072012
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFA_Terra-FM2-MODIS_Edition2B_027031.2004072012.met
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFB_Terra-FM2-MODIS_Edition2B_027031.2004072012
rm $CERESHOME/inversion/data/out_comp/QC/CER_GQCI_Terra-FM2-MODIS_Edition2B_027031.2004072012

3.16.7 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.5P2_LogReport_$INSTANCE3_FM2**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.5P2 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.5P2 has been executed. Metadata files, **CER_SSFB_$INSTANCE3_FM2.met, CER_SSFA_$INSTANCE3_FM2.met,** and **CER_SSF_$INSTANCE3_FM2.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P2** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P2**, using the following **diff_4.5-6.5P2.csh** script:

cd $CERESHOME/inversion/CER4.5-6.5P2/rcf
$CERESHOME/inversion/CER4.5-6.5P2/rcf/diff_4.5-6.5P2.csh $INSTANCE3_FM2

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

3.16.7.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.

2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_5p2 $INSTANCE3_FM2

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P2
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P2

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.16.7.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.5P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P2
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P2

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.16.7.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3_FM2
$CERESHOME/inversion/data_exp/CER4.5-6.5P2/CER_SSF_$INSTANCE3_FM2

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.16.8 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.5P2 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.5P2.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.5P2/rcf**. To use the clean-up script:

$CERESHOME/inversion/CER4.5-6.5P2/rcf/cleanup_4.5-6.5P2.csh $INSTANCE3_FM2

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.17 CER4_5-6.5P3 Alternate Main and Post Processors for Aqua Using Instrument IES Data

3.17.1 Stand Alone Test Procedures for FM3

3.17.1.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.5P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.5P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.5P3/rcf
setenv DATE_5P3 2004071512
source $CERESHOME/inversion/CER4.5-6.5P3/rcf/inversion-FM3-test-env.csh
setenv INSTANCE3_FM3 $SS4_5\_$PS4_5\_$CC4_5\.$DATE_5P3
$CERESHOME/inversion/CER4.5-6.5P3/rcf/pcfgen_4.5-6.5P3.csh $DATE_5P3
```

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.5P3/rcf/pcf/CER4.5-6.5P3_PCF_$INSTANCE3_FM3

Copy the following input data files:.

```
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_MOA_CERES_DAO-GEOS4_016025.2004071512
   $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SCCD_Aqua-FM3_Edition2_026024.20040715
   $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SCCN_Aqua-FM3_Edition2_026024.20040715
   $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SSFA_Aqua-FM3-MODIS_Edition2A_032037.2004071512
   $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SSFA_Aqua-FM3-MODIS_Edition2A_032037.2004071512.met
   $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SSFB_Aqua-FM3-MODIS_Edition2A_032037.2004071512
   $CERESHOME/inversion/data/out_comp/data/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_GQCI_Aqua-FM3-MODIS_Edition2A_032037.2004071512 $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_IES_Aqua-FM3_Edition2_029030.2004071512 $CERESHOME/instrument/data/int_prod/

3.17.1.2 Execution

Execute the production script by typing the script name, **run_4.5-6.5P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use **$INSTANCE3_FM3**, defined in Section 3.17.1.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.5P3:

cd $CERESHOME/inversion/CER4.5-6.5P3/rcf
$CERESHOME/inversion/CER4.5-6.5P3/rcf/run_4.5-6.5P3.csh $INSTANCE3_FM3

The script, **list_4.5-6.5P3.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.5P3/rcf/list_4.5-6.5P3.csh $INSTANCE3_FM3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.17.1.3 Exit Codes

All CER4.5-6.5P3 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.

3.17.1.4 Test Summary

Test Summary:

Total Run Time:	2:50 minutes
Memory:	296008 K
Required Disk Space:	500 Megabytes

3.17.2 Evaluation Procedures

When running the production script, **run_4.5-6.5P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove input files:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016025.2004071512
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Aqua-FM3_Edition2_026024.20040715
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Aqua-FM3_Edition2_026024.20040715
rm $CERESHOME/instrument/data/int_prod/CER_IES_Aqua-FM3_Edition2_029030.2004071512
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFA_Aqua-FM3-MODIS_Edition2A_032037.2004071512
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFA_Aqua-FM3-MODIS_Edition2A_032037.2004071512.met
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFB_Aqua-FM3-MODIS_Edition2A_032037.2004071512
rm $CERESHOME/inversion/data/out_comp/QC/CER_GQCI_Aqua-FM3-MODIS_Edition2A_032037.2004071512

3.17.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.5P3_LogReport_$INSTANCE3_FM3**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.5P3 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.5P3 has been executed. Metadata files, **CER_SSFB_$INSTANCE3.met, CER_SSFA_$INSTANCE3_FM3.met,** and **CER_SSF_$INSTANCE3_FM3.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P3** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P3**, using the following **diff_4.5-6.5P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.5P3/rcf
$CERESHOME/inversion/CER4.5-6.5P3/rcf/diff_4.5-6.5P3.csh $INSTANCE3_FM3

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

3.17.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.

2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_5p3 $INSTANCE3_FM3

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P3
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P3

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.17.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.5P3 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P3
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P3

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.17.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3_FM3
$CERESHOME/inversion/data_exp/CER4.5-6.5P3/CER_SSF_$INSTANCE3_FM3

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.17.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.5P3 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.5P3.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.5P3/rcf**. To use the clean-up script:

$CERESHOME/inversion/CER4.5-6.5P3/rcf/cleanup_4.5-6.5P3.csh $INSTANCE3_FM3

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation

3.17.5 Stand Alone Test Procedures for FM4

3.17.5.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.5P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.5P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 10-digit command-line argument, containing the 4-digit year, 2-digit month, 2-digit day and 2-digit hour of day.

Generate the PCF for the test case:

cd $CERESHOME/inversion/CER4.5-6.5P3/rcf
setenv DATE_5P3 2004071512
source $CERESHOME/inversion/CER4.5-6.5P3/rcf/inversion-FM4-test-env.csh
setenv INSTANCE3_FM4 $SS4_5_$PS4_5_$CC4_5\.$DATE_5P3
$CERESHOME/inversion/CER4.5-6.5P3/rcf/pcfgen_4.5-6.5P3.csh $DATE_5P3

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.5P3/rcf/pcf/CER4.5-6.5P3_PCF_$INSTANCE3_FM4

Copy the following input data files:

cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_MOA_CERES_DAO-GEOS4_016025.2004071512 $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SCCD_Aqua-FM4_Edition2_026024.20040715 $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SCCN_Aqua-FM4_Edition2_026024.20040715 $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SSFA_Aqua-FM4-MODIS_Edition2A_032037.2004071512 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SSFA_Aqua-FM4-MODIS_Edition2A_032037.2004071512.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_SSFB_Aqua-FM4-MODIS_Edition2A_032037.2004071512 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_GQCI_Aqua-FM4-MODIS_Edition2A_032037.2004071512 $CERESHOME/inversion/data/out_comp/QC/

cp $CERESHOME/inversion/data/input/CER4.5-6.5P3/CER_IES_Aqua-FM4_Edition2_029030.2004071512 $CERESHOME/instrument/data/int_prod/

3.17.5.2 Execution

Execute the production script by typing the script name, **run_4.5-6.5P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, 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.

For the Main and Post Processor test, use $INSTANCE3_FM4, defined in Section 3.17.5.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.5P3:

cd $CERESHOME/inversion/CER4.5-6.5P3/rcf
$CERESHOME/inversion/CER4.5-6.5P3/rcf/run_4.5-6.5P3.csh $INSTANCE3_FM4

The script, **list_4.5-6.5P3.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.5P3/rcf/list_4.5-6.5P3.csh $INSTANCE3_FM4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.17.5.3 Exit Codes

All CER4.5-6.5P3 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.

3.17.5.4 Test Summary

Test Summary:

Total Run Time:	2:50 minutes
Memory:	296008 K
Required Disk Space:	500 Megabytes

3.17.6 Evaluation Procedures

When running the production script, **run_4.5-6.5P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove MOA input files from the sarb directory:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016025.2004071512
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Aqua-FM4_Edition2_026024.20040715
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Aqua-FM4_Edition2_026024.20040715
rm $CERESHOME/instrument/data/int_prod/CER_IES_Aqua-FM4_Edition2_029030.2004071512
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFA_Aqua-FM4-MODIS_Edition2A_032037.2004071512
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFA_Aqua-FM4-MODIS_Edition2A_032037.2004071512.met
rm $CERESHOME/inversion/data/out_comp/data/CER_SSFB_Aqua-FM4-MODIS_Edition2A_032037.2004071512
rm $CERESHOME/inversion/data/out_comp/QC/CER_GQCI_Aqua-FM4-MODIS_Edition2A_032037.2004071512

3.17.7 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.5P3_LogReport_$INSTANCE3_FM4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.5P3 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.5P3 has been executed. Metadata files, **CER_SSFB_$INSTANCE3_FM4.met, CER_SSFA_$INSTANCE3_FM4.met,** and **CER_SSF_$INSTANCE3_FM4.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P3** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P3**, using the following **diff_4.5-6.5P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.5P3/rcf
$CERESHOME/inversion/CER4.5-6.5P3/rcf/diff_4.5-6.5P3.csh $INSTANCE3_FM4

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

3.17.7.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.

2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_5p3 $INSTANCE3_FM4

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P3
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P3

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.17.7.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.5P3 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P3
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P3

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.17.7.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE3_FM4
$CERESHOME/inversion/data_exp/CER4.5-6.5P3/CER_SSF_$INSTANCE3_FM4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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.

3.17.8 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.5P3 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.5P3.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.5P3/rcf**. To use the clean-up script:

$CERESHOME/inversion/CER4.5-6.5P3/rcf/cleanup_4.5-6.5P3.csh $INSTANCE3_FM4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.18 CER4_5-6.5P4 Alternate Main and Post Processors for Terra Using Instrument IES Data for both *P6* and *x86* processors.

3.18.1 Stand Alone Test Procedures for FM1

3.18.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.5P4/rcf
setenv YEAR 2004
setenv MONTH 07
setenv DAY 20
setenv HOUR 12
setenv DATE_5P4 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE3_FM1 Terra-FM1-MODIS_SSIT_000000.$DATE_5P4
source $CERESHOME/inversion/CER4.5-6.5P4/rcf/inversion-FM1-test.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.5P4/CER_MOA_CERES_DAO-GEOS4_016025.2004072012
    $CERESHOME/inversion/data/MOA/CERES_DAO-GEOS4/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SCCD_Terra-
    FM1_Edition2_026025.20040715
    $CERESHOME/inversion/data/SCCD/Terra-FM1_Edition2/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SCCN_Terra-
    FM1_Edition2_026025.20040715
    $CERESHOME/inversion/data/SCCN/Terra-FM1_Edition2/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SSFA_Terra-
    FM1-MODIS_Edition2B_027031.2004072012
    $CERESHOME/inversion/data/SSFA/Terra-FM1-
    MODIS_Edition2B/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SSFA_Terra-
    FM1-MODIS_Edition2B_027031.2004072012.met
    $CERESHOME/inversion/data/SSFA/Terra-FM1-
    MODIS_Edition2B/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SSFB_Terra-
    FM1-MODIS_Edition2B_027031.2004072012
    $CERESHOME/inversion/data/SSFB/Terra-FM1-
    MODIS_Edition2B/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_GQCI_Terra-
    FM1-MODIS_Edition2B_027031.2004072012
    $CERESHOME/inversion/data/GQCI/Terra-FM1-
    MODIS_Edition2B/2004/07/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_IES_Terra-FM1_Edition3_032040.2004072012 $CERESHOME/inversion/data/IES/Terra-FM1_Edition3/2004/07/

3.18.1.2 Execution

Execute the production script by typing the script name, **CER4.5-6.5P4-SGE_Driver.pl**, followed by the date and hour options, the cleanup option and the platform option selecting either *P6* or *x86*.

cd $CERESHOME/inversion/CER4.5-6.5P4/rcf
$CERESHOME/inversion/CER4.5-6.5P4/rcf/CER4.5-6.5P4-SGE_Driver.pl -date 20040720 -hour 12 -clean -platform p6/x86

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.5P4/rcf/pcf/CER4.5-6.5P4_PCF_$INSTANCE3_FM1

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.5P4/CER4.5-6.5P4_$INSTANCE3_FM1.o*

Output file generation test:

The script, **list_4.5-6.5P4.pl**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.5P4/rcf/list_4.5-6.5P4.pl $INSTANCE3_FM1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.18.1.3 Exit Codes

All CER4.5-6.5P4 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.

3.18.1.4 Test Summary

Test Summary:

Total Run Time:	4:04 minutes
Memory:	296050 K
Required Disk Space:	500 Megabytes

3.18.2 Evaluation Procedures

Remove input files:

rm $CERESHOME/inversion/data/MOA/CERES_DAO-GEOS4/2004/07/CER_MOA_CERES_DAO-GEOS4_016025.2004072012
rm $CERESHOME/inversion/data/SCCD/Terra-FM1_Edition2/2004/07/CER_SCCD_Terra-FM1_Edition2_026025.20040715
rm $CERESHOME/inversion/data/SCCN/Terra-FM1_Edition2/2004/07/CER_SCCN_Terra-FM1_Edition2_026025.20040715
rm $CERESHOME/inversion/data/IES/Terra-FM1_Edition3/2004/07/CER_IES_Terra-FM1_Edition3_032040.2004072012
rm $CERESHOME/inversion/data/SSFA/Terra-FM1-MODIS_Edition2B/2004/07/CER_SSFA_Terra-FM1-MODIS_Edition2B_027031.2004072012
rm $CERESHOME/inversion/data/SSFA/Terra-FM1-MODIS_Edition2B/2004/07/CER_SSFA_Terra-FM1-MODIS_Edition2B_027031.2004072012.met
rm $CERESHOME/inversion/data/SSFB/Terra-FM1-MODIS_Edition2B/2004/07/CER_SSFB_Terra-FM1-MODIS_Edition2B_027031.2004072012
rm $CERESHOME/inversion/data/GQCI/Terra-FM1-MODIS_Edition2B/2004/07/CER_GQCI_Terra-FM1-MODIS_Edition2B_027031.2004072012

3.18.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.5P4_LogReport_$INSTANCE3_FM1**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.5P4 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.5P4 has been executed

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P4** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P4**, using the following **diff_4.5-6.5P4.pl** script:

cd $CERESHOME/inversion/CER4.5-6.5P4/rcf
$CERESHOME/inversion/CER4.5-6.5P4/rcf/diff_4.5-6.5P4.pl $INSTANCE3_FM1

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

3.18.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.

2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_5p4 $INSTANCE3_FM1

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P4
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P4

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.18.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.5P4 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P4
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P4

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.18.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $**CERESHOME/inversion/data/SSF/Terra-FM1-MODIS_SSIT/2004/07/CER_SSF_$INSTANCE3_FM1**
$CERESHOME/inversion/data_exp/CER4.5-6.5P4/CER_SSF_$INSTANCE3_FM1

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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. Differences in the third to sixth decimal places for the data fields are acceptable.

3.18.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.5P4 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.5P4.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.5P4/rcf**. To use the clean-up script:

cd $CERESHOME/inversion/CER4.5-6.5P4/rcf
$CERESHOME/inversion/CER4.5-6.5P4/rcf/cleanup_4.5-6.5P4.pl $DATE_5P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.18.5 Stand Alone Test Procedures for FM2

3.18.5.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.5P4/rcf
setenv YEAR 2004
setenv MONTH 07
setenv DAY 20
setenv HOUR 12
setenv DATE_5P4 $YEAR$MONTH$DAY$HOUR
setenv INSTANCE3_FM2 Terra-FM2-MODIS_SSIT_000000.$DATE_5P4
source $CERESHOME/inversion/CER4.5-6.5P4/rcf/inversion-FM2-test.env
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.5P4/CER_MOA_CERES_DAO-GEOS4_016025.2004072012
    $CERESHOME/inversion/data/MOA/CERES_DAO-GEOS4/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SCCD_Terra-
    FM2_Edition2_026025.20040715
    $CERESHOME/inversion/data/SCCD/Terra-FM2_Edition2/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SCCN_Terra-
    FM2_Edition2_026025.20040715
    $CERESHOME/inversion/data/SCCN/Terra-FM2_Edition2/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SSFA_Terra-
    FM2-MODIS_Edition2B_027031.2004072012
    $CERESHOME/inversion/data/SSFA/Terra-FM2-
    MODIS_Edition2B/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SSFA_Terra-
    FM2-MODIS_Edition2B_027031.2004072012.met
    $CERESHOME/inversion/data/SSFA/Terra-FM2-
    MODIS_Edition2B/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_SSFB_Terra-
    FM2-MODIS_Edition2B_027031.2004072012
    $CERESHOME/inversion/data/SSFB/Terra-FM2-
    MODIS_Edition2B/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_GQCI_Terra-
    FM2-MODIS_Edition2B_027031.2004072012
    $CERESHOME/inversion/data/GQCI/Terra-FM2-
    MODIS_Edition2B/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P4/CER_IES_Terra-
    FM2_Edition3_032040.2004072012
    $CERESHOME/inversion/data/IES/Terra-FM2_Edition3/2004/07/
```

3.18.5.2 Execution

Execute the production script by typing the script name, **CER4.5-6.5P4-SGE_Driver.pl**, followed by the date and hour options, the cleanup option and the platform option selection either *P6* or *x86*.

cd $CERESHOME/inversion/CER4.5-6.5P4/rcf
$CERESHOME/inversion/CER4.5-6.5P4/rcf/CER4.5-6.5P4-SGE_Driver.pl -date 20040720 -hour 12 -clean -platform p6/x86

The following file will be generated:

$CERESHOME/inversion/CER4.5-6.5P4/rcf/pcf/CER4.5-6.5P4_PCF_$INSTANCE3_FM2

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.5P4/CER4.5-6.5P4_$INSTANCE3_FM2.o*

Output file generation test:

The script, **list_4.5-6.5P4.pl**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.5P4/rcf/list_4.5-6.5P4.pl $INSTANCE3_FM2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.18.5.3 Exit Codes

All CER4.5-6.5P4 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.

3.18.5.4 Test Summary

Test Summary:

Total Run Time:	4:04 minutes
Memory:	296050 K
Required Disk Space:	500 Megabytes

3.18.6 Evaluation Procedures

Remove input files:

rm $CERESHOME/inversion/data/MOA/CERES_DAO-GEOS4/2004/07/CER_MOA_CERES_DAO-GEOS4_016025.2004072012
rm $CERESHOME/inversion/data/SCCD/Terra-FM2_Edition2/2004/07/CER_SCCD_Terra-FM2_Edition2_026025.20040715
rm $CERESHOME/inversion/data/SCCN/Terra-FM2_Edition2/2004/07/CER_SCCN_Terra-FM2_Edition2_026025.20040715
rm $CERESHOME/inversion/data/IES/Terra-FM2_Edition3/2004/07/CER_IES_Terra-FM2_Edition3_032040.2004072012
rm $CERESHOME/inversion/data/SSFA/Terra-FM2-MODIS_Edition2B/2004/07/CER_SSFA_Terra-FM2-MODIS_Edition2B_027031.2004072012
rm $CERESHOME/inversion/data/SSFA/Terra-FM2-MODIS_Edition2B/2004/07/CER_SSFA_Terra-FM2-MODIS_Edition2B_027031.2004072012.met
rm $CERESHOME/inversion/data/SSFB/Terra-FM2-MODIS_Edition2B/2004/07/CER_SSFB_Terra-FM2-MODIS_Edition2B_027031.2004072012
rm $CERESHOME/inversion/data/GQCI/Terra-FM2-MODIS_Edition2B/2004/07/CER_GQCI_Terra-FM2-MODIS_Edition2B_027031.2004072012

3.18.7 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.5P4_LogReport_$INSTANCE3_FM2**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.5P4 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.5P4 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P4** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P4**, using the following **diff_4.5-6.5P4.pl** script:

cd $CERESHOME/inversion/CER4.5-6.5P4/rcf
$CERESHOME/inversion/CER4.5-6.5P4/rcf/diff_4.5-6.5P4.pl $INSTANCE3_FM2

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

3.18.7.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_5p4 $INSTANCE3_FM2

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P4
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P4

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.18.7.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.5P4 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P4
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P4

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.18.7.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $CERESHOME/inversion/data/SSF/Terra-FM2-MODIS_SSIT/2004/07/CER_SSF_$INSTANCE3_FM2 $CERESHOME/inversion/data_exp/CER4.5-6.5P4/CER_SSF_$INSTANCE3_FM2

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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. Differences in the third to sixth decimal places for the data fields are acceptable.

3.18.8 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.5P4 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.5P4.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.5P4/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.5P4/rcf
   $CERESHOME/inversion/CER4.5-6.5P4/rcf/cleanup_4.5-6.5P4.pl $DATE_5P4

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.19 CER4_5-6.5P5 Alternate Main and Post Processors for Aqua Using Instrument IES Data for both *P6* and *x86* processors.

3.19.1 Stand Alone Test Procedures for FM3

3.19.1.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.5P5/rcf
setenv YEAR 2004
setenv MONTH 07
setenv DAY 15
setenv HOUR 12
setenv DATE_5P5 $YEAR$MONTH$DAY$HOUR
source $CERESHOME/inversion/CER4.5-6.5P5/rcf/inversion-FM3-test.env
setenv INSTANCE3_FM3 $SS4_5\_$PS4_5\_$CC4_5\.$DATE_5P5
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_MOA_CERES_DAO-GEOS4_016025.2004071512 $CERESHOME/inversion/data/MOA/CERES_DAO-GEOS4/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SCCD_Aqua-FM3_Edition2_026024.20040715 $CERESHOME/inversion/data/SCCD/Aqua-FM3_Edition2/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SCCN_Aqua-FM3_Edition2_026024.20040715 $CERESHOME/inversion/data/SCCN/Aqua-FM3_Edition2/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SSFA_Aqua-FM3-MODIS_Edition2A_032037.2004071512 $CERESHOME/inversion/data/SSFA/Aqua-FM3-MODIS_Edition2A/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SSFA_Aqua-FM3-MODIS_Edition2A_032037.2004071512.met $CERESHOME/inversion/data/SSFA/Aqua-FM3-MODIS_Edition2A/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SSFB_Aqua-FM3-MODIS_Edition2A_032037.2004071512 $CERESHOME/inversion/data/SSFB/Aqua-FM3-MODIS_Edition2A/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_GQCI_Aqua-FM3-MODIS_Edition2A_032037.2004071512 $CERESHOME/inversion/data/GQCI/Aqua-FM3-MODIS_Edition2A/2004/07/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_IES_Aqua-FM3_Edition2_029030.2004071512 $CERESHOME/inversion/data/IES/Aqua-FM3_Edition2/2004/07/

3.19.1.2 Execution

Execute the production script by typing the script name, **CER4.5-6.5P5-SGE_Driver.pl**, followed by the date and hour options, the cleanup option and the platform option selecting either *P6* or *x86*.

cd $CERESHOME/inversion/CER4.5-6.5P5/rcf
$CERESHOME/inversion/CER4.5-6.5P5/rcf/CER4.5-6.5P5-SGE_Driver.pl -date 20040715 -hour 12 -clean -platform p6/x86

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.5P5/rcf/pcf/CER4.5-6.5P5_PCF_$INSTANCE3_FM3

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.5P5/CER4.5-6.5P5_$INSTANCE3_FM3.o*

Output file generation test:

The script, **list_4.5-6.5P5.pl**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.5P5/rcf/list_4.5-6.5P5.pl $INSTANCE3_FM3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.19.1.3 Exit Codes

All CER4.5-6.5P5 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.

3.19.1.4 Test Summary

Test Summary:

Total Run Time:	3:56 minutes
Memory:	296008 K
Required Disk Space:	500 Megabytes

3.19.2 Evaluation Procedures

Remove input files:

rm $CERESHOME/inversion/data/MOA/CERES_DAO-GEOS4/2004/07/CER_MOA_CERES_DAO-GEOS4_016025.2004071512
rm $CERESHOME/inversion/data/SCCD/Aqua-FM3_Edition2/2004/07/CER_SCCD_Aqua-FM3_Edition2_026024.20040715
rm $CERESHOME/inversion/data/SCCN/Aqua-FM3_Edition2/2004/07/CER_SCCN_Aqua-FM3_Edition2_026024.20040715
rm $CERESHOME/inversion/data/IES/Aqua-FM3_Edition2/2004/07/CER_IES_Aqua-FM3_Edition2_029030.2004071512
rm $CERESHOME/inversion/data/SSFA/Aqua-FM3-MODIS_Edition2A/2004/07/CER_SSFA_Aqua-FM3-MODIS_Edition2A_032037.2004071512
rm $CERESHOME/inversion/data/SSFA/Aqua-FM3-MODIS_Edition2A/2004/07/CER_SSFA_Aqua-FM3-MODIS_Edition2A_032037.2004071512.met
rm $CERESHOME/inversion/data/SSFB/Aqua-FM3-MODIS_Edition2A/2004/07/CER_SSFB_Aqua-FM3-MODIS_Edition2A_032037.2004071512
rm $CERESHOME/inversion/data/GQCI/Aqua-FM3-MODIS_Edition2A/2004/07/CER_GQCI_Aqua-FM3-MODIS_Edition2A_032037.2004071512

3.19.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.5P5_LogReport_$INSTANCE3_FM3**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.5P5 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.5P5 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P5** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P5**, using the following **diff_4.5-6.5P5.pl** script:

cd $CERESHOME/inversion/CER4.5-6.5P5/rcf
$CERESHOME/inversion/CER4.5-6.5P5/rcf/diff_4.5-6.5P5.pl $INSTANCE3_FM3

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

3.19.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_5p5 $INSTANCE3_FM3

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P5
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P5

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.19.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.5P5 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P5
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P5

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.19.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $**CERESHOME/inversion/data/SSF/Aqua-FM3-MODIS_SSIT/2004/07/CER_SSF_$INSTANCE3_FM3**
$CERESHOME/inversion/data_exp/CER4.5-6.5P5/CER_SSF_$INSTANCE3_FM3

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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. Differences in the third to sixth decimal places for the data fields are acceptable.

3.19.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.5P5 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.5P5.pl**, is located in directory **$CERESHOME/inversion/CER4.5-6.5P5/rcf**. To use the clean-up script:

   cd $CERESHOME/inversion/CER4.5-6.5P5/rcf
   $CERESHOME/inversion/CER4.5-6.5P5/rcf/cleanup_4.5-6.5P5.pl $DATE_5P5

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation

3.19.5 Stand Alone Test Procedures for FM4

3.19.5.1 Environment setup and file preparation

```
cd $CERESHOME/inversion/CER4.5-6.5P5/rcf
setenv YEAR 2004
setenv MONTH 07
setenv DAY 15
setenv HOUR 12
setenv DATE_5P5 $YEAR$MONTH$DAY$HOUR
source $CERESHOME/inversion/CER4.5-6.5P5/rcf/inversion-FM4-test.env
setenv INSTANCE3_FM4 $SS4_5\_$PS4_5\_$CC4_5\.$DATE_5P5
```

Copy the input files to appropriate locations:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.5P5/CER_MOA_CERES_DAO-GEOS4_016025.2004071512
    $CERESHOME/inversion/data/MOA/CERES_DAO-GEOS4/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SCCD_Aqua-
    FM4_Edition2_026024.20040715
    $CERESHOME/inversion/data/SCCD/Aqua-FM4_Edition2/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SCCN_Aqua-
    FM4_Edition2_026024.20040715
    $CERESHOME/inversion/data/SCCN/Aqua-FM4_Edition2/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SSFA_Aqua-FM4-
    MODIS_Edition2A_032037.2004071512
    $CERESHOME/inversion/data/SSFA/Aqua-FM4-
    MODIS_Edition2A/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SSFA_Aqua-FM4-
    MODIS_Edition2A_032037.2004071512.met
    $CERESHOME/inversion/data/SSFA/Aqua-FM4-
    MODIS_Edition2A/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_SSFB_Aqua-FM4-
    MODIS_Edition2A_032037.2004071512
    $CERESHOME/inversion/data/SSFB/Aqua-FM4-
    MODIS_Edition2A/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_GQCI_Aqua-
    FM4-MODIS_Edition2A_032037.2004071512
    $CERESHOME/inversion/data/GQCI/Aqua-FM4-
    MODIS_Edition2A/2004/07/
cp $CERESHOME/inversion/data/input/CER4.5-6.5P5/CER_IES_Aqua-
    FM4_Edition2_029030.2004071512
    $CERESHOME/inversion/data/IES/Aqua-FM4_Edition2/2004/07/
```

3.19.5.2 Execution

Execute the production script by typing the script name, **CER4.5-6.5P5-SGE_Driver.pl**, followed by the date and hour options, the cleanup option and the platform option selecting either *P6* or *x86*.

cd $CERESHOME/inversion/CER4.5-6.5P5/rcf
$CERESHOME/inversion/CER4.5-6.5P5/rcf/CER4.5-6.5P5-SGE_Driver.pl -date 20040715 -hour 12 -clean -platform p6/x86

The following file will be generated:
$CERESHOME/inversion/CER4.5-6.5P5/rcf/pcf/CER4.5-6.5P5_PCF_$INSTANCE3_FM4

The submitted job can be monitored with the **qstat** command.

The most recently created sge_log file can be viewed to monitor progress of this job. This will be the last file listed by the command:

ls -arlt $CERESHOME/inversion/sge_logs/CER4.5-6.5P5/CER4.5-6.5P5_$INSTANCE3_FM4.o*

Output file generation test:

The script, **list_4.5-6.5P5.pl**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.5P5/rcf/list_4.5-6.5P5.pl $INSTANCE3_FM4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.19.5.3 Exit Codes

All CER4.5-6.5P5 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.

3.19.5.4 Test Summary

Test Summary:

Total Run Time:	3:56 minutes
Memory:	296008 K
Required Disk Space:	500 Megabytes

3.19.6 Evaluation Procedures

Remove input data:

rm $CERESHOME/inversion/data/MOA/CERES_DAO-GEOS4/2004/07/CER_MOA_CERES_DAO-GEOS4_016025.2004071512
rm $CERESHOME/inversion/data/SCCD/Aqua-FM4_Edition2/2004/07/CER_SCCD_Aqua-FM4_Edition2_026024.20040715
rm $CERESHOME/inversion/data/SCCN/Aqua-FM4_Edition2/2004/07/CER_SCCN_Aqua-FM4_Edition2_026024.20040715
rm $CERESHOME/inversion/data/IES/Aqua-FM4_Edition2/2004/07/CER_IES_Aqua-FM4_Edition2_029030.2004071512
rm $CERESHOME/inversion/data/SSFA/Aqua-FM4-MODIS_Edition2A/2004/07/CER_SSFA_Aqua-FM4-MODIS_Edition2A_032037.2004071512
rm $CERESHOME/inversion/data/SSFA/Aqua-FM4-MODIS_Edition2A/2004/07/CER_SSFA_Aqua-FM4-MODIS_Edition2A_032037.2004071512.met
rm $CERESHOME/inversion/data/SSFB/Aqua-FM4-MODIS_Edition2A/2004/07/CER_SSFB_Aqua-FM4-MODIS_Edition2A_032037.2004071512
rm $CERESHOME/inversion/data/GQCI/Aqua-FM4-MODIS_Edition2A/2004/07/CER_GQCI_Aqua-FM4-MODIS_Edition2A_032037.2004071512

3.19.7 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.5P5_LogReport_$INSTANCE3_FM4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.5P5 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.5P5 has been executed.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P5** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.5P5**, using the following **diff_4.5-6.5P5.pl** script:

cd $CERESHOME/inversion/CER4.5-6.5P5/rcf
$CERESHOME/inversion/CER4.5-6.5P5/rcf/diff_4.5-6.5P5.pl $INSTANCE3_FM4

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

3.19.7.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.

2. To execute the comparison software for the binary SSF and SSFA, type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_5p5 $INSTANCE3_FM4

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P5
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P5

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.19.7.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.5P5 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_5P5
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_5P5

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.19.7.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

hdiff $**CERESHOME/inversion/data/SSF/Aqua-FM4-MODIS_SSIT/2004/07/CER_SSF_$INSTANCE3_FM4**
$CERESHOME/inversion/data_exp/CER4.5-6.5P5/CER_SSF_$INSTANCE3_FM4

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: “SSF_DATE” on the “SSF_Header” 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. Differences in the third to sixth decimal places for the data fields are acceptable.

3.19.8 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.5P5 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.5P5.pl**, is located in directory **$CERESHOME/inversion/CER4.5-6.5P5/rcf**. To use the clean-up script:

cd $CERESHOME/inversion/CER4.5-6.5P5/rcf
$CERESHOME/inversion/CER4.5-6.5P5/rcf/cleanup_4.5-6.5P5.pl $DATE_5P5

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.20 CER4_5-6.6P2 Daily CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Postprocessor for Terra

3.20.1 Stand Alone Test Procedures for FM1

3.20.1.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.6P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.6P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 8-digit command-line argument, containing the 4-digit year, 2-digit month, and 2-digit day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.6P2/rcf
setenv DATE_6P2 20020901
setenv SCC_FM1_6P2 Terra-FM1_Edition2_023019.20020915
setenv INSTANCE_FM1 Terra-FM1-MODIS_SSIT_000002.$DATE_6P2
source $CERESHOME/inversion/CER4.5-6.6P2/rcf/inversion-terra-FM1-test-
    env-6P2.csh
$CERESHOME/inversion/CER4.5-6.6P2/rcf/pcfgen_4.5-6.6P2.csh $DATE_6P2
```

The following files will be generated:

```
$CERESHOME/inversion/CER4.5-6.6P2/rcf/pcf/CER4.5-
    6.6P2_PCFin_$INSTANCE_FM1
$CERESHOME/inversion/CER4.5-6.6P2/rcf/pcf/CER4.5-
    6.6P2_PCF_$INSTANCE_FM1
```

Copy the following input data files:.

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090100
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090106
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090112
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090118
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
```

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090200
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_SCCD_$SCC_FM1_6P2
    $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_SCCN_$SCC_FM1_6P2
    $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-
    FM1-MODIS_Edition2A_026029.2002090101
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-
    FM1-MODIS_Edition2A_026029.2002090109
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-
    FM1-MODIS_Edition2A_026029.2002090123
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-
    FM1-MODIS_Edition2A_026029.2002090101.met
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-
    FM1-MODIS_Edition2A_026029.2002090109.met
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-
    FM1-MODIS_Edition2A_026029.2002090123.met
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFB_Terra-
    FM1-MODIS_Edition2A_026029.2002090101
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFB_Terra-
    FM1-MODIS_Edition2A_026029.2002090109
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFB_Terra-
    FM1-MODIS_Edition2A_026029.2002090123
    $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_GQCI_Terra-
    FM1-MODIS_Edition2A_026029.2002090101
    $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_GQCI_Terra-
    FM1-MODIS_Edition2A_026029.2002090109
    $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_GQCI_Terra-
    FM1-MODIS_Edition2A_026029.2002090123
    $CERESHOME/inversion/data/out_comp/QC/
```

3.20.1.2 Execution

Execute the production script by typing the script name, **run_4.5-6.6P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day.

For the Main and Post Processor test, use $INSTANCE_FM1, defined in Section 3.20.1.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.6P2:

cd $CERESHOME/inversion/CER4.5-6.6P2/rcf
$CERESHOME/inversion/CER4.5-6.6P2/rcf/run_4.5-6.6P2.csh $INSTANCE_FM1

The script, **list_4.5-6.6P2.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.6P2/rcf/list_4.5-6.6P2.csh $INSTANCE_FM1

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.20.1.3 Exit Codes

All CER4.5-6.6P2 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.

3.20.1.4 Test Summary

Test Summary:

Total Run Time:	5:20 minutes
Memory:	296092 K
Required Disk Space:	420 Megabytes

3.20.2 Evaluation Procedures

When running the production script, **run_4.5-6.6P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove MOA input files from the sarb directory:

rm
$CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002090100

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002090106
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002090118
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002090200
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_$SCC_FM1_6P2
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_$SCC_FM1_6P2

3.20.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.6P2_LogReport_$INSTANCE_FM1**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.6P2 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.6P2 has been executed. Metadata files, **CER_SSFB_$INSTANCE_FM1.met, CER_SSFA_$INSTANCE_FM1.met,** and **CER_SSF_$INSTANCE_FM1.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.6P2** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.6P2**, using the following **diff_4.5-6.6P2.csh** script:

cd $CERESHOME/inversion/CER4.5-6.6P2/rcf
$CERESHOME/inversion/CER4.5-6.6P2/rcf/diff_4.5-6.6P2.csh $INSTANCE_FM1

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

3.20.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA of hour '00', type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_6p2 $INSTANCE_FM1'23'

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_6P2'23'
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_6P2'23'

Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.20.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.6P2 comparison software.

Examine the comparison report files by typing:

```
cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_6P2'23'
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_6P2'23'
```

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.20.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

```
cd $CERESHOME/inversion/test_suites/bin
hdiff
    $CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM1'01' $CERESHOME/inversion/data_exp/CER4.5-6.6P2/CER_SSF_$INSTANCE_FM1'01'
hdiff
    $CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM1'09' $CERESHOME/inversion/data_exp/CER4.5-6.6P2/CER_SSF_$INSTANCE_FM1'09'
hdiff
    $CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM1'23' $CERESHOME/inversion/data_exp/CER4.5-6.6P2/CER_SSF_$INSTANCE_FM1'23'
```

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.20.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.6P2 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.6P2.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.6P2/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.6P2/rcf/cleanup_4.5-6.6P2.csh $INSTANCE_FM1

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.20.5 Stand Alone Test Procedures for FM2

3.20.5.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.6P2.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.6P2.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 8-digit command-line argument, containing the 4-digit year, 2-digit month, and 2-digit day.

Generate the PCF for the test case:

```
cd $CERESHOME/inversion/CER4.5-6.6P2/rcf
setenv DATE_6P2 20020901
setenv SCC_FM2_6P2 Terra-FM2_Edition2_023019.20020915
setenv INSTANCE_FM2 Terra-FM2-MODIS_SSIT_000002.$DATE_6P2
source $CERESHOME/inversion/CER4.5-6.6P2/rcf/inversion-terra-FM2-test-
    env-6P2.csh
$CERESHOME/inversion/CER4.5-6.6P2/rcf/pcfgen_4.5-6.6P2.csh $DATE_6P2
```

The following files will be generated:

```
$CERESHOME/inversion/CER4.5-6.6P2/rcf/pcf/CER4.5-
    6.6P2_PCFin_$INSTANCE_FM2
$CERESHOME/inversion/CER4.5-6.6P2/rcf/pcf/CER4.5-
    6.6P2_PCF_$INSTANCE_FM2
```

Copy the following input data files:.

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090100
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090106
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090112
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090118
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_MOA_CERES_DAO-GEOS4_016023.2002090200
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P2/CER_SCCD_$SCC_FM2_6P2
    $CERESHOME/erbelike/data/ancillary/dynamic/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SCCN_$SCC_FM2_6P2 $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-FM2-MODIS_Edition2A_026029.2002090101 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-FM2-MODIS_Edition2A_026029.2002090109 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-FM2-MODIS_Edition2A_026029.2002090123 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-FM2-MODIS_Edition2A_026029.2002090101.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-FM2-MODIS_Edition2A_026029.2002090109.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFA_Terra-FM2-MODIS_Edition2A_026029.2002090123.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFB_Terra-FM2-MODIS_Edition2A_026029.2002090101 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFB_Terra-FM2-MODIS_Edition2A_026029.2002090109 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_SSFB_Terra-FM2-MODIS_Edition2A_026029.2002090123 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_GQCI_Terra-FM2-MODIS_Edition2A_026029.2002090101 $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_GQCI_Terra-FM2-MODIS_Edition2A_026029.2002090109 $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P2/CER_GQCI_Terra-FM2-MODIS_Edition2A_026029.2002090123 $CERESHOME/inversion/data/out_comp/QC/

3.20.5.2 Execution

Execute the production script by typing the script name, **run_4.5-6.6P2.csh**, followed by a string which designates the instance of the product. The string should be formatted, ’Sampling Strategy’_’Production Strategy’_’Configuration Code’.’Data Date’. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day.

For the Main and Post Processor test, use $INSTANCE_FM2, defined in Section 3.20.5.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.6P2:

cd $CERESHOME/inversion/CER4.5-6.6P2/rcf
$CERESHOME/inversion/CER4.5-6.6P2/rcf/run_4.5-6.6P2.csh $INSTANCE_FM2

The script, **list_4.5-6.6P2.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.6P2/rcf/list_4.5-6.6P2.csh $INSTANCE_FM2

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.20.5.3 Exit Codes

All CER4.5-6.6P2 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.

3.20.5.4 Test Summary

Test Summary:

Total Run Time:	5:50 minutes
Memory:	296093 K
Required Disk Space:	420 Megabytes

3.20.6 Evaluation Procedures

When running the production script, **run_4.5-6.6P2.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove MOA input files from the sarb directory:

rm
$CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002090100
rm
$CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002090106
rm
$CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002090118
rm
$CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002090200

rm
$CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_$SCC_FM2_6P2
rm
$CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_$SCC_FM2_6P2

3.20.7 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.6P2_LogReport_$INSTANCE_FM2**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.6P2 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.6P2 has been executed. Metadata files, **CER_SSFB_$INSTANCE_FM2.met, CER_SSFA_$INSTANCE_FM2.met,** and **CER_SSF_$INSTANCE_FM2.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.6P2** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.6P2**, using the following **diff_4.5-6.6P2.csh** script:

cd $CERESHOME/inversion/CER4.5-6.6P2/rcf
$CERESHOME/inversion/CER4.5-6.6P2/rcf/diff_4.5-6.6P2.csh $INSTANCE_FM2

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

3.20.7.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA of hour '00', type the following commands:

   cd $CERESHOME/inversion/test_suites/bin
   run_compare_6p2 $INSTANCE_FM2'23'

   Two files will be created:
   $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_6P2'23'
   $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_6P2'23'

   Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.20.7.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.6P2 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_6P2'23'
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_6P2'23'

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.20.7.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM2'01' $CERESHOME/inversion/data_exp/CER4.5-6.6P2/CER_SSF_$INSTANCE_FM2'01'
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM2'09' $CERESHOME/inversion/data_exp/CER4.5-6.6P2/CER_SSF_$INSTANCE_FM2'09'
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM2'23' $CERESHOME/inversion/data_exp/CER4.5-6.6P2/CER_SSF_$INSTANCE_FM2'23'

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.20.8 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.6P2 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.6P2.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.6P2/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.6P2/rcf/cleanup_4.5-6.6P2.csh $INSTANCE_FM2

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.21 CER4_5-6.6P3 Daily CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Alternate Main Processor and HDF Postprocessor for Aqua

3.21.1 Stand Alone Test Procedures for FM3

3.21.1.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.6P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.6P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 8-digit command-line argument, containing the 4-digit year, 2-digit month, and 2-digit day.

Generate the CF for the FM3 test case:

```
cd $CERESHOME/inversion/CER4.5-6.6P3/rcf
setenv DATE_6P3 20030630
setenv INSTANCE_FM3 Aqua-FM3-MODIS_SSIT_000002.$DATE_6P3
source $CERESHOME/inversion/CER4.5-6.6P3/rcf/inversion-FM3-test-env-
    6P3.csh
$CERESHOME/inversion/CER4.5-6.6P3/rcf/pcfgen_4.5-6.6P3.csh $DATE_6P3
```

The following files will be generated:

```
$CERESHOME/inversion/CER4.5-6.6P3/rcf/pcf/CER4.5-
    6.6P3_PCFin_$INSTANCE_FM3
$CERESHOME/inversion/CER4.5-6.6P3/rcf/pcf/CER4.5-
    6.6P3_PCF_$INSTANCE_FM3
```

Copy the following input data files:.

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003063000
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003063006
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003063012
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003063018
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003070100
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SCCD_Aqua-FM3_Edition2_026023.20030615 $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SCCN_Aqua-FM3_Edition2_026023.20030615 $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM3-MODIS_ValR2_029033.2003063000 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM3-MODIS_ValR2_029033.2003063009 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM3-MODIS_ValR2_029033.2003063023 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM3-MODIS_ValR2_029033.2003063000.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM3-MODIS_ValR2_029033.2003063009.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM3-MODIS_ValR2_029033.2003063023.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFB_Aqua-FM3-MODIS_ValR2_029033.2003063000 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFB_Aqua-FM3-MODIS_ValR2_029033.2003063009 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFB_Aqua-FM3-MODIS_ValR2_029033.2003063023 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_GQCI_Aqua-FM3-MODIS_ValR2_029033.2003063000 $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_GQCI_Aqua-FM3-MODIS_ValR2_029033.2003063009 $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_GQCI_Aqua-FM3-MODIS_ValR2_029033.2003063023 $CERESHOME/inversion/data/out_comp/QC/

3.21.1.2 Execution

Execute the production script by typing the script name, **run_4.5-6.6P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, 'Sampling

Strategy'_'Production Strategy'_'Configuration Code'.'Data Date'. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day.

For the Main and Post Processor test, use $INSTANCE_FM3, defined in Section 3.21.1.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.6P3:

cd $CERESHOME/inversion/CER4.5-6.6P3/rcf
$CERESHOME/inversion/CER4.5-6.6P3/rcf/run_4.5-6.6P3.csh $INSTANCE_FM3

Note: The following message does not indicate a problem: lib-4964 : WARNING

The script, **list_4.5-6.6P3.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.6P3/rcf/list_4.5-6.6P3.csh $INSTANCE_FM3

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.21.1.3 Exit Codes

All CER4.5-6.6P3 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.

3.21.1.4 Test Summary

Test Summary:

Total Run Time:	5:05 minutes
Memory:	296007 K
Required Disk Space:	420 Megabytes

3.21.2 Evaluation Procedures

When running the production script, **run_4.5-6.6P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove FM3 SCC input files from the erbelike directory:

rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Aqua-FM3_Edition2_026023.20030615
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Aqua-FM3_Edition2_026023.20030615

Remove MOA input files from the sarb directory:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003063000
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003063006
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003063012
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003063018
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003070100

3.21.3 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.6P3_LogReport_$INSTANCE_FM3**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.6P3 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.6P3 has been executed. Metadata files, **CER_SSFB_$INSTANCE_FM3.met, CER_SSFA_$INSTANCE_FM3.met,** and **CER_SSF_$INSTANCE_FM3.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.6P3** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.6P3**, using the following **diff_4.5-6.6P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.6P3/rcf
$CERESHOME/inversion/CER4.5-6.6P3/rcf/diff_4.5-6.6P3.csh $INSTANCE_FM3

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

3.21.3.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA of hour '00', type the following commands:

cd $CERESHOME/inversion/test_suites/bin
run_compare_6p3 $INSTANCE_FM3'23'

Two files will be created:
$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_6P3'23'
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_6P3'23'

Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.21.3.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.6P3 comparison software.

Examine the comparison report files by typing:

cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_6P3'23'
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_6P3'23'

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.21.3.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

cd $CERESHOME/inversion/test_suites/bin
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM3'00' $CERESHOME/inversion/data_exp/CER4.5-6.6P3/CER_SSF_$INSTANCE_FM3'00'
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM3'09' $CERESHOME/inversion/data_exp/CER4.5-6.6P3/CER_SSF_$INSTANCE_FM3'09'
hdiff
$CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM3'23' $CERESHOME/inversion/data_exp/CER4.5-6.6P3/CER_SSF_$INSTANCE_FM3'23'

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.21.4 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.6P3 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.6P3.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.6P3/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.6P3/rcf/cleanup_4.5-6.6P3.csh $INSTANCE_FM3

2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

3.21.5 Stand Alone Test Procedures for FM4

3.21.5.1 PCF Generator

The Main and Post Processor production script, **run_4.5-6.6P3.csh**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. For this test and production runs, the PCF generator, **pcfgen_4.5-6.6P3.csh**, must be executed to create the ASCII input file and PCF for a particular production run. The PCF generator requires one 8-digit command-line argument, containing the 4-digit year, 2-digit month, and 2-digit day.

Generate the PCF for the FM4 test case:

```
cd $CERESHOME/inversion/CER4.5-6.6P3/rcf
setenv DATE_6P3 20030630
setenv INSTANCE_FM4 Aqua-FM4-MODIS_SSIT_000002.$DATE_6P3
source $CERESHOME/inversion/CER4.5-6.6P3/rcf/inversion-FM4-test-env-
    6P3.csh
$CERESHOME/inversion/CER4.5-6.6P3/rcf/pcfgen_4.5-6.6P3.csh $DATE_6P3
```

The following files will be generated:

```
$CERESHOME/inversion/CER4.5-6.6P3/rcf/pcf/CER4.5-
    6.6P3_PCFin_$INSTANCE_FM4
$CERESHOME/inversion/CER4.5-6.6P3/rcf/pcf/CER4.5-
    6.6P3_PCF_$INSTANCE_FM4
```

Copy the following input data files:

```
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003063000
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003063006
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003063012
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003063018
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-
    6.6P3/CER_MOA_CERES_DAO-GEOS4_016023.2003070100
    $CERESHOME/sarb/data/out_comp/data/regridmoa/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SCCD_Aqua-
    FM4_Edition2_026023.20030615
    $CERESHOME/erbelike/data/ancillary/dynamic/
```

cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SCCN_Aqua-FM4_Edition2_026023.20030615 $CERESHOME/erbelike/data/ancillary/dynamic/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM4-MODIS_ValR2_029033.2003063000 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM4-MODIS_ValR2_029033.2003063009 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM4-MODIS_ValR2_029033.2003063023 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM4-MODIS_ValR2_029033.2003063000.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM4-MODIS_ValR2_029033.2003063009.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFA_Aqua-FM4-MODIS_ValR2_029033.2003063023.met $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFB_Aqua-FM4-MODIS_ValR2_029033.2003063000 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFB_Aqua-FM4-MODIS_ValR2_029033.2003063009 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_SSFB_Aqua-FM4-MODIS_ValR2_029033.2003063023 $CERESHOME/inversion/data/out_comp/data/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_GQCI_Aqua-FM4-MODIS_ValR2_029033.2003063000 $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_GQCI_Aqua-FM4-MODIS_ValR2_029033.2003063009 $CERESHOME/inversion/data/out_comp/QC/
cp $CERESHOME/inversion/data/input/CER4.5-6.6P3/CER_GQCI_Aqua-FM4-MODIS_ValR2_029033.2003063023 $CERESHOME/inversion/data/out_comp/QC/

3.21.5.2 Execution

Execute the production script by typing the script name, **run_4.5-6.6P3.csh**, followed by a string which designates the instance of the product. The string should be formatted, ’Sampling Strategy’_’Production Strategy’_’Configuration Code’.’Data Date’. The date parameter is formatted, YYYYMMDD, where YYYY is the 4-digit year, MM is the 2-digit month, and DD is the 2-digit day.

For the Main and Post Processor test, use $INSTANCE_FM4, defined in Section 3.21.5.1, and type the following commands to execute the Alternate Main and Post Processor Product Generation Executive (PGE), CER4.5-6.6P3:

cd $CERESHOME/inversion/CER4.5-6.6P3/rcf
$CERESHOME/inversion/CER4.5-6.6P3/rcf/run_4.5-6.6P3.csh $INSTANCE_FM4

Note: The following message does not indicate a problem: lib-4964 : WARNING

The script, **list_4.5-6.6P3.csh**, will list the files that were created during execution of the PGE:

$CERESHOME/inversion/CER4.5-6.6P3/rcf/list_4.5-6.6P3.csh $INSTANCE_FM4

Note: If any file that should have been created is missing, then a message is written to the screen naming which file could not be found.

3.21.5.3 Exit Codes

All CER4.5-6.6P3 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.

3.21.5.4 Test Summary

Test Summary:

Total Run Time:	5:05 minutes
Memory:	296007 K
Required Disk Space:	420 Megabytes

3.21.6 Evaluation Procedures

When running the production script, **run_4.5-6.6P3.csh**, the system message, 'No match', may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Remove MOA input files from the sarb directory:

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003063000
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003063006
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003063012

rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003063018
rm $CERESHOME/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2003070100

Remove FM4 SCC input files from the erbelike directory:

rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCD_Aqua-FM4_Edition2_026023.20030615
rm $CERESHOME/erbelike/data/ancillary/dynamic/CER_SCCN_Aqua-FM4_Edition2_026023.20030615

3.21.7 Log and Status File Results and Metadata Evaluation

The Error and Status Log File, **CER4.5-6.6P3_LogReport_$INSTANCE_FM4**, is located in directory **$CERESHOME/inversion/runlogs** after CER4.5-6.6P3 has been executed. Metadata files, which end in extension '.met', are located in the same directories as their corresponding output files after CER4.5-6.6P3 has been executed. Metadata files, **CER_SSFB_$INSTANCE_FM4.met, CER_SSFA_$INSTANCE_FM4.met,** and **CER_SSF_$INSTANCE_FM4.met**, are written to directory, **$CERESHOME/inversion/data/out_comp/data**.

Compare the information contained in the log file with the expected contents of the Log Report file found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.6P3** and compare the metadata files with the expected contents of the files with the same names found in directory **$CERESHOME/inversion/data_exp/CER4.5-6.6P3**, using the following **diff_4.5-6.6P3.csh** script:

cd $CERESHOME/inversion/CER4.5-6.6P3/rcf
$CERESHOME/inversion/CER4.5-6.6P3/rcf/diff_4.5-6.6P3.csh $INSTANCE_FM4

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

3.21.7.1 Execution of Comparison Software for the Main Processor

The evaluation software for this Processor will perform a single test.

1. The executable for the comparison software is not provided in the tar file. It was created when all the software's code was compiled.
2. To execute the comparison software for the binary SSF and SSFA of hour '00', type the following commands:

cd $CERESHOME/inversion/test_suites/bin
run_compare_6p3 $INSTANCE_FM4'23'

Two files will be created:

$CERESHOME/inversion/test_suites/results/CmpReport_$DATE_6P3'23'
$CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_6P3'23'

Note: The message that CER_GQCA_* files cannot be found can be ignored.

3.21.7.2 Evaluation of Comparison Software Output

This section provides the procedure for evaluating the output from the CER4.5-6.3P2 comparison software.

Examine the comparison report files by typing:

```
cat $CERESHOME/inversion/test_suites/results/CmpReport_$DATE_6P3'23'
cat $CERESHOME/inversion/test_suites/results/CmpReportSSFA_$DATE_6P3'23'
```

The final line of this file will report the status of the comparison between the generated data and the expected output.

3.21.7.3 Evaluation of SSF HDF Product

This section provides the procedure for evaluating the output from the SSF HDF product produced by the test software. The comparison software is available in the TOOLKIT HDF delivery package. Execute the program by typing the following lines:

```
cd $CERESHOME/inversion/test_suites/bin
hdiff
    $CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM4'
    00' $CERESHOME/inversion/data_exp/CER4.5-
    6.6P3/CER_SSF_$INSTANCE_FM4'00'
hdiff
    $CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM4'
    09' $CERESHOME/inversion/data_exp/CER4.5-
    6.6P3/CER_SSF_$INSTANCE_FM4'09'
hdiff
    $CERESHOME/inversion/data/out_comp/data/CER_SSF_$INSTANCE_FM4'
    23' $CERESHOME/inversion/data_exp/CER4.5-
    6.6P3/CER_SSF_$INSTANCE_FM4'23'
```

The executable, **hdiff**, compares each Vdata and each SDS on the SSF HDF output file.

The only differences between the two HDF output files should be the dates on Vfields: "SSF_DATE" on the "SSF_Header" 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.

3.21.8 Solutions to Possible Problems

1. All output files are opened with Status = NEW in the CER4.5-6.6P3 software. These files must be removed before rerunning these test procedures. A script, which removes PGE created files, **cleanup_4.5-6.6P3.csh**, is located in directory **$CERESHOME/inversion/CER4.5-6.6P3/rcf**. To use the clean-up script:

   $CERESHOME/inversion/CER4.5-6.6P3/rcf/cleanup_4.5-6.6P3.csh $INSTANCE_FM4

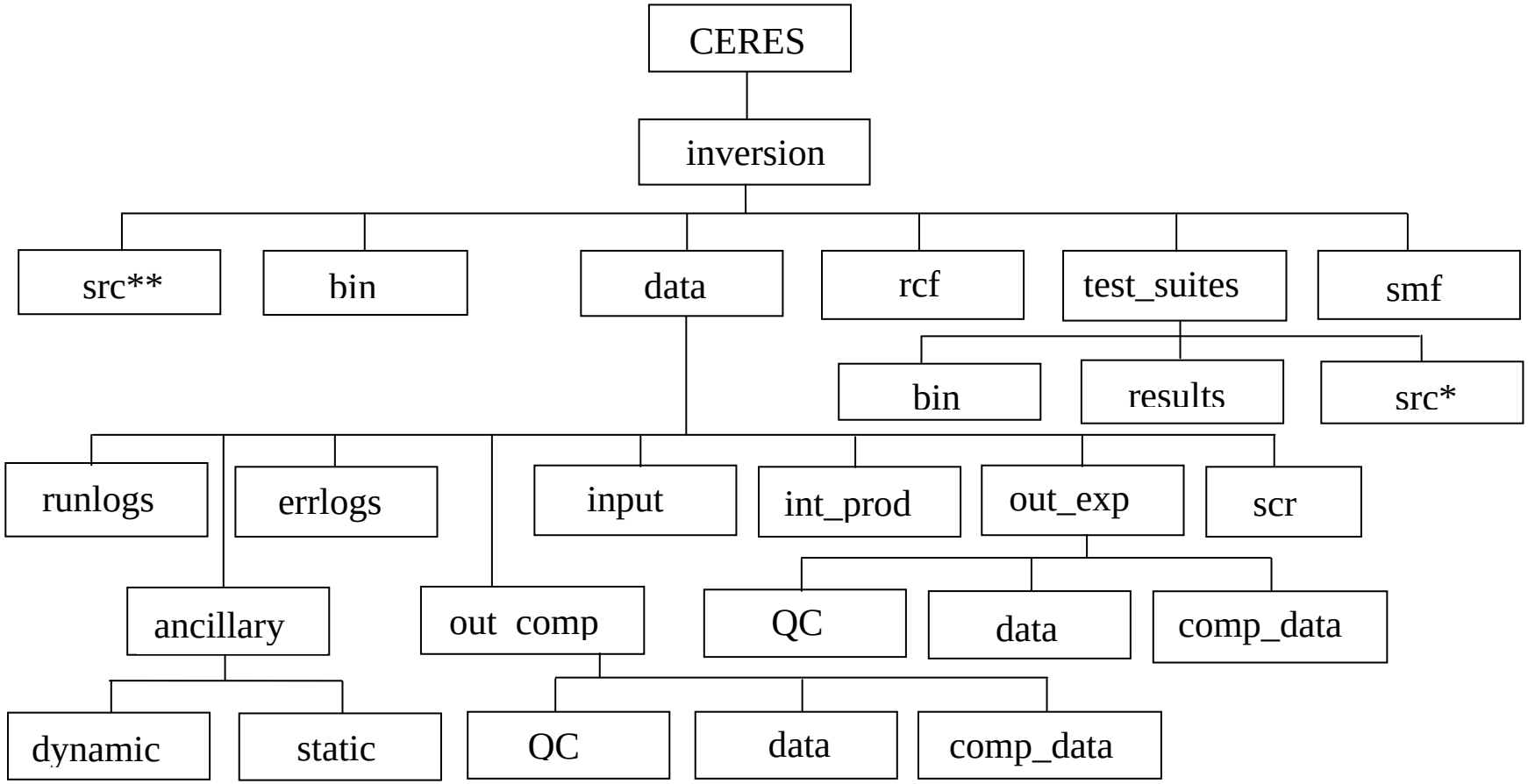
2. Use the latest version of CERESlib.
3. Ignore the warnings received during compilation.

Appendix A
Acronyms and Abbreviations

ASCII	American Standard Code Information Interchange
ASDC	Atmospheric Science Data Center
CERES	Clouds and the Earth's Radiant Energy System
CERESlib	CERES library
DAAC	Distributed Active Archive Center
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
F90	Fortran 90
HDF	Hierarchical Data Format
LaTIS	Langley TRMM Information System
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
PCF	Process Control File
PGE	Product Generation Executives
QC	Quality Control
SSAI	Science Systems Applications, Inc.
SSF	Single Scanner Footprint TOA/Surface Fluxes and Clouds
SSF	Single Scanner Footprint TOA/Surface Fluxes and Clouds
SSFA	Single Scanner Footprint TOA/Surface Fluxes and Clouds Aerosols
TOA	Top-of-Atmosphere
TRMM	Tropical Rainfall Measuring Mission

Appendix B
Directory Structure Diagrams

Directory Structure for the Inversion Tar File for PGEs CER4.5-6.1P1, CER4.5-6.2P1 and CER4.5-6.3P1



*Continued on next page

Figure B-1. Directory Structure for Inversion Tar File for PGEs CER4.5-6.1P1, CER4.5-6.2P1 and CER4.5-6.3P1.

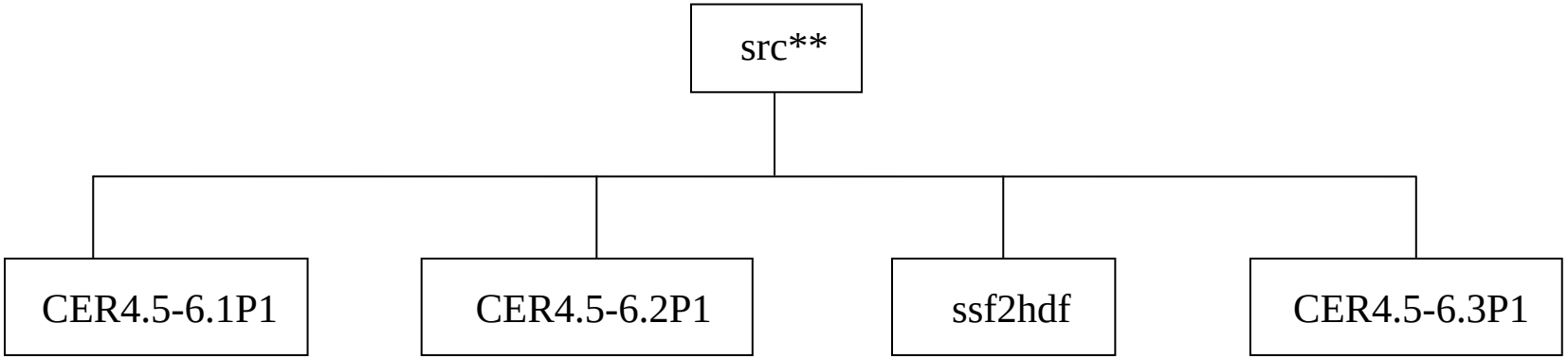


Figure B-2. Directory Structure for Inversion Tar File for PGEs CER4.5-6.1P1, CER4.5-6.2P1 and CER4.5-6.3P1.

Directory Structure for Inversion Tar File for PGEs CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.2P2, CER4.5-6.2P3, CER4.5-6.2P4, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.4P1, CER4.5-6.4P2, CER4.5-6.5P2, CER4.5-6.5P3, CER4.5-6.5P4, CER4.5-6.5P5, CER4.5-6.6P2 and CER4.5-6.6P3

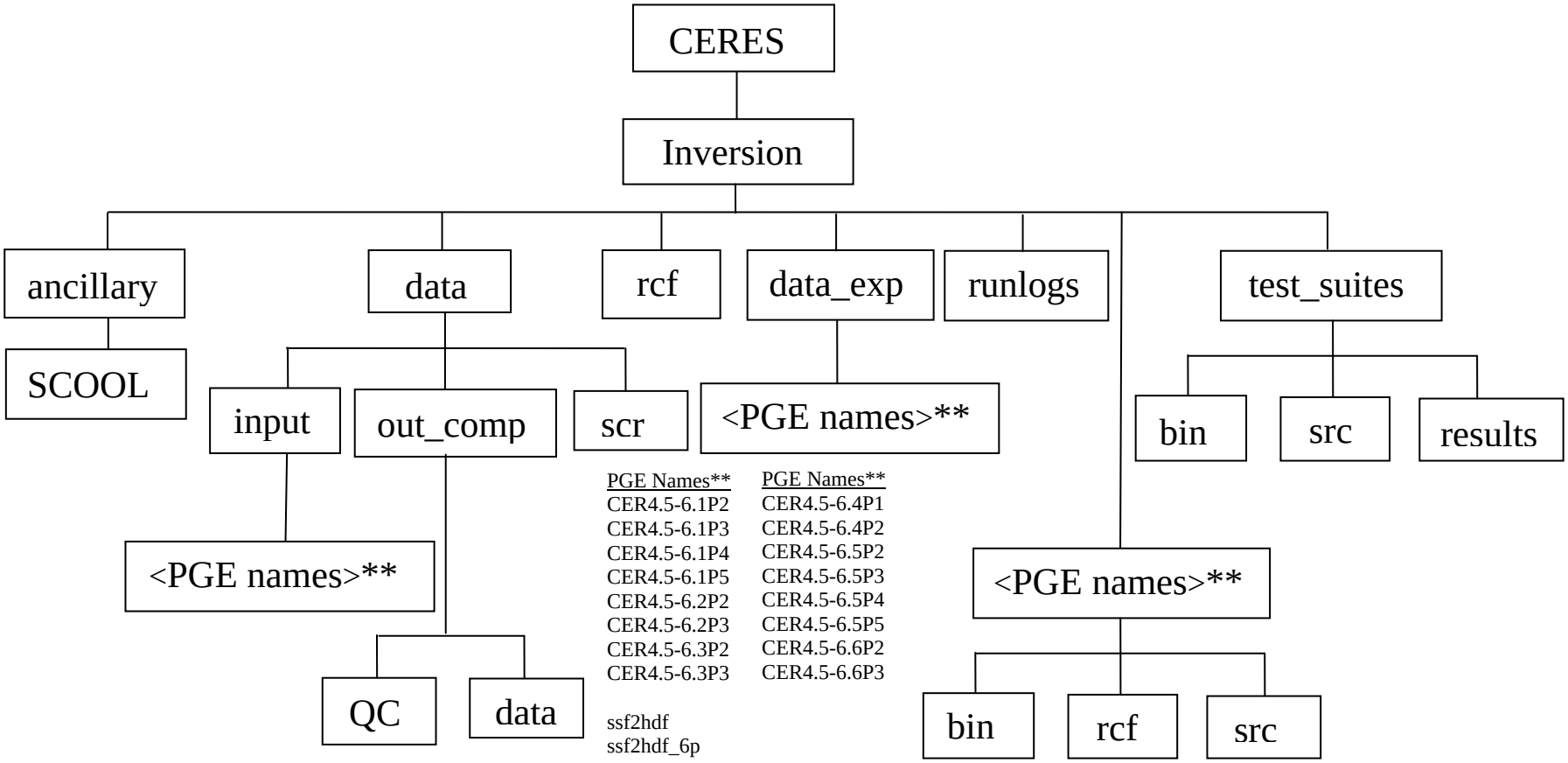


Figure B-3. Directory Structure for Inversion Tar File for PGEs CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.1P6, CER4.5-6.2P2, CER4.5-6.2P3, CER4.5-6.2P4, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.4P1, CER4.5-6.4P2, CER4.5-6.5P2, CER4.5-6.5P3, CER4.5-6.5P4, CER4.5-6.5P5, CER4.5-6.6P2, and CER4.5-6.6P3.

Appendix C
File Description Tables

C.1 Production Scripts and Executables

The following scripts must be moved to the production environment.

Table C.1-1. PGE CER4.5-6.1P1 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.1P1.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Main and HDF Processors
run_4.5-6.1P1.csh	ASCII	C-Shell script which executes the Main and HDF Processors
cleanup_4.5-6.1P1.csh	ASCII	C-Shell script which removes output files from CER4.5-6.1P1
diff_4.5-6.1P1.csh	ASCII	C-Shell script which compares the Log files and the *.met files
list_4.5-6.1P1.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.1P1.csh script
compile_4.5-6.1P1.csh	ASCII	C-Shell script which compiles the code for the Main and HDF Processors and the comparison software

Table C.1-2. PGE CER4.5-6.1P2 Production Scripts

File Name	Format	Description
CER4.5-6.1P2_pcf_gen.pl	ASCII	Perl script which creates the PCF for the Main and HDF Processors
run_4.5-6.1P2.pl	ASCII	Perl script which executes the Main and HDF Processors
cleanup_4.5-6.1P2.pl	ASCII	Perl script which removes output files from CER4.5-6.1P2
diff_4.5-6.1P2.pl	ASCII	Perl script which compares the Log files and the *.met files
list_4.5-6.1P2.pl	ASCII	Perl script which lists out the files that should be created by the run_4.5-6.1P2.csh script
compile_4.5-6.1P2.pl	ASCII	Perl script which compiles the code for the Main and HDF Processors and the comparison software
CER4_5_6_1P2_Env.pm	ASCII	Perl program to set the environment for the SSF Processor
CER4_5_6_1P2_FileUtils.pm	ASCII	Perl program containing functions for determining if there are enough input files for the SSF Processor
CER4_5_6_1P2_PCF.pm	ASCII	Perl program that constructs a PCF object for the SSF Processor

Table C.1-2. PGE CER4.5-6.1P2 Production Scripts

File Name	Format	Description
CER4.5-6.1P2-Launch.pl	ASCII	Perl script which runs the PCF generator, cleans existing outputs and executes the run script.
CER4.5-6.1P2-SGE_Driver.pl	ASCII	Perl script which submits jobs to Sun Grid Engine for the SSF Processor

Table C.1-3. PGE CER4.5-6.1P3 Production Scripts

File Name	Format	Description
CER4.5-6.1P3_pcf_gen.pl	ASCII	Perl script which creates the PCF for the Main and HDF Processors
run_4.5-6.1P3.pl	ASCII	Perl script which executes the Main and HDF Processors
cleanup_4.5-6.1P3.pl	ASCII	Perl script which removes output files from CER4.5-6.1P3
diff_4.5-6.1P3.pl	ASCII	Perl script which compares the Log files and the *.met files
list_4.5-6.1P3.pl	ASCII	Perl script which lists out the files that should be created by the run_4.5-6.1P3.csh script
compile_4.5-6.1P3.pl	ASCII	Perl script which compiles the code for the Main and HDF Processors and the comparison software
CER4_5_6_1P3_Env.pm	ASCII	Perl program to set the environment for the SSF Processor
CER4_5_6_1P3_FileUtils.pm	ASCII	Perl program containing functions for determining if there are enough input files for the SSF Processor
CER4_5_6_1P3_PCF.pm	ASCII	Perl program that constructs a PCF object for the SSF Processor
CER4.5-6.1P3-Launch.pl	ASCII	Perl script which runs the PCF generator, cleans existing outputs and executes the run script.
CER4.5-6.1P3-SGE_Driver.pl	ASCII	Perl script which submits jobs to Sun Grid Engine for the SSF Processor

Table C.1-4. PGE CER4.5-6.1P4 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.1P4.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Main and HDF Processors
CER4.5-6.1P4_pcf_gen.pl	ASCII	Perl script which creates the ASCII and PCF for the Main and HDF Processors
run_4.5-6.1P4.csh	ASCII	C-Shell script which executes the Main and HDF Processors

Table C.1-4. PGE CER4.5-6.1P4 Production Scripts

File Name	Format	Description
run_4.5-6.1P4.pl	ASCII	Perl script which executes the Main and HDF Processors
cleanup_4.5-6.1P4.csh	ASCII	C-Shell script which removes output files from CER4.5-6.1P4
cleanup_4.5-6.1P4.pl	ASCII	Perl script which removes output files from CER4.5-6.1P4
diff_4.5-6.1P4.csh	ASCII	C-Shell script which compares the Log files and the *.met files
list_4.5-6.1P4.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.1P4.csh script
compile_4.5-6.1P4.csh	ASCII	C-Shell script which compiles the code for the Main and HDF Processors and the comparison software
CER4.5-6.1P4-Launch.pl	ASCII	Perl script which runs the PCF generator, cleans existing outputs and executes the run script.
CER4.5-6.1P4-SGE_Driver.pl	ASCII	Perl script which submits the jobs to Sun Grid Engine.

Table C.1-5. PGE CER4.5-6.1P5 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.1P5.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Main and HDF Processors
CER4.5-6.1P5_pcf_gen.pl	ASCII	Perl script which creates the ASCII and PCF for the Main and HDF Processors
run_4.5-6.1P5.csh	ASCII	C-Shell script which executes the Main and HDF Processors
run_4.5-6.1P5.pl	ASCII	Perl script which executes the Main and HDF Processors
cleanup_4.5-6.1P5.csh	ASCII	C-Shell script which removes output files from CER4.5-6.1P5
cleanup_4.5-6.1P5.pl	ASCII	Perl script which removes output files from CER4.5-6.1P5
diff_4.5-6.1P5.csh	ASCII	C-Shell script which compares the Log files and the *.met files
list_4.5-6.1P5.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.1P5.csh script
compile_4.5-6.1P5.csh	ASCII	C-Shell script which compiles the code for the Main and HDF Processors and the comparison software
CER4.5-6.1P5-Launch.pl	ASCII	Perl script which runs the PCF generator, cleans existing outputs and executes the run script.
CER4.5-6.1P5-SGE_Driver.pl	ASCII	Perl script which submits the jobs to Sun Grid Engine.

Table C.1-6. PGE CER4.5-6.2P1 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.2P1.csh	ASCII	C-Shell script which creates the ASCII and PCF for the SSF Subset Postprocessor
run_4.5-6.2P1.csh	ASCII	C-Shell script which executes the SSF Subset Postprocessor
cleanup_4.5-6.2P1.csh	ASCII	C-Shell script which removes output files from CER4.5-6.2P1
diff_4.5-6.2P1.csh	ASCII	C-Shell script which compares the Log files and the *.met files
list_4.5-6.2P1.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.2P1.csh script
compile_4.5-6.2P1.csh	ASCII	C-Shell script which compiles the code for the SSF Subset Postprocessor and the subset comparison software

Table C.1-7. PGE CER4.5-6.2P2 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.2P2.pl	ASCII	Perl script which creates the PCF for the SSF Subset Postprocessor
run_4.5-6.2P2.pl	ASCII	Perl script which executes the SSF Subset Postprocessor
cleanup_4.5-6.2P2.pl	ASCII	Perl script which removes output files from CER4.5-6.2P2
diff_4.5-6.2P2.pl	ASCII	Perl script which compares the Log files and the *.met files
list_4.5-6.2P2.pl	ASCII	Perl script which lists out the files that should be created by the run_4.5-6.2P2.csh script
compile_4.5-6.2P2.pl	ASCII	Perl script which compiles the code for the SSF Subset Postprocessor and the subset comparison software
CER4_5_6_2P2_Env.pm	ASCII	Perl program to set the environment for the SSF Subset Postprocessor
CER4_5_6_2P2_FileUtils.pm	ASCII	Perl program containing functions for determining if there are enough input files for the SSF Subset Postprocessor
CER4_5_6_2P2_PCF.pm	ASCII	Perl program that constructs a PCF object for the SSF Subset Postprocessor
CER4.5-6.2P2-Launch.pl	ASCII	Perl script which runs the PCF generator, cleans existing outputs and executes the run script.
CER4.5-6.2P2-SGE_Driver.pl	ASCII	Perl script which submits jobs to Sun Grid Engine for the SSF Subset Postprocessor

Table C.1-8. PGE CER4.5-6.2P3 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.2P3.csh	ASCII	C-Shell script which creates the ASCII and PCF for the SSF Subset Postprocessor
CER4.5-6.2P3_pcf_gen.pl	ASCII	Perl script which creates the ASCII and PCF for the SSF Subset Postprocessor
run_4.5-6.2P3.csh	ASCII	C-Shell script which executes the SSF Subset Postprocessor
run_4.5-6.2P3.pl	ASCII	Perl script which executes the SSF Subset Postprocessor
cleanup_4.5-6.2P3.csh	ASCII	C-Shell script which removes output files from CER4.5-6.2P3
cleanup_4.5-6.2P3.pl	ASCII	Perl script which removes output files from CER4.5-6.2P3
diff_4.5-6.2P3.csh	ASCII	C-Shell script which compares the Log files and the *.met files
list_4.5-6.2P3.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.2P3.csh script
compile_4.5-6.2P3.csh	ASCII	C-Shell script which compiles the code for the SSF Subset Postprocessor and the subset comparison software
CER4.5-6.2P3-Launch.pl	ASCII	Perl script which runs the PCF generator, cleans existing outputs and executes the run script.
CER4.5-6.2P3-SGE_Driver.pl	ASCII	Perl script which submits the jobs to Sun Grid Engine.

Table C.1-9. PGE CER4.5-6.2P4 Production Scripts

File Name	Format	Description
CER4.5-6.2P4-Launch.pl	ASCII	Perl script which run the PCF generator, cleans existing outputs and executes the run script for the SSF Subset Postprocessor
CER4.5-6.2P4-SGE_Driver.pl	ASCII	Perl script which submits jobs to Sun Grid Engine for the SSF Subset Postprocessor
CER4_5_6_2P4_Env.pm	ASCII	Perl program to set the environment for the SSF Subset Postprocessor
CER4_5_6_2P4_FileUtils.pm	ASCII	Perl program containing functions for determining if there are enough input files for the SSF Subset Postprocessor
CER4_5_6_2P4_PCF.pm	ASCII	Perl program that constructs a PCF object for the SSF Subset Postprocessor
list_4.5-6.2P4.pl	ASCII	Perl script which lists out the files that should be created by the run_4.5-6.2P4.csh script

Table C.1-9. PGE CER4.5-6.2P4 Production Scripts

File Name	Format	Description
compile_4.5-6.2P4.pl	ASCII	Perl script which compiles the code for the SSF Subset Postprocessor and the subset comparison software

Table C.1-10. PGE CER4.5-6.3P1 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.3P1.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Alternate Main and HDF Processors
run_4.5-6.3P1.csh	ASCII	C-Shell script which executes the Alternate Main and HDF Processors
cleanup_4.5-6.3P1.csh	ASCII	C-Shell script which removes output files from CER4.5-6.3P1
diff_4.5-6.3P1.csh	ASCII	C-Shell script which compares the Log files and the *.met files for CER4.5-6.3P1
list_4.5-6.3P1.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.3P1.csh script
compile_4.5-6.3P1.csh	ASCII	C-Shell script which compiles the code for the Alternate Main and HDF Processors and the comparison software

Table C.1-11. PGE CER4.5-6.3P2 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.3P2.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Alternate Main and HDF Processors
run_4.5-6.3P2.csh	ASCII	C-Shell script which executes the Alternate Main and HDF Processors
cleanup_4.5-6.3P2.csh	ASCII	C-Shell script which removes output files from CER4.5-6.3P2
diff_4.5-6.3P2.csh	ASCII	C-Shell script which compares the Log files and the *.met files for CER4.5-6.3P2
list_4.5-6.3P2.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.3P2csh script
compile_4.5-6.3P2.csh	ASCII	C-Shell script which compiles the code for the Alternate Main and HDF Processors and the comparison software

Table C.1-12. PGE CER4.5-6.3P3 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.3P3.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Alternate Main and HDF Processors for Aqua
run_4.5-6.3P3.csh	ASCII	C-Shell script which executes the Alternate Main and HDF Processors
cleanup_4.5-6.3P3.csh	ASCII	C-Shell script which removes output files from CER4.5-6.3P3
diff_4.5-6.3P3.csh	ASCII	C-Shell script which compares the Log files and the *.met files for CER4.5-6.3P3
list_4.5-6.3P3.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.3P3csh script
compile_4.5-6.3P3.csh	ASCII	C-Shell script which compiles the code for the Alternate Main and HDF Processors and the comparison software

Table C.1-13. PGE CER4.5-6.4P1 Production Scripts

File Name	Format	Description
CER4.5-6.4P1-Launch.pl	ASCII	Perl script which run the PCF generator, cleans existing outputs and executes the run script for the SSF monthly validation Subset processor
CER4.5-6.4P1-SGE_Driver.pl	ASCII	Perl script which submits jobs to Sun Grid Engine for the SSF monthly validation Subset processor
CER4_5_6_4P1_Env.pm	ASCII	Perl program to set the environment for the SSF monthly validation Subset processor
CER4_5_6_4P1_FileUtils.pm	ASCII	Perl program containing functions for determining if there are enough input files for the SSF monthly validation Subset processor
CER4_5_6_4P1_PCF.pm	ASCII	Perl program that constructs a PCF object for the SSF monthly validation Subset processor
pcfgen_4.5-6.4P1.pl	ASCII	Perl script which creates the ASCII and PCF for the SSF monthly validation Subset Postprocessor
run_4.5-6.4P1.pl	ASCII	Perl script which executes the SSF monthly validation Subset Postprocessor
cleanup_4.5-6.4P1.pl	ASCII	Perl script which removes output files from CER4.5-6.4P1
diff_4.5-6.4P1.pl	ASCII	Perl script which compares the Log files and the *.met files
list_4.5-6.4P1.pl	ASCII	Perl script which lists out the files that should be created by the run_4.5-6.4P1.csh script
compile_4.5-6.4P1.pl	ASCII	Perl script which compiles the code for the SSF monthly validation Subset Postprocessor and the subset comparison software

Table C.1-14. PGE CER4.5-6.4P2 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.4P2.csh	ASCII	C-Shell script which creates the ASCII and PCF for the SSF monthly validation Subset Postprocessor
pcfgen_4.5-6.4P2.pl		Perl script which creates the ASCII and PCF for the SSF monthly validation Subset Postprocessor
run_4.5-6.4P2.csh	ASCII	C-Shell script which executes the SSF monthly validation Subset Postprocessor
run_4.5-6.4P2.pl		Perl script which executes the SSF monthly validation Subset Postprocessor
cleanup_4.5-6.4P2.csh	ASCII	C-Shell script which removes output files from CER4.5-6.4P2
cleanup_4.5-6.4P2.pl		Perl script which removes output files from CER4.5-6.4P2
diff_4.5-6.4P2.csh	ASCII	C-Shell script which compares the Log files and the *.met files
list_4.5-6.4P2.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.4P2.csh script
compile_4.5-6.4P2.csh	ASCII	C-Shell script which compiles the code for the SSF monthly validation Subset Postprocessor and the subset comparison software
CER4.5-6.4P2-Launch.pl	ASCII	Perl script which runs the PCF generator, cleans existing outputs and executes the run script.
CER4.5-6.4P2-SGE_Driver.pl	ASCII	Perl script which submits the jobs to Sun Grid Engine.

Table C.1-15. PGE CER4.5-6.5P2 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.5P2.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Terra Daily Alternate Main and HDF Processors
run_4.5-6.5P2.csh	ASCII	C-Shell script which executes the Daily Alternate Main and HDF Processors
cleanup_4.5-6.5P2.csh	ASCII	C-Shell script which removes output files from CER4.5-6.5P2
diff_4.5-6.5P2.csh	ASCII	C-Shell script which compares the Log files and the *.met files for CER4.5-6.5P2
list_4.5-6.5P2.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.5P2 csh script

Table C.1-15. PGE CER4.5-6.5P2 Production Scripts

File Name	Format	Description
compile_4.5-6.5P2.csh	ASCII	C-Shell script which compiles the code for the Daily Alternate Main and HDF Processors and the comparison software

Table C.1-16. PGE CER4.5-6.5P3 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.5P3.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Aqua Daily Alternate Main and HDF Processors
run_4.5-6.5P3.csh	ASCII	C-Shell script which executes the Daily Alternate Main and HDF Processors
cleanup_4.5-6.5P3.csh	ASCII	C-Shell script which removes output files from CER4.5-6.5P3
diff_4.5-6.5P3.csh	ASCII	C-Shell script which compares the Log files and the *.met files for CER4.5-6.5P3
list_4.5-6.5P3.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.5P3 csh script
compile_4.5-6.5P3.csh	ASCII	C-Shell script which compiles the code for the Daily Alternate Main and HDF Processors and the comparison software

Table C.1-17. PGE CER4.5-6.5P4 Production Scripts

File Name	Format	Description
CER4.5-6.5P4_pcf_gen.pl	ASCII	Perl script which creates the ASCII and PCF for the Terra Daily Alternate Main and HDF Processors
CER4.5-6.5P4-Launch.pl	ASCII	Perl script which run the PCF generator, cleans existing outputs and executes the run script for the Terra Daily Alternate Main and HDF processors
CER4.5-6.5P4-SGE_Driver.pl	ASCII	Perl script which submits jobs to Sun Grid Engine for the Terra Daily Alternate Main and HDF processors
CER4_5_6_5P4_Env.pm	ASCII	Perl program to set the environment for the Terra Daily Alternate Main and HDF processors
CER4_5_6_5P4_FileUtils.pm	ASCII	Perl program containing functions for determining if there are enough input files for the Terra Daily Alternate Main and HDF processors
CER4_5_6_5P4_PCF.pm	ASCII	Perl program that constructs a PCF object for the Terra Daily Alternate Main and HDF processors

Table C.1-17. PGE CER4.5-6.5P4 Production Scripts

File Name	Format	Description
run_4.5-6.5P4.pl	ASCII	Perl script which executes the Terra Daily Alternate Main and HDF Processors
cleanup_4.5-6.5P4.pl	ASCII	Perl script which removes output files from CER4.5-6.5P4
diff_4.5-6.5P4.pl	ASCII	Perl script which compares the Log files and the *.met files for CER4.5-6.5P4
list_4.5-6.5P4.pl	ASCII	Perl script which lists out the files that should be created by the run_4.5-6.5P4 csh script
compile_4.5-6.5P4.pl	ASCII	Perl script which compiles the code for the Terra Daily Alternate Main and HDF Processors and the comparison software

Table C.1-18. PGE CER4.5-6.5P5 Production Scripts

File Name	Format	Description
CER4.5-6.5P5_pcf_gen.pl	ASCII	Perl script which creates the ASCII and PCF for the Aqua Daily Alternate Main and HDF Processors
CER4.5-6.5P5-Launch.pl	ASCII	Perl script which run the PCF generator, cleans existing outputs and executes the run script for the Daily Alternate Main and HDF processors
CER4.5-6.5P5-SGE_Driver.pl	ASCII	Perl script which submits jobs to Sun Grid Engine for the Daily Alternate Main and HDF processors
CER4_5_6_5P5_Env.pm	ASCII	Perl program to set the environment for the Daily Alternate Main and HDF processors
CER4_5_6_5P5_FileUtils.pm	ASCII	Perl program containing functions for determining if there are enough input files for the Daily Alternate Main and HDF processors
CER4_5_6_5P5_PCF.pm	ASCII	Perl program that constructs a PCF object for the Daily Alternate Main and HDF processors
run_4.5-6.5P5.pl	ASCII	Perl script which executes the Daily Alternate Main and HDF Processors
cleanup_4.5-6.5P5.pl	ASCII	Perl script which removes output files from CER4.5-6.5P5
diff_4.5-6.5P5.pl	ASCII	Perl script which compares the Log files and the *.met files for CER4.5-6.5P5
list_4.5-6.5P5.pl	ASCII	Perl script which lists out the files that should be created by the run_4.5-6.5P5 csh script
compile_4.5-6.5P5.pl	ASCII	Perl script which compiles the code for the Daily Alternate Main and HDF Processors and the comparison software

Table C.1-19. PGE CER4.5-6.6P2 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.6P2.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Aqua Daily Alternate Main and HDF Processors
run_4.5-6.6P2.csh	ASCII	C-Shell script which executes the Daily Alternate Main and HDF Processors
cleanup_4.5-6.6P2.csh	ASCII	C-Shell script which removes output files from CER4.5-6.6P2
diff_4.5-6.6P2.csh	ASCII	C-Shell script which compares the Log files and the *.met files for CER4.5-6.6P2
list_4.5-6.6P2.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.6P2 csh script
compile_4.5-6.6P2.csh	ASCII	C-Shell script which compiles the code for the Daily Alternate Main and HDF Processors and the comparison software

Table C.1-20. PGE CER4.5-6.6P3 Production Scripts

File Name	Format	Description
pcfgen_4.5-6.6P3.csh	ASCII	C-Shell script which creates the ASCII and PCF for the Aqua Daily Alternate Main and HDF Processors
run_4.5-6.6P3.csh	ASCII	C-Shell script which executes the Daily Alternate Main and HDF Processors
cleanup_4.5-6.6P3.csh	ASCII	C-Shell script which removes output files from CER4.5-6.6P3
diff_4.5-6.6P3.csh	ASCII	C-Shell script which compares the Log files and the *.met files for CER4.5-6.6P3
list_4.5-6.6P3.csh	ASCII	C-Shell script which lists out the files that should be created by the run_4.5-6.6P3 csh script
compile_4.5-6.6P3.csh	ASCII	C-Shell script which compiles the code for the Daily Alternate Main and HDF Processors and the comparison software

C.2 Executables

Table C.2-1. PGE CER4.5-6.1P1 Executables

File Name	Format	Description
invsurf_p1.exe[1]	Binary	Main Processor executable
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-2. PGE CER4.5-6.1P2 Executables

File Name	Format	Description
invsurf_p2_$CPUTYPE.exe[1]	Binary	Main Processor executable for Terra Processing
ssf2hdf_1p2_$CPUTYPE.exe[1]	Binary	HDF Post Processor executable for Terra Processing

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

Table C.2-3. PGE CER4.5-6.1P3 Executables

File Name	Format	Description
invsurf_1p3_$CPUTYPE.exe[1]	Binary	Main Processor executable for Aqua Processing
ssf2hdf_1p3_$CPUTYPE.exe[1]	Binary	HDF Post Processor executable for Aqua Processing

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

Table C.2-4. PGE CER4.5-6.1P4 Executables

File Name	Format	Description
invsurf_p4.exe[1]	Binary	Main Processor executable for Terra Edition4 Processing
ssf2hdf_p4.exe[1]	Binary	HDF Post Processor executable for Terra Edition4 Processing

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

Table C.2-5. PGE CER4.5-6.1P5 Executables

File Name	Format	Description
invsurf_p5.exe[1]	Binary	Main Processor executable for Aqua Edition4 Processing
ssf2hdf_p4.exe[1]	Binary	HDF Post Processor executable for Aqua Edition4 Processing

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

Table C.2-6. PGE CER4.5-6.2P1 Executable

File Name	Format	Description
subset_ssf.exe[1]	Binary	SSF Subset Post Processor executable

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

Table C.2-7. PGE CER4.5-6.2P2 Executable

File Name	Format	Description
subset_ssf_2p2_$CPUTYPE.exe[1]	Binary	SSF Subset Post Processor executable
ssf2hdf_2p2_$CPUTYPE.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-8. PGE CER4.5-6.2P3 Executable

File Name	Format	Description
subset_ssf_p3.exe[1]	Binary	SSF Subset Post Processor executable
ssf2hdf_p3.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-9. PGE CER4.5-6.2P4 Executable

File Name	Format	Description
subset_ssf_2p4_$CPUTYPE.exe[1]	Binary	SSF Subset Post Processor executable
ssf2hdf_2p4_$CPUTYPE.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-10. PGE CER4.5-6.3P1 Executable

File Name	Format	Description
invsurf_adm.exe[1]	Binary	Alternate Main Processor executable for TRMM
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-11. PGE CER4.5-6.3P2 and CER4.5-6.6P2 Executables

File Name	Format	Description
invsurf-3p2.exe[1]	Binary	Alternate Main Processor executable for Terra
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-12. PGE CER4.5-6.3P3 Executables

File Name	Format	Description
invsurf-3p3.exe[1]	Binary	Alternate Main Processor executable for Aqua
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-13. PGE CER4.5-6.4P1 Executables

File Name	Format	Description
monthly_val_ssf_CPUTYPE.exe[1]	Binary	Monthly validation SSF Subset Post Processor executable

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

Table C.2-14. PGE CER4.5-6.4P2 Executables

File Name	Format	Description
monthly_val_ssf.exe[1]	Binary	Monthly validation SSF Subset Post Processor executable

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

Table C.2-15. PGE CER4.5-6.5P2 Executables

File Name	Format	Description
invsurf-5p2.exe[1]	Binary	Alternate Main Processor executable for Terra
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-16. PGE CER4.5-6.5P3 Executables

File Name	Format	Description
invsurf-5p3.exe[1]	Binary	Alternate Main Processor executable for Aqua
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-17. PGE CER4.5-6.5P4 Executables

File Name	Format	Description
invsurf-5p4_$CPUTYPE.exe[1]	Binary	Alternate Main Processor executable for Terra
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-18. PGE CER4.5-6.5P5 Executables

File Name	Format	Description
invsurf-5p5_CPUTYPE.exe[1]	Binary	Alternate Main Processor executable for Aqua
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-19. PGE CER4.5-6.6P2 Executables

File Name	Format	Description
invsurf-6p2.exe[1]	Binary	Daily Alternate Main Processor executable for Terra
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

Table C.2-20. PGE CER4.5-6.6P2 Executables

File Name	Format	Description
invsurf-6p2.exe[1]	Binary	Daily Alternate Main Processor executable for Terra
ssf2hdf_p2.exe[1]	Binary	HDF Post Processor executable

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

C.3 Status Message Files

Subsystems 4.5 and 4.6 software does not create any Status Message Files.

C.4 Processing Control Files (PCF) and Metadata Control Files (MCF)

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

Table C.4-1. PGE CER4.5-6.1P1 Metadata Control Files

File Name	Format	Description
GQCA.MCF	ODL	MCF for ASCII QC Report for Main Processor
GQCI.MCF	ODL	MCF for Binary QC Report for Main Processor
SSF.MCF	ODL	MCF for SSF's HDF file for Post Processor
SSFB.MCF	ODL	MCF for Binary SSF file for Main Processor

Table C.4-2. PGEs CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4 and CER4.5-6.1P5 Metadata Control Files

File Name	Format	Description
GQCA.MCF	ODL	MCF for ASCII QC Report for Main Processor
GQCI.MCF	ODL	MCF for Binary QC Report for Main Processor
SSF.MCF	ODL	MCF for SSF's HDF file for Post Processor
SSFB.MCF	ODL	MCF for Binary SSF file for Main Processor
SSFA.MCF	ODL	MCF for Binary Aerosol file for Main Processor

Table C.4-3. PGE CER4.5-6.2P1 Metadata Control Files

File Name	Format	Description
SSFD.MCF	ODL	MCF for SSF DAYTIME Subset File
SSFN.MCF	ODL	MCF for SSF NIGHTTIME Subset File
SSFB.MCF	ODL	MCF for Binary SSF file for Main Processor
GQCA.MCF	ODL	MCF for ASCII QC Report for Main Processor
GQCI.MCF	ODL	MCF for Binary QC Report for Main Processor

Table C.4-4. PGE CER4.5-6.2P2, CER4.5-6.2P3, and CER4.5-6.2P4 Metadata Control Files

File Name	Format	Description
SSFD.MCF	ODL	MCF for SSF DAYTIME Subset File
SSFN.MCF	ODL	MCF for SSF NIGHTTIME Subset File
SSFAD.MCF	ODL	MCF for SSF DAYTIME Aerosol Subset File
SSFB.MCF	ODL	MCF for Binary SSF file for Main Processor
GQCA.MCF	ODL	MCF for ASCII QC Report for Main Processor
GQCI.MCF	ODL	MCF for Binary QC Report for Main Processor
SSF.MCF	ODL	MCF for SSF's HDF file for Post Processor
SSFB-nadir.MCF	ODL	MCF for Binary SSF nadir product for Main Processor
SSF-nadir.MCF	ODL	MCF for HDF SSF nadir product for Post Processor
SSFB-val.MCF	ODL	MCF for Binary SSF nadir product for Main Processor

Table C.4-5. PGE CER4.5-6.3P1 Metadata Control Files

File Name	Format	Description
GQCI.MCF	ODL	MCF for Binary QC Report for Main Processor
SSFB.MCF	ODL	MCF for Binary SSF file for Main Processor
SSF.MCF	ODL	MCF for SSF's HDF file for Post Processor

Table C.4-6. PGE CER4.5-6.3P2, CER4.5-6.5P2, CER4.5-6.5P4 and CER4.5-6.6P2 Metadata Control Files

File Name	Format	Description
GQCI.MCF	ODL	MCF for Binary QC Report for Alternate Processor
SSFB.MCF	ODL	MCF for Binary SSF file for Alternate Processor
SSFA.MCF	ODL	MCF for Binary SSF file for Alternate Processor
SSF.MCF	ODL	MCF for SSF's HDF file for Alternate Processor

Table C.4-7. PGE CER4.5-6.3P3, CER4.5-6.5P3, CER4.5-6.5P5 and CER4.5-6.6P3 Metadata Control Files

File Name	Format	Description
GQCI.MCF	ODL	MCF for Binary QC Report for Alternate Processor
SSFB.MCF	ODL	MCF for Binary SSF file for Alternate Processor
SSFA.MCF	ODL	MCF for Binary SSF file for Alternate Processor
SSF.MCF	ODL	MCF for SSF's HDF file for Alternate Processor

Table C.4-8. PGE CER4.5-6.4P1 and CER4.5-6.4P2 Metadata Control Files

File Name	Format	Description
SSFB-val.MCF	ODL	MCF for Binary SSF monthly validation Subset File
GQCA-val.MCF	ODL	MCF for ASCII station report.

Table C.4-9. PGE CER4.5-6.1P1 Process Control Files

File Name	Format	Description
CER4.5-6.1P1_PCF_TRMM-PFM-VIRS_SSIT_000000.1998050101[1]	ASCII	Process Control File template for Main and Post Processors
CER4.5-6.1P1_PCFin_TRMM-PFM-VIRS_SSIT_000000.1998050101[1]	ASCII	ASCII file created by the PCF file generator used to create the CER4.5-6.1P1PCF file

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

Table C.4-10. PGE CER4.5-6.1P2 Process Control Files

File Name	Format	Description
CER4.5-6.1P2_PCF_TRMM-PFM-VIRS_SSIT_000000.2001041001[1]	ASCII	Process Control File template for Main and Post Processors

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

Table C.4-11. PGE CER4.5-6.1P3 Process Control Files

File Name	Format	Description
CER4.5-6.1P3_PCF_TRMM-PFM-VIRS_SSIT_000000.2001041001[1]	ASCII	Process Control File template for Main and Post Processors

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

Table C.4-12. PGE CER4.5-6.1P4 Process Control Files

File Name	Format	Description
CER4.5-6.1P4_PCF_TRMM-PFM-VIRS_SSIT_000000.2001041001[1]	ASCII	Process Control File template for Main and Post Processors

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

Table C.4-13. PGE CER4.5-6.1P5 Process Control Files

File Name	Format	Description
CER4.5-6.1P5_PCF_TRMM-PFM-VIRS_SSIT_000000.2001041001[1]	ASCII	Process Control File template for Main and Post Processors

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

Table C.4-14. PGE CER4.5-6.2P1 Process Control Files

File Name	Format	Description
CER4.5-6.2P1_PCF_TRMM-PFM-VIRS_SSIT_000001.20000225[1]	ASCII	Process Control File template for SSF Subset Post Processors
CER4.5-6.2P1_PCFin_TRMM-PFM-VIRS_SSIT_000001.20000225[1]	ASCII	ASCII file created by the PCF file generator used to create the CER4.5-6.2P1 PCF file

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

Table C.4-15. PGE CER4.5-6.2P2 Process Control Files

File Name	Format	Description
CER4.5-6.2P2_PCF_TRMM-PFM-VIRS_SSIT_000001.20010410[1]	ASCII	Process Control File template for SSF Subset Post Processors

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

Table C.4-16. PGE CER4.5-6.2P3 Process Control Files

File Name	Format	Description
CER4.5-6.2P3_PCF_TRMM-PFM-VIRS_SSIT_000001.20010410[1]	ASCII	Process Control File template for SSF Subset Post Processors

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

Table C.4-17. PGE CER4.5-6.2P4 Process Control Files

File Name	Format	Description
CER4.5-6.2P4_PCF_TRMM-PFM-VIRS_SSIT_000001.20010410[1]	ASCII	Process Control File template for SSF Subset Post Processors

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

Table C.4-18. PGE CER4.5-6.3P1 Process Control Files

File Name	Format	Description
CER4.5-6.3P1_PCF_TRMM-PFM-VIRS_SSIT2_000001.1998050101[1]	ASCII	Process Control File template for Alternate Main and Post Processors
CER4.5-6.3P1_PCFin_TRMM-PFM-VIRS_SSIT2_000001.1998050101[1]	ASCII	ASCII file created by the PCF file generator used to create the CER4.5-6.3P1 PCF file

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

Table C.4-19. PGE CER4.5-6.3P2 Process Control Files

File Name	Format	Description
CER4.5-6.3P2_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	Process Control File template for Alternate Main and Post Processors
CER4.5-6.3P2_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	ASCII file created by the PCF file generator used to create the CER4.5-6.3P2 PCF file

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

Table C.4-20. PGE CER4.5-6.3P3 Process Control Files

File Name	Format	Description
CER4.5-6.3P3_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	Process Control File template for Alternate Main and Post Processors for Aqua
CER4.5-6.3P3_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	ASCII file created by the PCF file generator used to create the CER4.5-6.3P3 PCF file

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

Table C.4-21. PGE CER4.5-6.4P1 Process Control Files

File Name	Format	Description
CER4.5-6.4P1_PCF_Terra-FM1-MODIS_Edition1A_020021.200011[1]	ASCII	Process Control File template for monthly validation Subset Post Processors

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

Table C.4-22. PGE CER4.5-6.4P2 Process Control Files

File Name	Format	Description
CER4.5-6.4P2_PCF_Terra-FM1-MODIS_Edition1A_020021.200011[1]	ASCII	Process Control File template for monthly validation Subset Post Processors

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

Table C.4-23. PGE CER4.5-6.5P2 Process Control Files

File Name	Format	Description
CER4.5-6.5P2_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	Process Control File template for Terra Alternate Main and Post Processors

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

Table C.4-24. PGE CER4.5-6.5P3 Process Control Files

File Name	Format	Description
CER4.5-6.5P3_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	Process Control File template for Aqua Alternate Main and Post Processors

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

Table C.4-25. PGE CER4.5-6.5P4 Process Control Files

File Name	Format	Description
CER4.5-6.5P4_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	Process Control File template for Terra Alternate Main and Post Processors

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

Table C.4-26. PGE CER4.5-6.5P5 Process Control Files

File Name	Format	Description
CER4.5-6.5P5_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	Process Control File template for Aqua Alternate Main and Post Processors

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

Table C.4-27. PGE CER4.5-6.6P2 Process Control Files

File Name	Format	Description
CER4.5-6.6P2_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	Process Control File template for Alternate Main and Post Processors
CER4.5-6.6P2_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	ASCII file created by the PCF file generator used to create the CER4.5-6.6P2 PCF file

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

Table C.4-28. PGE CER4.5-6.6P3 Process Control Files

File Name	Format	Description
CER4.5-6.6P3_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	Process Control File template for Aqua Daily Alternate Main and Post Processors
CER4.5-6.6P3_PCF_Terra-FM1-MODIS_SSIT_000000.2000030100[1]	ASCII	ASCII file created by the PCF file generator used to create the CER4.5-6.6P3 PCF file

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

C.5 Ancillary Input Data

Table C.5-1. PGE CER4.5-6.1P1 Ancillary Input Data

File Name	Format	Description
IGBP_mod_all.YYYYMMDD[1]	ASCII	SW Draft ADM input file
IISCOLD.YYYYMMDD[1]	Binary	Spectral Correction Ancillary Data
ceres_SI_PFM_day.YYYYMMDD[1]	ASCII	Daytime Slope-Intercept Spectral Correction Coefficients for TRMM PFM
ceres_SI_PFM_night.YYYYMMDD[1]	ASCII	Nighttime Slope-Intercept Spectral Correction Coefficients for TRMM PFM
ceres_SI_FM1_day.YYYYMMDD[1]	ASCII	Daytime Slope-Intercept Spectral Correction Coefficients for Terra FM1
ceres_SI_FM1_night.YYYYMMDD[1]	ASCII	Nighttime Slope-Intercept Spectral Correction Coefficients for Terra FM1

Table C.5-1. PGE CER4.5-6.1P1 Ancillary Input Data

File Name	Format	Description
ceres_SI_FM2_day.YYYYMMDD[1]	ASCII	Daytime Slope-Intercept Spectral Correction Coefficients for Terra FM2
ceres_SI_FM2_night.YYYYMMDD[1]	ASCII	Nighttime Slope-Intercept Spectral Correction Coefficients for Terra FM2
adm_groups.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
adm_land_cld.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
adm_ocecld.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
admws.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
albmn_groups.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
albmn_land_cld.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
albmn_ocecld.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
albmnws_th.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
bbalbbrdf_aer_atm_allws.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
clear_snow_radiance.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
cloudy_snow_radiance.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
clr_oce_key.YYYYMMDD[1]	ASCII	SW Draft ADM Input File
erbetoa_csalb_clim.YYYYMMDD[1]	Binary	ERBE Clear-sky Albedo Table
lwwndy_bcfdes_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwndy_bcflnd_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwndy_bcfocn_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwndy_cskydes_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwndy_cskylnd_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwndy_cskyocn_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwndy_ovc_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwnnt_bcfdes_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwnnt_bcflnd_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwnnt_bcfocn_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwnnt_cskydes_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwnnt_cskylnd_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwnnt_cskyocn_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
lwwnnt_ovc_admed2.YYYYMMDD[1]	ASCII	LW and WN Draft ADMs
ws_pctil.YYYYMMDD[1]	ASCII	SW Draft ADM input file

1. YYYY - 4 digit year
   MM - 2 digit month {valid values: 01 .. 12}
   DD - 2 digit day {valid values: 01 .. 31}

Table C.5-2. PGE CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.5P2, CER4.5-6.5P3, CER4.5-6.5P4, CER4.5-6.5P5, CER4.5-6.6P2, and CER4.5-6.6P3 Ancillary Input Data

File Name	Format	Description
IGBP_mod_all.map.YYYYMMDD[2]	ASCII	Terra ADM Input File
IISCOLD.YYYYMMDD[2]	Binary	Spectral Correction Ancillary Data
match_taod_550.YYYYMMDD	Binary	
match_aerj.YYYYMMDD	Binary	
match_aerk.YYYYMMDD	Binary	
match_taod.YYYYMMDD	Binary	
match_asp.YYYYMMDD	Binary	
match_ssa.YYYYMMDD	Binary	
sorce_v11_au_ed.dat.YYYYMMDD	ASCII	SORCE TSI data
ceres_SI_PFM_day.YYYYMMDD[2]	ASCII	Daytime Slope-Intercept Spectral Correction Coefficients for TRMM PFM
ceres_SI_PFM_night.YYYYMMDD[2]	ASCII	Nighttime Slope-Intercept Spectral Correction Coefficients for TRMM PFM
ceres_SI_FM1_day.YYYYMMDD[2]	ASCII	Daytime Slope-Intercept Spectral Correction Coefficients for Terra FM1
ceres_SI_FM1_night.YYYYMMDD[2]	ASCII	Nighttime Slope-Intercept Spectral Correction Coefficients for Terra FM1
ceres_SI_FM2_day.YYYYMMDD[2]	ASCII	Daytime Slope-Intercept Spectral Correction Coefficients for Terra FM2
ceres_SI_FM2_night.YYYYMMDD[2]	ASCII	Nighttime Slope-Intercept Spectral Correction Coefficients for Terra FM2
adm_groups.dat2b.YYYYMMDD[2]	ASCII	Terra ADM Input File
adm_land_cld.dat2b.YYYYMMDD[2]	ASCII	Terra ADM Input File
admcsky_terra_lwwn.dat.YYYYMMDD[2]	ASCII	Terra ADM Input File
admcsky_terra_lwwn _dy _ed1a.dat.YYYYMMDD[2]	ASCII	Terra ADM Input File
admcsky_terra_lwwn_nt_ed1a.dat.YYYYMMDD[2]	ASCII	Terra ADM Input File
admcsky_terra_lwwn_nt.dat.YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-lw-terra-beta5-all-day.offset.YYYYMMDD[2]	ASCII	Terra ADM Input File
albmn_land_cld.out2b.YYYYMMDD[2]	ASCII	Terra ADM Input File
albmn_groups.out2b.YYYYMMDD[2]	ASCII	Terra ADM Input File

Table C.5-2. PGE CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.5P2, CER4.5-6.5P3, CER4.5-6.5P4, CER4.5-6.5P5, CER4.5-6.6P2, and CER4.5-6.6P3 Ancillary Input Data

File Name	Format	Description
ann-lw-terra-ed2-all-day.par.YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-lw-terra-ed2-all-day.offset..YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-lw-terra-ed2-all-nt.par.YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-1w-terra-ed2-all-nt.offset..YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-sw-terra-ed2-all.offset..YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-sw-terra-ed2-all.par..YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-wn-terra-ed2-all-day.offset.YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-wn-terra-ed2-all-day.par.YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-wn-terra-ed2-all-nt.offset.YYYYMMDD[2]	ASCII	Terra ADM Input File
ann-wn-terra-ed2-all-nt.par.YYYYMMDD[2]	ASCII	Terra ADM Input File
descld_lwflx_allpw.fit.YYYYMMDD[2]	Binary	Terra ADMs
descld_lwflx_nit_allpw.YYYYMMDD[2]	Binary	Terra ADM Input File
descld_lwrad_allpw.fit.YYYYMMDD[2]	Binary	Terra ADM Input File
descld_lwrad_nit_allpw.fit.YYYYMMDD[2]	Binary	Terra ADM Input File
descld_wnflx_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADM Input File
descld_wnflx_nit_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
descld_wnrad_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
descld_wnrad_nit _allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
erbetoa_csalb_clim.YYYYMMDD[2]	Binary	ERBE Clear-sky Albedo Table
fits_01.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_02.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_03.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_04.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_05.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_06.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_07.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_08.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_09.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_10.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_11.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fits_12.dat.YYYYMMDD[2]	ASCII	Terra ADMs
fresh_snow_adm.dat.YYYYMMDD[2]	ASCII	LW and WN Edition2B ADMs
fresh_snow_adm_lw.dat.YYYYMMDD[2]	ASCII	LW and WN Edition2B ADMs
fresh_snow_adm_lw_night.dat.YYYYMMDD[2]	ASCII	LW and WN Edition2B ADMs

Table C.5-2. PGE CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.5P2, CER4.5-6.5P3, CER4.5-6.5P4, CER4.5-6.5P5, CER4.5-6.6P2, and CER4.5-6.6P3 Ancillary Input Data

File Name	Format	Description
fresh_snow_adm_wn.dat.YYYYMMDD[2]	ASCII	LW and WN Edition2B ADMs
fresh_snow_adm_wn_night.dat.YYYYMMDD[2]	ASCII	LW and WN Edition2B ADMs
fuliou.dat.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld1_swflx.fit.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld1_swrad.fit.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld2_swflx.fit.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld2_swrad.fit.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld3_swflx.fit.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld3_swrad.fit.YYYYMMDD3[2]	ASCII	Terra ADMs
llndcld_lwflx_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld_lwflx_nit_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
llndcld_lwrad_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld_lwrad_nit_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
llndcld_wnflx_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld_wnflx_nit_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
llndcld_wnrad_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
lndcld_wnrad_nit_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
ocecld1_swflx.fit..YYYYMMDD[2]	ASCII	Terra ADMs
ocecld1_swrad.fit..YYYYMMDD[2]	ASCII	Terra ADMs
ocecld2_swflx.fit..YYYYMMDD[2]	ASCII	Terra ADMs
ocecld2_swrad.fit..YYYYMMDD[2]	ASCII	Terra ADMs
ocecld3_swflx.fit..YYYYMMDD[2]	ASCII	Terra ADMs
ocecld3_swrad.fit..YYYYMMDD[2]	ASCII	Terra ADMs
ocecld_lwflx_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
ocecld_lwflx_nit_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
ocecld_lwrad_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
ocecld_lwrad_nit_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
ocecld_wnflx_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
ocecld_wnflx_nit_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
ocecld_wnrad_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs
ocecld_wnrad_nit_allpw.fit.YYYYMMDD[2]	ASCII	Terra ADMs_nit
oceclr_adm_trmmterra.dat_nak.YYYYMMDD[2]	ASCII	Terra ADMs
oceclrth.dat.nak.YYYYMMDD[2]	ASCII	Terra ADMs
permanent_snow_adm.dat.YYYYMMDD[2]	ASCII	Terra ADMs

Table C.5-2. PGE CER4.5-6.1P2, CER4.5-6.1P3, CER4.5-6.1P4, CER4.5-6.1P5, CER4.5-6.3P2, CER4.5-6.3P3, CER4.5-6.5P2, CER4.5-6.5P3, CER4.5-6.5P4, CER4.5-6.5P5, CER4.5-6.6P2, and CER4.5-6.6P3 Ancillary Input Data

File Name	Format	Description
permanent_snow_adm_lw.dat.YYYYMMDD[2]	ASCII	Terra ADMs
permanent_snow_adm_lw_night.dat.YYYYMMDD[2]	ASCII	Terra ADMs
permanent_snow_adm_wn.dat.YYYYMMDD[2]	ASCII	Terra ADMs
permanent_snow_adm_wn_night.dat.YYYYMMDD[2]	ASCII	Terra ADMs
rayleigh_lim.dat.YYYYMMDD[2]	ASCII	Terra ADMs
seaice_adm.dat.YYYYMMDD[2]	ASCII	Terra ADMs
seaice_adm_lw.dat.YYYYMMDD[2]	ASCII	Terra ADMs
seaice_adm_lw_night.dat.YYYYMMDD[2]	ASCII	Terra ADMs
seaice_adm_wn.dat.YYYYMMDD[2]	ASCII	Terra ADMs
seaice_adm_wn_night.dat.YYYYMMDD[2]	ASCII	Terra ADMs

1. YYYY - 4 digit year
   MM - 2 digit month {valid values: 01 .. 12}
   DD - 2 digit day {valid values: 01 .. 31}

C.6 Output Temporary Data Files (Production Results)

Table C.6-1. Output Temporary Data Files

File Name[2]	Format	Description
$CERESHOME/inversion/data/scr/MCFWrite.temp.SS_PS_CC.YYYYMMDDHH1[1]	ASCII	Temporary file created by the Toolkit
$CERESHOME/inversion/data/scr/MCFWrite.temp.SS_PS_CC.YYYYMMDD[1]	ASCII	Temporary file created by the Toolkit

1. These files will be generated on execution of Subsystem software and are not included in the tar file.
2. YYYY - 4 digit year
   MM - 2 digit month {valid values: 01 .. 12}
   DD - 2 digit day {valid values: 01 .. 31}
   HH - 2 digit hour of the day {valid values: 00 .. 23}
   SS - Sampling Strategy
   PS - Production Strategy
   CC - Configuration Code