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

Data Management System

Operator's Manual

CERES ERBE-like Inversion to Instantaneous TOA Fluxes (Subsystem 2.0)

CER2.1P1
CER2.2P1
CER2.3P1
CER2.3P2
CER2.4P1

Release 7
Version 1

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

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
06/21/01	R3V5	271	• Added new Instrument Configuration code "CC1_2".	Secs. 2.2.2, 3.2.2, & 4.2.2
			• Updated command line options for CER2.2P1, CER2.3P1, and CER2.3P2 PCF generators.	Secs. 2.2.1, 2.2.5, 2.4.1, 3.2.1., 3.4.1, 4.2.1, & 4.4.1
			• Added exit codes, screen messages and Logfile error messages.	Secs. 2.5.1, 2.5.2, 3.5.1, 3.5.2, 4.5.1, & 4.5.2
			• Introduced ERBE S-8 data as alternate input dataset.	Secs. 2.3.2, 3.3.2, & 4.3.2
			• Updated format to comply with standards.	All
04/26/02	R3V6	341	• Added new PGE 2.4P1.	Introduction, Secs. 5.0, 3.1.3, 3.2.2, 4.1.3, & 4.2.2
			• Added new runtime parameter command line option for "spcor".	Secs. 2.2.1, 2.4.1, 3.2.1, 3.4.1, 4.2.1, & 4.4.1
			• Added input data set sections for CER2.4P1 target PGEs.	Secs. 2.3.4, 3.3.4, & 4.3.4
			• Added error messages for new PGE 2.4P1.	App. B
			• Added example of Ascii Input file for new PGE 2.4P1.	App. C
			• Adjusted capitalization of runtime parameter YYYYMMDD to yyyymmdd.	Secs. 1.6 & 2.6
			• Added PCF, PCFin, and Toolkit Log files to the Expected output file listings.	Secs. 1.6, 2.6, 3.6, 4.6, & 5.6
			• Removed /QA from Expected output file listings destination column.	Secs. 1.6, 2.6, 3.6, 4.6, & 5.6

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
04/26/02 (Cont.)	R3V6	341	• Updated format to comply with standards.	All
04/17/03	R4V1	432	• Added new Exit codes for PGE 2.4P1. • Added new Screen Messages for execution of CER2.4P1. • Added new output files produced in PGE 2.4P1. • Added references to new PGE CER3.2P2. • Updated format to comply with standards.	Table 5-3 Table 5-4 Table 5-5 Table 2-2 All
12/08/03	R4V2	484	• Added production strategy to all output files created by the spectral response function trending software in CER2.4P1 processing. • Updated format to comply with standards.	Table 5-5, App. C All
09/30/09	R5V1	726	• Updated with new directory structure. • Removed Appendix C – Sample ASCII (PCFin) File Listing since PCFin files are no longer required.	Sec. 1.0 App. C
09/30/09	R5V2	727	• Copied R4V2-484 CER2.1P1 for SGI operations. • Added CER2.4P1 instructions for new directory structure to *magneto* and added new command line field for Edition3 CER2.4P1 inputs. • Removed old Sections 1.0 and 6.0 as they pertained to *warlock*. (12/11/09)	Sec. 1.0 Sec. 7.0 Secs. 1.0 & 6.0
10/28/09	R5V3	734	• Added CER2.2P1 instructions for new directory structure to *magneto* and added new command line field for Edition3 CER2.2P1 inputs. • Added CER2.3P1 instructions for new directory structure to *magneto* and added new command line field for Edition3 CER2.3P1 inputs. • Added CER2.3P2 instructions for new directory structure to *magneto* and added new command line field for Edition3 CER2.3P2 inputs. • Removed /QA from expected output file listings destination column. (05/26/2010)	Sec. 2.0 Sec. 3.0 Sec. 4.0 Tables 1-6 & 5-5
09/09/10	R5V4	806	• Modified script names. • In the "Frequency" column, "day" was replaced with "month" and the "SCCtrend" files were removed. (09/08/2010)	Secs. 5.4.2, 5.4.4, & 5.5.3 Table 5-5

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SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
09/09/10 (Cont.)	R5V4	806	• In the "File Name" column, the number "15" replaced "dd." (09/08/2010)	Table 5-6
			• Added "Available Through Ordering Tool" column and removed red "meta" from expected output tables. (09/13/2010)	All Expected Output Tables
			• Modified "yyyy, mm, dd" to read "yyyy, mm, (dd=15)". 11/16/2010	Secs. 3.3.4 & 4.3.4
11/25/09	R6V1	740	• Modified script/executable names for *AMI*.	All
			• Updated with new *AMI* directory structure.	
			• Added SGE scripts.	
			• Updated PS1 environment variable to PS1_0 on *AMI*.	
			• Added /yyyy/mm to the CQCR output filename. (09/14/2011)	Table 1-6
			• Removed SAT, IMAG, and INST parameters. (09/19/2011)	Sec. 1.2.2
			• Removed IMAG parameter. (09/19/2011)	Sec. 5.2.2
			• Modified and added parameters. (09/30/2011)	Secs. 2.2.2, 3.2.2, & 4.2.2
			• Added parameters. (10/11/2011)	Secs. 1.2.2 & 5.2.2
			• Added "Web" to the destination columns of the output file listing tables. (10/13/2011)	Tables 2-6, 3-6, & 4-6
			• Modified a link and document title name. (04/10/2012)	References
09/21/11	R7V1	867	• Updated scripts for *x86* operations.	All
			• Updated exit codes/messages to the new CERES-wide standard, eliminated use of './' to run scripts, and added listing of SGE Driver optional parameters and typical examples of use.	Tables 1-4, 1-5, 2-4, 2-5, 3-4, 3-5, 4-4, 4-5, 5-3, & 5-4
			• Eliminated inversion runtime parameters options no longer available in updated scripts.	Secs. 2.2.1, 2.2.5, 3.2.1, 4.2.1, Tables 2-3, 3-3, & 4-3
			• Added new ES8G product (DPO version of gif plots) files to expected output listing for CER2.2P1.	Table 2-6
			• Removed ./ and / from commanding statements. (07/11/2012)	Secs. 1.4 & 5.4, Tables 1-5 & 5-4

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SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
09/21/11 (Cont'd)	R7V1	867	• Added SGE driver examples, and replaced "–" with "--" in Driver statement. (07/11/2012)	Sec. 5.4
			• Corrected clean option. (07/11/2012)	Sec. 1.4
			• Added .summary file and sge_log and updated Log files destination to expected output files listings for all PGEs. (10/31/2012)	Tables 1-6, 2-6, 3-6, 4-6 & 5-5
			• Changed 'Remove' to 'Do not remove' for File Disposition (part d) of CER2.1P1 input file (i.e., daily NSIDC data) section. (11/01/2012)	Sec. 1.3.1
			• Added ' rm' to ES8N 'Destination' . (11/01/2012)	Table 2-6
			• Removed alternate to PRES8 input section (i.e., S-8 from ERBE) and references to it (in previous section) for 2.2P1, 2.3P1, and 2.3P2. (11/01/2012)	Secs. 2.3.1, 2.3.2, 3.3.1, 3.3.2, 4.3.1, 4.3.2

Preface

The Clouds and the Earth's Radiant Energy System (CERES) Data Management System 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 Data Management System consists of 12 subsystems; each subsystem represents one or more stand-alone executable programs. Each subsystem executes when all of its required input data sets are available and produces one or more archival science products.

This Operator's Manual is written for the data processing operations staff at the Langley ASDC by the Data Management Team responsible for this Subsystem. Each volume describes all Product Generation Executables for a particular subsystem and contains the Runtime Parameters, Production Request Parameters, the required inputs, the steps used to execute, and the expected outputs for each executable included within this Subsystem. In addition, all subsystem error messages and subsequent actions required by the ASDC operations staff are included.

Acknowledgment is given to the CERES Documentation Team for their support in preparing this document.

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Introduction

CERES is a key component of EOS and NPP. The first CERES instrument (PFM) flew on TRMM, four instruments are currently operating on the EOS Terra (FM1 and FM2) and Aqua (FM3 and FM4) platforms, and NPP (FM5) platform. CERES measures radiances in three broadband channels: a shortwave channel (0.3 - 5 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.

Document Overview

This document, *CERES ERBE-like Inversion to Instantaneous TOA Fluxes (Subsystem 2.0) Operator's Manual*, is part of the Release 3 CERES Subsystem 2.0 and 3.0 package provided to the Langley Atmospheric Science Data Center (ASDC). It provides a description of the CERES ERBE-like Subsystem 2.0 Release 3 software and explains the procedures for executing the software. A description of Acronyms and Abbreviations is provided in Appendix A, and a list of PGE generated Error Messages is contained in Appendix B.

This document is organized as follows:

Introduction
Document Overview
Subsystem Overview

1.0 PGEName: CER2.1P1 - CERES ERBE-like Monthly Geo-Scene and Snow Map, and Longwave and Albedo Thresholds.
2.0 PGEName: CER2.2P1 - CERES ERBE-like Daily Inversion for a Single Instrument.
3.0 PGEName: CER2.3P1 - CERES ERBE-like Monthly Inversion for the First Day of the Next Month.
4.0 PGEName: CER2.3P2 - CERES ERBE-like Monthly Inversion for the Last Day of the Previous Month.
5.0 PGEName: CER2.4P1 - CERES ERBE-like Spectral Response Functions and Correction Coefficients.
References
Appendix A - Acronyms and Abbreviations
Appendix B - Error Messages

Subsystem Overview

The ERBE-like software is divided into two subsystems; Subsystem 2.0 - ERBE-like Inversion, which processes daily data, and Subsystem 3.0 - ERBE-like Monthly Averaging, which processes once a month. The ERBE-like Subsystems 2.0 and 3.0 come from the ERBE Subsystems V and VI. Details concerning the conversion process from the ERBE to the CERES ERBE-like code may be found in the CERES Software Requirement Documents for Subsystem 2.0 and 3.0 (Reference 1).

Subsystem 2.0 (ERBE-like Inversion)

The ERBE-like Inversion Subsystem calculates estimates of the radiant flux at the top-of-atmosphere (TOA) based on satellite altitude data from the Instrument Subsystem (1.0). This inversion process is dependent on several factors, including Earth surface features; the extent of cloudiness; and the relative geometry of the spacecraft, the Sun, and the measurement field-of-view (FOV). Each radiometric measurement is spectrally corrected to give an unfiltered measurement. The observed scene is determined by the ERBE scene identification algorithm based on these unfiltered measurements using angular distribution models and statistics provided by the CERES Science Team. Estimates of the radiant flux at the TOA are computed based on scene information, geometrical considerations, and the unfiltered measurements.

PGE CER2.1P1 generates a binary input file containing geo-scene types (including snow cover) and albedo and longwave threshold values used by the other ERBE-like Subsystem 2.0 PGEs. This PGE also generates geo-scene maps as color postscript files and as gif files for display over the Web.

PGE CER2.2P1 is the ERBE-like daily inversion main-processor. The binary ES-8 and EID-6 files and the ES-8 HDF-EOS archival product are produced. This PGE also generates monthly QC and ES-8 GIF files to support the ERBE-like Web applications.

PGEs CER2.3P1 and CER2.3P2 are used to process overlap data for a data month. CER2.3P1 processes data that are collected on the first day of a month but belong to the last day of the previous month. CER2.3P2 processes data that are collected on the last day of a month but belong to the first day of the next month.

PGE CER2.4P1 generates the Spectral Correction Coefficient day and night files containing the spectral response and spectral correction coefficients values used by the ERBE-like Subsystem 2.0 PGEs; CER2.2P1, CER2.3P1, and CER2.3P2.

The following table contains each PGE with its execution frequency, PGE dependencies (input requirements), target PGEs, and a short description.

ERBE-like (Subsystems 2.0 and 3.0) Processing (FAPS+RAPS) Overview

PGE	Freq.	PGE Dependencies	Target PGEs	Description
CER2.1P1	1/month	Ingest Data	CER2.2P1 CER2.3P1 CER2.3P2	This PGE is run after the end of the data month after all ingest data have arrived.
CER2.2P1	1/day (Quick Look, validation)	CER1.2P1	N/A	This PGE is processed three times, the first time with composite snow. The output is viewed and deleted after the PGE is processed a second time with actual snow, see next item.
CER2.2P1	1/day (Baseline, validation)	CER1.2P1 CER2.1P1	N/A	This PGE is processed a second time after the end of the data month with actual snow (output from 2.1P1). The output is used in spectral response function analysis, see next item.
CER2.2P1	1/day (for archival)	CER1.2P1 CER2.1P1 CER2.4P1	CER3.1P1	This PGE is processed a third time after the processing of the spectral correction coefficients. Actual snow (output from 2.1P1) and updated spectral correction coefficients (output from 2.4P1). Output from this process will be input to Subsystem 3.0.
CER2.3P1	1/month	CER1.2P1 CER2.1P1 CER2.4P1	CER3.1P1	This PGE creates an overlap data file from the first day of the next month. Actual snow of the current month and updated spectral correction coefficients of the current month are used. Ancillary input must be the same as used for the second processing of CER2.2P1.
CER2.3P2	1/month	CER1.2P1 CER2.1P1 CER2.4P1	CER3.1P1	This PGE creates an overlap data file from the last day of the previous month. Actual snow of the current month and updated spectral correction coefficients of the current month are used. Ancillary input must be the same as used for the second processing of CER2.2P1.

ERBE-like (Subsystems 2.0 and 3.0) Processing (FAPS+RAPS) Overview

PGE	Freq.	PGE Dependencies	Target PGEs	Description
CER2.4P1	1/day	CER1.3P2	CER2.2P1 CER2.3P1 CER2.3P2 CER4.5-6.1P2	This PGE creates the spectral response and spectral correction coefficient values for the inversion process.
Note: From this point on, the processors are considered as part of the Subsystem 3.0 process scenario.				
CER3.1P1	1/month	CER2.2P1 CER2.3P1 CER2.3P2	CER3.2P1	Monthly Averaging. This PGE creates archival products ES-4 and ES-9.
CER3.2P1	1/month	CER3.1P1	N/A	Multi-Instrument Monthly Averaging. This PGE creates archival products ES-4 and ES-9.

Seven Product Generation Executives (PGEs) are used to run the ERBE-like software (Subsystems 2.0 and 3.0). This Operator's Manual describes the Subsystem 2.0 PGE procedures. The *CERES ERBE-like Averaging to Monthly TOA Fluxes (Subsystem 3.0) Operator's Manual* (Reference 2) is also available.

1.0 PGEName: CER2.1P1

CERES ERBE-like Monthly Geo-Scene and Snow Map, and Longwave and Albedo Thresholds

1.1 PGE Details

1.1.1 Responsible Persons

Table 1-1. Subsystem Software Analysts Contacts for CER2.1P1

Item	Primary	Alternate
Contact Name	Dale Walikainen	Jeremie Lande
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1692	951-1916
Fax	951-1900	951-1900
LaRC email	Dale.R.Walikainen@nasa.gov	Jeremie.Lande-1@nasa.gov

1.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 1-1.

1.1.3 Parent PGE(s)

A parent PGE generates data for input to the current PGE, CER2.1P1. PGE CER2.1P1 is only dependent on outside data sources and has no parent PGE(s).

1.1.4 Target PGE(s)

A target PGE requires input data generated from the current PGE, CER2.1P1.

Table 1-2. Target PGEs after CER2.1P1

PGEName	Description
CER2.2P1	CERES ERBE-like Daily Inversion to Instantaneous TOA Fluxes Main-Processor for FAPS+RAPS data for a Single Instrument.
CER2.3P1	CERES ERBE-like Monthly Inversion to Instantaneous TOA Fluxes Overlap-Processor for FAPS+RAPS data for a Single Instrument for the First Day of the Next Month.
CER2.3P2	CERES ERBE-like Monthly Inversion to Instantaneous TOA Fluxes Overlap-Processor for FAPS+RAPS data for a Single Instrument for the Last Day of the Previous Month.

1.2 Operating Environment

1.2.1 Runtime Parameters (List all dynamic parameters needed at runtime.)

Table 1-3. Runtime Parameters for CER2.1P1

Parameter[a]	Description	Valid Values
yyyy	4-digit CERDataDateYear	>= 1984
mm	2-digit CERDataDateMonth	01 .. 12

a. All character strings.

1.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 3) for a detailed description of the CERES environment parameters. For the current values of the Sampling Strategy and Production Strategy variables listed below, see "CERES DMT to DAAC Processing Requests." (URL: http://ceres.larc.nasa.gov/dmt2daac.php)

One environment script is required. It is named '**ENVerbelike-env.csh**' and contains the following parameters:

SS2_1 - Sampling Strategy for CER2.1P1, see Production Request (Reference 4)
PS2_1 - Production Strategy for CER2.1P1, see Production Request (Reference 4)
CC2_1 - Configuration Code for CER2.1P1, see CM Database
SW2 - Software SCCR number for CER2.1P1, see CM Database
DATA2 - Data SCCR number for CER2.1P1, see CM Database

1.2.3 Execution Frequency (daily, hourly, or monthly)

monthly (1/month) - This PGE is to be processed once per month, when input is available.

1.2.4 Memory/Disk Space/Time Requirements

Memory: 97.5 MB
Disk Space: 0.51 MB
Total Run Time: 0:42 minutes

1.2.5 Restrictions Imposed in Processing Order

PGE CER2.1P1 requires that the number of missing daily input files for the data month is no more than 10. If the required number of input files are not available, contact the Subsystem software analysts from Table 1-1.

1.3 Processor Dependencies (Previous PGEs, Ingest Data)

Note: Include all required inputs such as .met files, header files, etc.

1.3.1 Input Dataset Name (#1): NISE_SSMISF17

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

   /ASDC_archive/NCEP/NSIDC/yyyy/NISE_SSMISF17_yyyymmdd.HDFEOS

   Where yyyy and mm are described in Table 1-3 and dd ranges from 01 to 31.

   1. Mandatory/Optional: **Mandatory. The maximum number of missing files is 10 in a data month.**
   2. Time Related Dependency: **The data date must match the runtime parameters: yyyy, mm.**
   3. Waiting Period: **Run PGE when data for the data month are available, if the minimum requirement is satisfied. (Typically, satisfying this requirement will take approximately 10 days after the end of the data month.)**

b. Source of Information (Source PGE name or Ingest Source):

   Ingest Source - National Snow and Ice Data Center (NSIDC).

c. Alternate Data Set, if one exists (maximum waiting period): **None.**

d. File Disposition after successful execution: **Do not remove.**

e. Typical file size (MB): **2.1**

1.4 Operating Procedures (Procedure for each part of the processor's elements)

The production script, **CER2.1P1**, references a Process Control File (PCF) which contains the file names and paths for the PGE. This PCF is created by first sourcing the ERBE-like-specific environment script, **ENVerbelike-env.csh**, then executing an ASCII file and PCF generator, **gen_pcf.CER2.1P1**.

1.4.1 How to Generate the ASCII File and PCF

The ASCII file and PCF generator requires one command-line argument: data date (yyyymm) (see Table 1-3).

At the command-line (>) type in **$CERESHOME/erbelike/CER2.1P1/rcf** :

```
> clr_dir.PGE2.1 yyyymm
> CER2.1P1_gen_pcf.pl yyyymm
```

The following files are generated and located in **$CERESHOME/erbelike/CER2.1P1/rcf/pcf/**:

```
CER2.1P1_PCF_$SS2_1_$PS2_1_$CC2_1.yyyymm
CER2.1P1_PCF_$SS2_1_$PS2_1_$CC2_1.yyyymm.log
```

1.4.2 How to Execute the Main-Processor

Clear the output directories of files previously generated from this PGE by executing script, **clr_dir.PGE2.1**, with the runtime parameter data date. Before running the program, make sure the executable, **gen_snow.exe**, is in the **$CERESHOME/erbelike/bin** directory. Execute the production script by typing the script name, **CER2.1P1**, followed by a string which designates the instance of the data. The string should be formatted, "Sampling Strategy"_"Production Strategy"_"Configuration Code"."DataDate". The date parameter is formatted, yyyymm, where yyyy is the data year and mm is the data month (see Table 1-3).

At the command-line (>) type:

> CER2.1P1_run.pl $SS2_1_$PS2_1_$CC2_1.yyyymm

For SGE: (Note the PCF is generated with the SGE_Driver script below.)

> clr_dir.PGE2.1 yyyymm
>CER2.1P1-SGE_Driver.pl –d yyyymm

There are several options for running the SGE driver:

[-help]	**Display this help message.**
[-clean]	**Delete any existing outputs that are encountered..**
[-p CPU]	**Run the PGE on the platform designated by CPU (i.e., *p6* or *x86*).**
[-d YYYYMM]	**Run the PGE on the data month specified by YYYYMM.**
[-start YYYYMM]	**Run the PGE starting on the data month specfied by YYYYMM.**
[-end YYYYMM]	**Run the PGE stopping on the data month specified by YYYYMM.**

Examples of most likely used options:

(running consecutive months)

>CER2.1P1-SGE_Driver.pl –start 201109 –end 201112

(running on *p6*)

>CER2.1P1-SGE_Driver.pl –d 201109 –p p6

(running on an *x86*)

>CER2.1P1-SGE_Driver.pl –d 201109 –p x86

1.4.3 Special Case Considerations

N/A, at this time. Special case considerations will be handled on a case-by-case basis, where instructions will accompany each special request.

1.4.4 Special Reprocessing Instructions

1. All output files are opened with Status = NEW in the CER2.1P1 software. These files must be removed before rerunning these procedures. A script, which removes PGE created files, **clr_dir.PGE2.1**, is located in directory **$CERESHOME/erbelike/CER2.1P1/rcf**. Using data date as a command line argument:

   > clr_dir.PGE2.1 yyyymm

2. See reprocessing requirements in "CERES DMT to DAAC Processing Requests" available on the Web at: http://ceres.larc.nasa.gov/docs.php .

1.5 Execution Evaluation

1.5.1 Exit Codes

The processor CER2.1P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 1-4. Other exit codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person for assistance (see Table 1-1).

Table 1-4. Exit Codes for CER2.1P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
152	Fatal	Rerun with appropriate date. Error message should include an example.
198	Fatal	"PCF: CER2.1P1_PCF_$SS2_1_$PS2_1_$CC2_1.yyyymm DoesNOT exist" Inform the primary contact in Table 1-1.
200	Fatal	Check the Log files, inform the primary contact from Table 1-1, and take the appropriate action (see Appendix B).

1.5.2 Screen Messages (Use Table format for large number of messages)

Table 1-5. Screen Messages for Execution of CER2.1P1

Message	Definition/Action
Cannot access <filename>: No such file or directory	From the clear directory script, clr_dir.PGE2.1, as a part of the Main-Processor. This message occurs when the script tries to remove an old output file that does not exist. Proceed normally.
___ error___ Check Command Line Arguments(s) <-Example Call-> CER2.1P1_gen_pcf.pl 200908 Exit Code = 152	The pcf generator requires YYYYMM as an argument.
PCF: CER2.1P1_PCF_$SS2_1_$PS2_1_$CC2_1.yyyymm DoesNOT exist Exit Code = 198	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.1P1 ___ error___ PCF file generation ___ error___ non-zero status for CER2.1P1_gen_snow_$ENV{'CPUTYPE'}.exe "Exit code = 200	From running the production script, CER2.1P1, this message written to the screen signifies a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).

1.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in the directory: **$CERESHOME/erbelike/data/runlogs/CER2.1P1**.

1.5.3.1 Report Log File: CER2.1P1_LogReport_$SS2_1_$PS2_1_$CC2_1.yyyymm

The Report Log File contains the PGE CER2.1P1 generated messages. These messages may be strictly informative (Error Type = Status or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal). A list of these messages is contained in Appendix B.

1.5.3.2 Status Log File: CER2.1P1_LogStatus_$SS2_1_$PS2_1_$CC2_1.yyyymm

The Status Log File contains all messages created by the Toolkit. If an abnormal exit is encountered by the PGE, this file should be examined for '_F_', fatal message type. The responsible person should be advised (see Table 1-1).

1.5.3.3 User Log File: CER2.1P1_LogUser_$SS2_1_$PS2_1_$CC2_1.yyyymm

The User Log File is not used at this time, but exists to satisfy the Toolkit requirements. Typically the '_U_' and '_N_' (User information and Notice) will be written to the User Log File and the Status Log File.

1.5.4 Solutions to Possible Problems

If problems occur, consult the primary contact in Table 1-1.

1.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

All output files are opened with status "NEW". If files exist, the program will terminate.

b. Target PGE Termination

If more than 10 days of snow data are not available for the data month, the program will terminate and the target PGEs should not run. Target PGEs should not be processed in instances of PGE failure and/or non-zero exit codes.

1.6 Expected Output Dataset(s)

(Note: Include all expected Web files.)
The expected output datasets are listed below for each instance of the PGE. This PGE is expected to run once per month.

Table 1-6. Expected Output File Listing for CER2.1P1

File Name[a]/Directory	m/o	File Size (MB)	Freq/PGE	Target PGE	Destination[b]	Available Through Ordering Tool
CER2.1P1_PCF_$SS2_1_$PS2_1_$CC2_1.yyyymm @($CERESHOME/erbelike/CER2.1P1/rcf/pcf)	m	0.012	1/month	N/A	Archive rm	No
CER2.1P1_PCF_$SS2_1_$PS2_1_$CC2_1.yyyymm.log @($CERESHOME/erbelike/CER2.1P1/rcf/pcf)	m	0.004	1/month	N/A	Archive rm	No
CER2.1P1_$SS2_$PS2_$CC2.yyyymm.summary or CER2.1P1_$SS2_$PS2_$CC2.y1m1-y2m2.summary @($CERESHOME/erbelike/CER2.1P1/rcf/pcf/summary)	o	0.002	1/run	N/A	No Archive rm	No
CER2.1P1_LogReport_$SS2_1_$PS2_1_$CC2_1.yyyymm @($CERESHOME/erbelike/runlogs/CER2.1P1)	m	0.001	1/month	N/A	No Archive rm	No
CER2.1P1_LogStatus_$SS2_1_$PS2_1_$CC2_1.yyyymm @($CERESHOME/erbelike/runlogs/CER2.1P1)	m	0.003	1/month	N/A	No Archive rm	No
CER2.1P1_LogUser_$SS2_1_$PS2_1_$CC2_1.yyyymm @($CERESHOME/erbelike/runlogs/CER2.1P1)	m	0.001	1/month	N/A	No Archive rm	No
CER2.1P1_$SS2_$PS2_$CC2.yyyymmdd.o# @($CERESHOME/erbelike/sge_logs/CER2.1P1)	o		1/month	N/A	Archive rm	No
CER_SNOW_$SS2_1_$PS2_1_$CC2_1.yyyymm (.met) @($CERESHOME/erbelike/data/CERES/SNOW/ CERES_NSIDC/yyyy/mm)	m	0.031	1/month	CER2.2P1 CER2.3P1 CER2.3P2	Archive	No
CER_CQCR_$SS2_1_$PS2_1_$CC2_1.yyyymm (.met) @($CERESHOME/erbelike/data/CERES/CQCR/yyyy/mm)	m	0.019	1/month	N/A	Archive rm	No
CERESweb_yyyymm.map @($CERESHOME/erbelike/web/CER2.1P1/CERESweb)	o	0.011	1/month	N/A	permanent, No Archive	No
CERESfmt_yyyymm.map @($CERESHOME/erbelike/web/CER2.1P1/CERESfmt)	o	0.013	1/month	N/A	permanent, No Archive	No

a. See Section 1.2 for information on variable data values.
If "(.met)" is written next to an expected output filename, then the metadata file with the identical filename and .met extension must exist.

b. Note:
- # - SGE job number, generated upon job submission
- rm - remove
- yyyy - 4-digit year (See Runtime Parameters Table 1-3)
- mm - 2-digit month {valid values: 01 .. 12} (See Runtime Parameters Table 1-3)
- m - mandatory output
- o - optional output

1.7 Expected Temporary Files/Directories

Table 1-7. Temporary Files Listing for CER2.1P1

Directory[a]	File Name
$CERESHOME/erbelike/CER2.1P1/data/scr/ CER2.1P1_$SS2_1_$PS2_1_$CC2_1.yyyymm	TempENV.dat
$CERESHOME/erbelike/CER2.1P1/data/scr/ CER2.1P1_$SS2_1_$PS2_1_$CC2_1.yyyymm	TempSNOW.ps
$CERESHOME/erbelike/CER2.1P1/data/scr/ CER2.1P1_$SS2_1_$PS2_1_$CC2_1.yyyymm	Mail_2.1p1.txt

a. See Section 1.2 for information on variable data values.

2.0 PGEName: CER2.2P1

CERES ERBE-like Daily Inversion for a Single Instrument.

2.1 PGE Details

2.1.1 Responsible Persons

See Table 1-1, Subsystem Software Analysts Contacts.

2.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 1-1.

2.1.3 Parent PGE(s)

A parent PGE generates data for input to the current PGE, CER2.2P1.

Table 2-1. Parent PGEs for CER2.2P1

PGEName	Description
CER1.2P1	CERES BDS to Pre-ES8 conversion post-processor.
CER2.1P1	CERES ERBE-like Monthly Geo-Scene and Snow Map, and Longwave Flux and Albedo Thresholds.
CER2.4P1	CERES ERBE-like Spectral Response Functions and Correction Coefficients.

2.1.4 Target PGE(s)

A target PGE requires input data generated from the current PGE, CER2.2P1.

Table 2-2. Target PGEs after CER2.2P1

PGEName	Description
CER3.1P1	CERES ERBE-like Monthly TOA Flux Averaging Main-Processor for FAPS+RAPS data for a Single Instrument.

2.2 Operating Environment

2.2.1 Runtime Parameters (List all dynamic parameters needed at runtime.)

Table 2-3. Runtime Parameters for CER2.2P1

Parameter[a]	Description	Valid Values
yyyy	4-digit CERDataDateYear	>= 1984
mm	2-digit CERDataDateMonth	01 .. 12
dd	2-digit CERDataDateDay	01 .. 31
snow	Type of input snow file "Actual" or "Composite"	"A" or "C"
adm	Original Angular Directional Model structure	"F"
spcor	Slope Intercept Spectral Correction Algorithm, or Instrument Team's modified input for the Slope Intercept Spectral Correction Algorithm.	"N" or "M"
swoff	Type of SW Offset: "Thermal", "No offsets", or "Edition3 corrections"	"T", "Z", or "K"

a. All character strings.

2.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 3) for a detailed description of the CERES environment parameters. For the current values of the Sampling Strategy and Production Strategy variables listed below, see "CERES DMT to DAAC Processing Requests." (URL: http://ceres.larc.nasa.gov/dmt2daac.php)

One environment script is required and should contain the following parameters:

SS1 - Sampling Strategy for CER1.2P1, see Production Request (Reference 4)
SS2_1 - Sampling Strategy for CER2.1P1, see Production Request (Reference 4)
SS2 - Sampling Strategy for CER2.2P1, see Production Request (Reference 4)
PS1_0 - Production Strategy for CER1.2P1, see Production Request (Reference 4)
PS2_1 - Production Strategy for CER2.1P1, see Production Request (Reference 4)
PS2_4 - Production Strategy for CER2.4P1, see Production Request (Reference 4)
PS2 - Production Strategy for CER2.2P1, see Production Request (Reference 4)
CC1_2 - Configuration Code for CER1.2P1, see CM Database
CC2_1 - Configuration Code for CER2.1P1, see CM Database
CC2_4 - Configuration Code for CER2.4P1, see CM Database
CC2 - Configuration Code for CER2.2P1, see CM Database
SW2 - Software SCCR number for CER2.2P1, see CM Database
DATA2 - Data SCCR number for CER2.2P1, see CM Database
SAT - Satellite, see Production Request (Reference 4)
INST - Instrument, see Production Request (Reference 4)

PROD - Production mode, optional since 'Yes' by default (read PRES8 input from DPO)
PGE - PGE name, optional and set to 'CER2.2P1'
ERBELIKEHOME - erbelike parent directory, same as CERESHOME
InputArchive - location of ASDC DPO, by default set to '/ASDC_archive'
PLOTES8 - optional since set to 'Yes' by default (anything else skips plot_es8)

2.2.3 Execution Frequency (daily, hourly, or monthly)

Daily (1/day) - This PGE is to be processed once per data day, following the guidelines described in Section 2.2.5, Restrictions Imposed in Processing Order.

2.2.4 Memory/Disk Space/Time Requirements

Memory: 546 MB
Disk Space: 800 MB
Total Run Time: 5 minutes

2.2.5 Restrictions Imposed in Processing Order

PGE CER2.2P1 will be executed three times for each data day. It will be run first with "composite snow" for validation processing. This processing is performed to get a quick-look at the data for validation purposes before the actual snow data for the month is available. When the actual snow data becomes available, the month is rerun using the actual snow data. When the spectral response function and correction coefficient input data becomes available, the month is rerun again using the spectral response function and correction coefficient data. The operating procedures in Section 2.4.1 and Section 2.4.2 will be used for processing with either set of snow data and either set of spectral response function and correction coefficient input data.

Composite Snow Processing:

The CERES Science Team has requested this process be run daily with the appropriate composite snow ancillary file, 'SNOW_COMPOSITE_mm.19980130[1]', as soon as CER1.2P1 is run and a new preES-8 file is created. The value of the runtime parameter 'snow' is set to "C", and the Production Strategy (PS2) is set to include the annotation 'QC', which will be reflected in the output file names. There is no target PGE for this process. The output files from Composite Snow Processing are used for validation purposes only and are deleted as soon as Actual Snow Processing is completed for the entire data month.

Actual Snow Processing:

PGE CER2.1P1 must generate the actual snow data for the current data month (see input requirement Section 2.3.3) prior to this process. The value of the runtime parameter 'snow' is set to "A", and the Production Strategy (PS2) is unchanged from the value initially set in the environment script (Section 2.2.2). Once Actual Snow Processing is run daily for the entire month of data, the output files from Composite Snow Processing are deleted. The target PGE is CER3.1P1.

1. mm = 01 .. 12 for each data month, and
   19980130 = the generation date of the ancillary file.

Angular Direction Model Processing:

The value of the runtime parameter 'adm' is set to "F" to process the original ADM structure currently run in CERES data processing.

Spectral Correction Algorithm Processing:

The value of the runtime parameter 'spcor' is set to "N" to process the Slope Intercept Spectral Correction Algorithm currently run in CERES data processing. The value of the runtime parameter 'spcor' is set to "M" to process the monthly Slope Intercept Spectral Correction Algorithm using monthly Spectral Response Function and Correction Coefficient Files generated by PGE CER2.4P1. The monthly file is represented by the daily Spectral Response Function and Correction Coefficient file for the 15th of the runtime parameter 'mm'.

Offset Processing:

The value of the runtime parameter 'swoff' is set to "T" to apply the thermal offset applied the Slope Intercept Spectral Correction Algorithm currently run in CERES data processing. The value of the runtime parameter 'swoff' is set to "Z" to not apply any SW offsets. "K" applies Edition3 SW thermal corrections and iso-radiometric factors which apply to LW flux day and night, WN radiance and SW flux. These iso-radiometric factors force FM2 to have the same average all-sky fluxes as FM1 at the beginning of the mission (March 2000). Aqua will have its beginning of mission fluxes (July 2002) equal to FM1's (July 2002) averages.

2.3 Processor Dependencies (Previous PGEs, Ingest Data)

None. Process when Input Data are available.

2.3.1 Input Dataset Name (#1): preES-8

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

   $InputArchive/CERES/PRES8/$SS1_$PS1_0/yyyy/mm/CER_PRES8_$SS1_$PS1_0_$CC1_2.yyyymmdd

   1. Mandatory/Optional: **This file is mandatory.**
   2. Time Related Dependency: **The data date must match the runtime parameters: yyyy, mm, dd.**
   3. Waiting Period: **None, process when all input data are available (see Section** 2.2.5).

b. Source of Information (Source is PGE name or Ingest Source):

   Source PGE: CER1.2P1

c. Alternate Data Set, if one exists (maximum waiting period): **None.**

d. File Disposition after successful execution: **Do not remove until monthly processing (Subsystem 3.0) is complete. The file for "<u>the last day of the month</u>" cannot be removed until the monthly processing of the following month is complete.**

e. Typical file size (MB): **283**

2.3.2 Input Dataset Name (#2): SNOW

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/erbelike/data/CERES/SNOW/CERES_NSIDC/yyyy/mm/CER_SNOW_$SS2_1_$PS2_1_$CC2_1.yyyymm

1. Mandatory/Optional: **This file is mandatory for Actual Snow Processing (see Section** 2.2.5).
2. Time Related Dependency: **The data date must match the runtime parameters: yyyy, mm.**
3. Waiting Period: **One month, process when all input data are available.**

b. Source of Information (Source is PGE name or Ingest Source):

Source PGE: CER2.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **The ancillary input file 'SNOW_COMPOSITE_mm.19980130' is used for Composite Snow Processing until the actual snow data file is generated (see Section** 2.2.5).

d. File Disposition after successful execution: **Do not remove.**

e. Typical file size (MB): **.03**

2.3.3 Input Dataset Name (#3): Spectral Response and Correction Coefficients

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/erbelike/data/CERES/SCCD/$SS2_$PS2_4/yyyy/mm/CER_SCCD_$SS2_$PS2_4_$CC2_4.yyyymmdd
$CERESHOME/erbelike/data/CERES/SCCN/$SS2_$PS2_4/yyyy/mm/CER_SCCN_$SS2_$PS2_4_$CC2_4.yyyymmdd

1. Mandatory/Optional: **This file is mandatory for final processing (see Section** 2.2.5).
2. Time Related Dependency: **The data date must match the runtime parameter: yyyymm**
3. Waiting Period: **One month, process when all input data are available.**

b. Source of Information (PGE name or Ingest source):

PGE: CER2.4P1

c. Alternate Data Set, if one exists (max waiting period): **the CERESlib data files:**

'ceres_SI_$INST_day.20020328' and 'ceres_SI_$INST_night.20020328' (Terra)
'ceres_SI_$INST_day.20030620' and 'ceres_SI_$INST_night.20030620' (Aqua)

are used for **Baseline** and **Edition1** Processing until the **Edition2** Spectral Correction Coefficient data files for the data month **yyyymm** are generated (see Section 2.2.5**)**.

d. File Disposition after successful execution: **Do not remove.**

e. Typical file size (MB): **.55, and .02**

2.4 Operating Procedures (Procedure for each part of the processor's elements)

Clear the output directories of files previously generated from this PGE (for this particular data instance) by executing script, **CER2.2P1_cleanup.pl**, with the runtime parameter data date:

At the command-line (>) type:

> cd $CERESHOME/erbelike/CER2.2P1/rcf
> CER2.2P1_cleanup.pl –d yyyymmdd

The production script, **CER2.2P1.pl**, references a Process Control File (PCF) containing the file names and paths for the PGE. For manual processing, this PCF is created by first sourcing the ERBE-like-specific environment script mentioned in Section 2.3.2 above, then executing the PCF generator, **gen_pcf.CER2.2.pl**. If processing via **SGE**, the PCF generator will be called via the driver script **CER2.2P1-SGE_Driver.pl** followed by the runtime parameters of Table 2-3, as shown in Section **2.4.2**.

2.4.1 How to Generate the PCF

The PCF file generator requires five command-line arguments: data date (yyyymmdd), the snow file parameter (either Actual (A) or Composite (C)), ADM structure (either Original (F) or New (N)), Spectral Correction Algorithm (either Original (F), Slope Intercept Method (N), or Slope Intercept Method using the daily Spectral Response Function and Correction Coefficient Files generated by PGE CER2.4P1 (D)), and SW offsets (either day/night (D), thermal SW offsets (T), no offsets (Z), or Edition3 corrections (K)) (see Table 2-3).

At the command-line (>) type (**Note: this step is not needed for SGE testing**):

> gen_pcf.CER2.2.pl yyyymmdd snow adm spcor swoff

The following files are generated and located in **$CERESHOME/erbelike/CER2.2P1/rcf/pcf/**:

CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd
CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd.log

2.4.2 How to Execute the Main-Processor

Before running the program, make sure the executables (**CER2.2P1_inv_ppc64.exe** and **CER2.2P1_gen_es8hdf_ppc64.exe**) are in the **$CERESHOME/erbelike/bin** and **$CERESHOME/erbelike/CER2.2P1/bin** directories, respectively. If processing manually, execute the production script by typing the script name, **CER2.2P1.pl**, followed by a string designating the instance of the data. The string should be formatted, "Sampling Strategy"_"Production Strategy"_"Configuration Code"."DataDate". The date parameter is

formatted, yyyymmdd, where yyyy is the data year, mm is the data month, and dd is the data day (see Table 2-3).

At the **command-line** (>) type (**Note: this step is not needed for SGE testing**):

> CER2.2P1.pl $SS2_$PS2_$CC2.yyyymmdd

To run using **SGE** instead, type:

> CER2.2P1-SGE_Driver.pl –d yyyymmdd -- snow adm spcor swoff

To run using **SGE** for **multiple sequential dates**, type:

> CER2.2P1-SGE_Driver.pl –s y1m1d1 –e y2m2d2 -- snow adm spcor swoff

where **y1m1d1** and **y2m2d2** are the start and end dates, respectively.

The **CER2.2P1-SGE_Driver.pl** script will search for the required input data files and any existing data product files for the requested data date(s) and time(s) provided. If all the input data files are available and previously created output for this data date does not exist, the job will be submitted to the SGE queue. However, if any mandatory data files are missing the script will not submit the job to the SGE queue. Instead the information on which data files are missing or already exist can be found in the **CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd.log** file. Mandatory files may then be staged or existing output files can be deleted before attempting to rerun this job.

Here are the optional arguments for **CER2.2P1-SGE_Driver.pl:**

[-clean]	Delete any existing outputs encountered during PGE execution
[-platform CPU]	Run the PGE on the platform designated by CPU (i.e., *p6* or *x86*)
[-date YYYYMMDD]	Run the PGE on the data day specified by YYYYMMDD.
[-start YYYYMMDD]	Run the PGE starting on the data day specfied by YYYYMMDD.
[-end YYYYMMDD]	Run the PGE stopping on the data day specified by YYYYMMDD.

The extra argument following '—' are mandatory for each run. Below are typical examples:

To run a single Baseline1-QC day on an *x86* platform:

> CER2.2P1-SGE_Driver.pl –d 20091201 –p x86 -- C F N T

To run an Edition1-CV month on the *p6* platform:

> CER2.2P1-SGE_Driver.pl –s 20091201 –e 20091231 –p p6 -- A F N T

2.4.3 Special Case Considerations

Refer to Section 2.2.5, Restrictions Imposed in Processing Order.

2.4.4 Special Reprocessing Instructions

1. All output files are opened with Status = NEW in the CER2.2P1 software. These files must be removed before rerunning these procedures. A script, which removes PGE-created files, **clr_dir.CER2.2.csh**, is located in directory **$CERESHOME/erbelike/CER2.2P1/rcf**. Using the data date as a command line argument, type:

   > clr_dir.CER2.2.csh yyyymmdd

2. See reprocessing requirements in "CERES DMT to DAAC Processing Requests" available on the Web at: http://ceres.larc.nasa.gov/docs.php .

2.5 Execution Evaluation

2.5.1 Exit Codes

The processor CER2.2P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 2-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person for assistance (see Table 1-1).

Table 2-4. Exit Codes for CER2.2P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
198	Fatal	"PCF missing error CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd Does NOT exist." Inform the primary contact in Table 1-1.
75	Fatal	"JSS invalid date error." Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
151	Fatal	"PCF file write error." Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
239	Fatal	"PGE HDF compression error. CER2.2P1 CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in es8hdf". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
152	Fatal	"PCF parameter Error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
250	Fatal	"PLT_ERROR: UNSUCCESSFULLY terminated in plot_es8". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
200	Fatal	"Non-specific PGE error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).

2.5.2 Screen Messages (Use Table format for large number of messages)

Table 2-5. Screen Messages for Execution of CER2.2P1

Exit Code	Definition
PCF: CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd DoesNOT exist Exit Status = 198	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.2P1 CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in pres8 conversion Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.2P1 CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in inversion Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.2P1 CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in es8hdf Exit Status = 239	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.2P1 CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in plot_qc Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.2P1 CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in plot_es8 Exit Status = 250	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.2P1 CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in qc checker Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).

2.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in the directory: **$CERESHOME/erbelike/runlogs/CER2.2P1**.

2.5.3.1 Report Log File: CER2.2P1_LogReport_$SS2_$PS2_$CC2.yyyymmdd

The Report Log File contains the PGE **CER2.2P1** generated messages. These messages may be strictly informative (Error Type = Status or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

2.5.3.2 Status Log File: CER2.2P1_LogStatus_$SS2_$PS2_$CC2.yyyymmdd

The Status Log File contains all messages created by the Toolkit. If an abnormal exit is encountered by the PGE, this file should be examined for '_F_', fatal message type. The responsible person should be advised (see Table 1-1).

2.5.3.3 User Log File: CER2.2P1_LogUser_$SS2_$PS2_$CC2.yyyymmdd

The User Log File is not used at this time, but exists to satisfy the Toolkit requirements. Typically the '_U_' and '_N_' (User information and Notice) will be written to the User Log File and the Status Log File.

2.5.4 Solutions to Possible Problems

If exit code 250 is encountered, then one or more zero length gif files may have been created.

The operator can generate all of the 'gif' files associated with an ES-8 by executing the following command:

> $CERESHOME/erbelike/CER2.2P1/rcf/plot_es8.csh CER_ES8B_$SS2_$PS2_$CC2.yyyymmdd

where, $SS2, $PS2, $CC2, yyyy, mm, dd, are the respective Environment and Runtime parameters (see Section 2.2.1 and Section 2.2.2).

2.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

   Please refer to Appendix B for a descriptive list of all errors and the result of those errors.

b. Target PGE Termination

   Please refer to Appendix B for a descriptive list of all errors and the result of those errors. If .met files have not been created, the target PGEs should not run. Target PGEs should not be processed in instances of PGE failure.

2.6 Expected Output Dataset(s)

(Note: Include all expected Web files.)
The expected output datasets are listed below for each instance of the PGE. The PGE will be run once per day with composite snow and again with actual snow data.

Table 2-6. Expected Output File Listing for CER2.2P1

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/PGE	Target PGE	Destination[c]	Available Through Ordering Tool
CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike//CER2.2P1/rcf/pcf)	m	0.032	1/day	N/A	Archive rm	No
CER2.2P1_PCF_$SS2_$PS2_$CC2.yyyymmdd.log @($CERESHOME/erbelike/CER2.2P1/rcf/pcf)	m	0.003	1/day	N/A	Archive rm	No
CER2.2P1_$SS2_$PS2_$CC2.yyyymmdd.summary or CER2.2P1_$SS2_$PS2_$CC2.y1m1d1-y2m2d2.summary @($CERESHOME/erbelike/CER2.2P1/rcf/pcf/summary)	o	0.005	1/run	N/A	No Archive rm	No
CER2.2P1_LogReport_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/runlogs/CER2.2P1)	m	0.012	1/day	N/A	No Archive rm	No
CER2.2P1_LogStatus_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/runlogs/CER2.2P1)	m	0.007	1/day	N/A	No Archive rm	No
CER2.2P1_LogUser_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/runlogs/CER2.2P1)	m	0.001	1/day	N/A	No Archive rm	No
CER2.2P1_$SS2_$PS2_$CC2.yyyymmdd.o# @($CERESHOME/erbelike/sge_logs/CER2.2P1)	o		1/day	N/A	Archive, rm	No
CER_CQCI_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CQCI/$SS2_$PS2/yyyy/mm)	m	0.113	1/day	N/A	Web, Archive rm	No
CER_EID6_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/EID6/$SS2_$PS2/yyyy/mm)	m	11.9	1/day	CER3.1P1[d]	Archive	No
CER_ES8B_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/ES8B/$SS2_$PS2/yyyy/mm)	m	490	1/day	N/A	Archive rm	No
CER_ES8N_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/ES8N/$SS2_$PS2/yyyy/mm)	m	3.56	1/day	N/A	Archive rm	No
CER_ES8_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/ES8/$SS2_$PS2/yyyy/mm)	m	293	1/day	N/A	Archive rm	Yes
CER_CMSG_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CMSG/$SS2_$PS2/yyyy/mm)	m	0.015	1/day	N/A	Archive rm	No
ES8_yyyymmdd_i_jk.gif @($CERESHOME/erbelike/web/CER2.2P1/gif/ES8_yyyymm_i/ES8_yyyymmdd_i)	o	0.064	16/day	N/A	permanent, No archive	No
ES8_yyyymmdd_i_9.gif @($CERESHOME/erbelike/web/CER2.2P1/gif/ES8_yyyymm_i/ES8_yyyymmdd_i)	o	0.064	1/day	N/A	permanent, No archive	No
CER_ES8G_$SS2_$PS2_$CC2.yyyymmdd_jk @($CERESHOME/erbelike/data/CERES/ES8G/$SS2_$PS2/yyyy/mm)	o	0.064	16/day	N/A	Archive rm	No

Table 2-6. Expected Output File Listing for CER2.2P1

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/PGE	Target PGE	Destination[c]	Available Through Ordering Tool
CER_ES8G_$SS2_$PS2_$CC2.yyyymmdd_9 @($CERESHOME/erbelike/data/CERES/ES8G/ $SS2_$PS2/yyyy/mm)	o	0.064	1/day	N/A	Archive rm	No

a. See Section 2.2 for information on variable data values.
If "(.met)" is written next to an expected output filename, then the metadata file with the identical filename and .met extension must exist.
Note: yyyy - 4-digit year (See Runtime Parameters Table 2-3)
mm - 2-digit month {valid values: 01 .. 12} (See Runtime Parameters Table 2-3)
dd - 2-digit day {valid values: 01 .. 31} (See Runtime Parameters Table 2-3)
- SGE job number, generated upon job submission
I - instrument ID (valid values: 1,2,3,4,5, or 6)
j - plot number (valid values: 1,2,3,...,8)
k - color bar (valid values: 1,2)

b. Note: m - mandatory output
o - optional output

c. Note: rm - remove

d. Only data for the preferred cross track instrument will be produced for the Edition3 subsystem3 products. The input files to subystem3 are the EID6s from 2.2P1 and CXDRs from 2.3P1/2. Hence, for Edition3 there will be one X-track EID6/CXDR file for Terra (with $SS2 = Terra-Xtrk) and one X-track EID6/CXDR file for Aqua (with $SS2 = Aqua-Xtrk). For Terra, the preferred cross track instrument alternates between FM1 and FM2 prior to March 2006. From March 2006 forward, FM1 is consistently the preferred Terra cross track instrument. Similarly for Aqua, the preferred cross track instrument alternates up through March 2005, but the FM3 instrument is consistently the preferred cross track from April 2005 forward.

2.7 Expected Temporary Files/Directories.

Table 2-7. Temporary Files Listing for CER2.2P1

Directory	File Name
$CERESHOME/erbelike/CER2.2P1/data/scr	ShmMem

3.0 PGEName: CER2.3P1

CERES ERBE-like Monthly Inversion for the First Day of the Next Month.
Note: This PGE is run prior to PGE CER3.1P1 if there is input data from the first day of the next month.

3.1 PGE Details

3.1.1 Responsible Persons

See Table 1-1, Subsystem Software Analysts Contacts.

3.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 1-1.

3.1.3 Parent PGE(s)

A parent PGE generates data for input to the current PGE, CER2.3P1.

Table 3-1. Parent PGEs for CER2.3P1

PGEName	Description
CER1.2P1	CERES BDS to Pre-ES8 conversion post-processor.
CER2.1P1	CERES ERBE-like Monthly Geo-Scene and Snow Map, and Longwave Flux and Albedo Thresholds.
CER2.4P1	CERES ERBE-like Spectral Response Functions and Correction Coefficients.

3.1.4 Target PGE(s)

A target PGE requires input data generated from the current PGE, CER2.3P1.

Table 3-2. Target PGEs after CER2.3P1

PGEName	Description
CER3.1P1	CERES ERBE-like Monthly TOA Flux Averaging Main-Processor for FAPS+RAPS data for a Single Instrument.

3.2 Operating Environment

3.2.1 Runtime Parameters (List all dynamic parameters needed at runtime.)

The runtime parameters of PGE CER2.3P1 are relative to a target processing month in that for a given month, PGE CER2.3P1 supplies overlap data from the first day of the month after the target processing month. Therefore, where the descriptions "CERDataDateYear" and "CERDataDateMonth" are used, these descriptions will refer to the month and year of data for the target processing month.

Table 3-3. Runtime Parameters for CER2.3P1

Parameter[a]	Description	Valid Values
yyyy	4-digit Year corresponding to the month after the CERDataDateMonth	>= 1984
mm	2-digit Month after CERDataDateMonth	01 .. 12
dd	First day (2-digit) of the month after CERDataDateMonth	01
snow	Type of input snow file: "Actual" or "Composite"	"A" or "C"
adm	Original Angular Directional Model structure	"F"
spcor	Slope Intercept Spectral Correction Algorithm, or Instrument Team's modified input for the Slope Intercept Spectral Correction Algorithm.	"N" or "M"
swoff	Type of SW Offset: "Thermal", "No offsets", or "Edition3 corrections"	"T", "Z", or "K"

a. All character strings.

3.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 3) for a detailed description of the CERES environment parameters. For the current values of the Sampling Strategy and Production Strategy variables listed below, see "CERES DMT to DAAC Processing Request." (URL: http://ceres.larc.nasa.gov/dmt2daac.php)

One environment script is required, and should contain definitions for the following parameters:

SS1 - Sampling Strategy for CER1.2P1, see Production Request (Reference 4)
SS2_1 - Sampling Strategy for CER2.1P1, see Production Request (Reference 4)
SS2 - Sampling Strategy for CER2.3P1, see Production Request (Reference 4)
PS1_0 - Production Strategy for CER1.2P1, see Production Request (Reference 4)
PS2_1 - Production Strategy for CER2.1P1, see Production Request (Reference 4)
PS2_4 - Production Strategy for CER2.4P1, see Production Request (Reference 4)
PS2 - Production Strategy for CER2.3P1, see Production Request (Reference 4)
CC1_2 - Configuration Code for CER1.2P1, see CM Database
CC2_1 - Configuration Code for CER2.1P1, see CM Database
CC2_4 - Configuration Code for CER2.4P1, see CM Database

CC2 - Configuration Code for CER2.3P1, see CM Database
SW2 - Software SCCR number for CER2.3P1, see CM Database
DATA2 - Data SCCR number for CER2.3P1, see CM Database
SAT - Satellite, see Production Request (Reference 4)
INST - Instrument, see Production Request (Reference 4)
PROD - Production mode, optional since 'Yes' by default (read PRES8 input from DPO)
PGE - PGE name, optional and set to 'CER2.3P1'
ERBELIKEHOME - erbelike parent directory, same as CERESHOME
InputArchive - location of ASDC DPO, by default set to '/ASDC_archive'

3.2.3 Execution Frequency (daily,hourly, or monthly)

monthly (1/month) - This PGE, along with PGE CER2.3P2, is to be processed once per month, immediately before PGE CER3.1P1.

3.2.4 Memory/Disk Space/Time Requirements

Memory:	5.04 MB
Disk Space:	13 MB
Total Run Time:	18 seconds

3.2.5 Restrictions Imposed in Processing Order

Relative to the target PGE CER3.1P1 data date, this PGE depends on the first day of the next month. For the input requirements (see Section 3.3.1).

3.3 Processor Dependencies (Previous PGEs, Ingest Data)

Note: Include all required inputs such as .met files, header files, etc.

3.3.1 Input Dataset Name (#1): preES-8

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

   $InputArchive/CERES/PRES8/$SS1_$PS1_0/yyyy/mm/CER_PRES8_$SS1_$PS1_0_$CC1_2.yyyymmdd

   1. Mandatory/Optional: **This file is mandatory.**
   2. Time Related Dependency: **The data date must match the runtime parameters: yyyy, mm, dd.**
   3. Waiting Period: **None, process when all input data are available.**

b. Source of Information (Source is PGE name or Ingest Source):

   Source PGE: CER1.2P1

c. Alternate Data Set, if one exists (maximum waiting period): **None.**

d. File Disposition after successful execution: **Do not remove until monthly processing (Subsystem 3.0) is complete.**

e. Typical file size (MB): **283**

3.3.2 Input Dataset Name (#2): SNOW

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/erbelike/data/CERES/SNOW/CERES_NSIDC/yyyy/mm/CER_SNOW_$SS2_1_$PS2_1_$CC2_1.yyyymm

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency: **The data date must match the PGE CER3.1P1 runtime parameters: yyyy, mm (See *CERES ERBE-like Averaging to Monthly TOA Fluxes Subsystem 3.0 Operator's Manual*, Table 1-4)**
3. Waiting Period: **One month, process when all input data are available.**

b. Source of Information (Source is PGE name or Ingest Source):

Source PGE: CER2.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **None.**

d. File Disposition after successful execution: **Do not remove.**

e. Typical file size (MB): **.03**

3.3.3 Input Dataset Name (#3): Spectral Response and Correction Coefficients

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/erbelike/data/CERES/SCCD/$SS2_$PS2_4/yyyy/mm
CER_SCCD_$SS2_$PS2_4_$CC2_4.yyyymmdd
$CERESHOME/erbelike/data/CERES/SCCN/$SS2_$PS2_4/yyyy/mm
CER_SCCN_$SS2_$PS2_4_$CC2_4.yyyymmdd

1. Mandatory/Optional: **This file is mandatory for final processing (see Section 3.2.5**).
2. Time Related Dependency: **The data date must match the runtime parameters: yyyymm**
3. Waiting Period: **One month, process when all input data are available.**

b. Source of Information (PGE name or Ingest source):

PGE: CER2.4P1

c. Alternate Data Set, if one exists (max waiting period): **the CERESlib data files:**

'ceres_SI_$INST_day.20020328' and 'ceres_SI_$INST_night.20020328' (Terra)
'ceres_SI_$INST_day.20030620' and 'ceres_SI_$INST_night.20030620' (Aqua)

are used for **Edition1** Processing until the **Edition2** Spectral Correction Coefficient data files for the data month **yyyymm** are generated (see Section 3.2.5**)**.

d. File Disposition after successful execution: **Do not remove.**

e. Typical file size (MB): **.55, and .02**

3.4 Operating Procedures (Procedure for each part of the processor's elements)

Clear the output directories of files previously generated from this PGE (for this particular data instance) by executing script **CER2.3P1_cleanup.pl**, with the runtime parameter data year-month date (the day is not needed since only the first of the month can be processed):

At the command-line (>) type:

> cd $CERESHOME/erbelike/CER2.3P1/rcf
> CER2.3P1_cleanup.pl –d yyyymm

The production script, **CER2.3P1.pl**, references a Process Control File (PCF) containing the file names and paths for the PGE. For manual processing, this PCF is created by first sourcing the ERBE-like-specific environment script mentioned in Section 3.2.2 above, then executing the PCF generator, **gen_pcf.CER2.3P1.pl**. If processing via **SGE**, the PCF generator will be called via the driver script **CER2.3P1-SGE_Driver.pl** followed by the runtime parameters of Table 3-2 as shown in Section **3.2.1**.

3.4.1 How to Generate the PCF

The PCF file generator requires five command-line arguments: data date (yyyymm), the snow file parameter (either Actual (A) or Composite (C)), ADM structure (either Original (F) or New (N)), Spectral Correction Algorithm (either Original (F), Slope Intercept Method (N), or Slope Intercept Method using the daily Spectral Response Function and Correction Coefficient Files generated by PGE CER2.4P1 (D)), and SW offsets (either day/night (D), thermal SW offsets (T), no offsets (Z), or Edition3 corrections (K)) (see Table 3-3).

At the command-line (>) type (**Note: this step is not needed for SGE testing**):

> gen_pcf.CER2.3P1.pl yyyymm snow adm spcor swoff

The following files are generated and located in **$CERESHOME/erbelike/CER2.3P1/rcf/pcf/**:

CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd
CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd.log

3.4.2 How to Execute the Main-Processor

Before running the program, make sure the executables (**CER2.2P1_inv_ppc64.exe**, **CER3.1P1_ddbint_ppc64.exe, and CER3.1P1_ddbupd_ppc64.exe**) are in the **$CERESHOME/erbelike/bin** directory. If processing manually, execute the production script by typing the script name, **CER2.3P1.pl**, followed by a string designating the instance of the data. The string should be formatted, "Sampling Strategy"_"Production Strategy"_"Configuration Code"."DataDate". The date parameter is formatted, yyyymmdd, where yyyy is the data year, mm is the data month, and dd is the data day (see Table 3-3).

At the **command-line** (>) type (**Note: this step is not needed for SGE testing**):

> CER2.3P1.pl $SS2_$PS2_$CC2.yyyymmdd

To run using **SGE** instead, type:

> CER2.3P1-SGE_Driver.pl –d yyyymm -- snow adm spcor swoff

To run using **SGE** for **multiple sequential dates**, type:

> CER2.3P1-SGE_Driver.pl –s y1m1 –e y2m2 -- snow adm spcor swoff

where **y1m1** and **y2m2** are the start and end dates, respectively.

The **CER2.3P1-SGE_Driver.pl** script will search for the required input data files and any existing data product files for the requested data date(s) and time(s) provided. If all the input data files are available and previously created output for this data date does not exist, the job will be submitted to the SGE queue. However, if any mandatory data files are missing the script will not submit the job to the SGE queue. Instead the information on which data files are missing or already exist can be found in the **CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd.log** file. Mandatory files may then be staged or existing output files can be deleted before attempting to rerun this job.

Here are the optional arguments for **CER2.3P1-SGE_Driver.pl:**

[-clean]	Delete any existing outputs encountered during PGE execution
[-platform CPU]	Run the PGE on the platform designated by CPU (i.e. p6 or x86)
[-date YYYYMM]	Run the PGE for the first day of month specified by YYYYMM.
[-start YYYYMM]	Run the PGE starting with the month specfied by YYYYMM.
[-end YYYYMM]	Run the PGE stopping with the month specified by YYYYMM.

The extra argument following '--' are mandatory for each run. Below are typical examples:

To run 2 Edition1-CV months on the *p6* platform:

> CER2.3P1-SGE_Driver.pl –s 200911 –e 200912 –p p6 -- A F N T

To run 2 Edition3 months on the *x86* platform:

> CER2.3P1-SGE_Driver.pl –s 200911 –e 200912 –p x86 -- A F M K

3.4.3 Special Case Considerations

N/A, at this time. Special case considerations will be handled on a case-by-case basis, where instructions will accompany each special request.

3.4.4 Special Reprocessing Instructions

1. All output files are opened with Status = NEW in the CER2.3P1 software. These files must be removed before rerunning these procedures. A script, which removes PGE created files, **clr_dir.PGE2.3P1.csh**, is located in directory

$CERESHOME/erbelike/CER2.3P1/rcf. Using yyyymmdd as a command line argument, type:

> **clr_dir.PGE2.3P1.csh yyyymmdd**

2. See reprocessing requirements in the "CERES DMT to DAAC Processing Request" available on the Web at: http://ceres.larc.nasa.gov/dmt2daac.php .

3.5 Execution Evaluation

3.5.1 Exit Codes

The processor CER2.3P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 3-4. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person for assistance (see Table 1-1).

Table 3-4. Exit Codes for CER2.3P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
198	Fatal	"PCF missing error. CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd. DoesNOT exist". Inform the primary contact in Table 1-1.
75	Fatal	"JSS invalid date error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
151	Fatal	"PCF file write error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
152	Fatal	"PCF parameter error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
200	Fatal	"Non-specific PGE error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).

3.5.2 Screen Messages (Use Table format for large number of messages.)

Table 3-5. Screen Messages for Execution of CER2.3P1

Message	Definition/Action
Cannot access <filename>: No such file or directory	This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.
CER2.3P1 CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd SUCCESSFULLY terminated Exit Status = 0	This message is written to the screen to signify that PGE CER2.3P1 has successfully completed. Proceed normally.
PCF: CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd DoesNOT exist Exit Status = 198	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.3P1 CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in inversion Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.3P1 CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in ddbint Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.3P1 CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in ddbupd Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).

3.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in the directory: **$CERESHOME/erbelike/runlogs/CER2.3P1/**.

3.5.3.1 Report Log File: CER2.3P1_LogReport_$SS2_$PS2_$CC2.yyyymmdd

The Report Log File contains the PGE CER2.3P1 generated messages. These messages may be strictly informative (Error Type = Status or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

3.5.3.2 Status Log File: CER2.3P1_LogStatus_$SS2_$PS2_$CC2.yyyymmdd

The Status Log File contains all messages created by the Toolkit. If an abnormal exit is encountered by the PGE, this file should be examined for '_F_', fatal message type. The responsible person should be advised (see Table 1-1).

3.5.3.3 User Log File: CER2.3P1_LogUser_$SS2_$PS2_$CC2.yyyymmdd

The User Log File is not used at this time, but exists to satisfy the Toolkit requirements. Typically the '_U_' and '_N_' (User information and Notice) will be written to the User Log File and the Status Log File.

3.5.4 Solutions to Possible Problems

If problems occur, consult the primary contact in Table 1-1.

3.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

   Please refer to Appendix B for a descriptive list of all errors and the result of those errors.

b. Target PGE Termination

   Please refer to Appendix B for a descriptive list of all errors and the result of those errors. If .met files have not been created, the target PGE should not run. Target PGEs should not be processed in instances of PGE failure.

3.6 Expected Output Dataset(s)

(Note: Include all expected Web files.)
The expected output datasets are listed below for each instance of the PGE. This PGE is expected to run once a month.

Table 3-6. Expected Output File Listing for CER2.3P1

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/PGE	Target PGE	Destination[c]	Available Through Ordering Tool
CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/CER2.3P1/rcf/pcf)	m	0.030	1/month	N/A	Archive rm	No
CER2.3P1_PCF_$SS2_$PS2_$CC2.yyyymmdd.log @($CERESHOME/erbelike/CER2.3P1/rcf/pcf)	m	0.002	1/month	N/A	Archive rm	No
CER2.3P1_$SS2_$PS2_$CC2.yyyymm.summary or CER2.3P1_$SS2_$PS2_$CC2.y1m1-y2m2.summary @($CERESHOME/erbelike/CER2.3P1/rcf/pcf/ summary)	o	0.005	1/run	N/A	No Archive rm	No
CER2.3P1_LogReport_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/runlogs/CER2.3P1)	m	0.010	1/month	N/A	No Archive rm	No
CER2.3P1_LogStatus_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/runlogs/CER2.3P1)	m	0.006	1/month	N/A	No Archive rm	No
CER2.3P1_LogUser_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/runlogs/CER2.3P1)	m	0.001	1/month	N/A	No Archive rm	No
CER2.3P1_$SS2_$PS2_$CC2.yyyymm.o# @($CERESHOME/erbelike/sge_logs/CER2.3P1)	o		1/month	N/A	Archive rm	No
CER_CQCIX_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CQCIX/ $SS2_$PS2/yyyy/mm)	m	0.11	1/month	N/A	Web, Archive rm	No
CER_EID6X_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/EID6X/ $SS2_$PS2/yyyy/mm)	o	11.85	1/month	N/A	Archive rm	No
CER_CXDR_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CXDR/ $SS2_$PS2/yyyy/mm)	o	1.10	1/month	CER3.1P1[d]	Archive	No
CER_CQCD_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CQCD/ $SS2_$PS2/yyyy/mm)	o	0.05	1/month	N/A	Web, Archive rm	No
CER_CMSGX_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CMSGX/ $SS2_$PS2/yyyy/mm)	m	0.015	1/month	N/A	Archive rm	No

a. See Section 3.2 for information on variable data values.
If "(.met)" is written next to an expected output filename, then the metadata file with the identical filename and .met extension must exist.
Note: yyyy - 4-digit year (See Runtime Parameters Table 3-3)
mm - 2-digit month {valid values: 01 .. 12} (See Runtime Parameters Table 3-3)
dd - 2-digit day {valid values: 01 .. 31} (See Runtime Parameters Table 3-3)
- SGE job number, generated upon job submission

b. Note: m - mandatory output
o - optional output
c. Note: rm - remove
d. Only data for the preferred cross track instrument will be produced for the Edition3 subsystem3 products. The input files to subystem3 are the EID6s from 2.2P1 and CXDRs from 2.3P1/2. Hence, for Edition3 there will be one X-track EID6/CXDR file for Terra (with $SS2 = Terra-Xtrk) and one X-track EID6/CXDR file for Aqua (with $SS2 = Aqua-Xtrk). For Terra, the preferred cross track instrument alternates between FM1 and FM2 prior to March 2006. From March 2006 forward, FM1 is consistently the preferred Terra cross track instrument. Similarly for Aqua, the preferred cross track instrument alternates up through March 2005, but the FM3 instrument is consistently the preferred cross track from April 2005 forward.

3.7 Expected Temporary Files/Directories.

Table 3-7. Temporary Files Listing for CER2.3P1

Directory	File Name
$CERESHOME/erbelike/CER2.3P1/data/scr	ShmMem

4.0 PGEName: CER2.3P2

CERES ERBE-like Monthly Inversion for the Last Day of the Previous Month.

Note: This PGE is run prior to PGE CER3.1P1 if there is input data from the last day of the previous month.

4.1 PGE Details

4.1.1 Responsible Persons

See Table 1-1, Subsystem Software Analysts Contacts.

4.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 1-1.

4.1.3 Parent PGE(s)

A parent PGE generates data for input to the current PGE, CER2.3P2.

Table 4-1. Parent PGEs for CER2.3P2

PGEName	Description
CER1.2P1	CERES BDS to Pre-ES8 conversion post-processor.
CER2.1P1	CERES ERBE-like Monthly Geo-Scene and Snow Map, and Longwave Flux and Albedo Thresholds.
CER2.4P1	CERES ERBE-like Spectral Response Functions and Correction Coefficients.

4.1.4 Target PGE(s)

A target PGE requires input data generated from the current PGE, CER2.3P2.

Table 4-2. Target PGEs after CER2.3P2

PGEName	Description
CER3.1P1	CERES ERBE-like Monthly TOA Flux Averaging Main-Processor for FAPS+RAPS data for a Single Instrument.

4.2 Operating Environment

4.2.1 Runtime Parameters (List all dynamic parameters needed at runtime.)

The runtime parameters of PGE CER2.3P2 are relative to a target processing month in that, for a given month, PGE CER2.3P2 supplies overlap data from the last day of the month previous to the target processing month. Therefore, where the descriptions "CERDataDateYear" and "CERDataDateMonth" are used, these descriptions will refer to the month and year of data for the target processing month.

Table 4-3. Runtime Parameters for CER2.3P2

Parameter[a]	Description	Valid Values
yyyy	4-digit Year corresponding to the month before the CERDataDateMonth	>= 1984
mm	2-digit Month before CERDataDateMonth	01 .. 12
dd	Last day (2-digit) of the month before CERDataDateMonth	28 .. 31
snow	Type of input snow file "Actual" or "Composite"	"A" or "C"
adm	Original Directional Model structure	"F"
spcor	Slope Intercept Spectral Correction Algorithm, or Instrument Team's modified input for the Slope Intercept Spectral Correction Algorithm.	"N" or "M"
swoff	Type of SW Offset: "Thermal", "No offsets", or "Edition3 corrections"	"T", "Z", or "K"

a. All character strings.

4.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 3) for a detailed description of the CERES environment parameters. For the current values of the Sampling Strategy and Production Strategy variables listed below, see "CERES DMT to DAAC Processing Request." (URL: http://ceres.larc.nasa.gov/dmt2daac.php)

An environment script is required and should define the following parameters:

SS1 - Sampling Strategy for CER1.2P1, see Production Request (Reference 4)
SS2_1 - Sampling Strategy for CER2.1P1, see Production Request (Reference 4)
SS2 - Sampling Strategy for CER2.3P2, see Production Request (Reference 4)
PS1_0 - Production Strategy for CER1.2P1, see Production Request (Reference 4)
PS2_1 - Production Strategy for CER2.1P1, see Production Request (Reference 4)
PS2_4 - Production Strategy for CER2.4P1, see Production Request (Reference 4)
PS2 - Production Strategy for CER2.3P2, see Production Request (Reference 4)
CC1_2 - Configuration Code for CER1.2P1, see CM Database
CC2_1 - Configuration Code for CER2.1P1, see CM Database
CC2_4 - Configuration Code for CER2.4P1, see CM Database

CC2 - Configuration Code for CER2.3P2, see CM Database
SW2 - Software SCCR number for CER2.3P2, see CM Database
DATA2 - Data SCCR number for CER2.3P2, see CM Database
SAT - Satellite, see Production Request (Reference 4)
INST - Instrument, see Production Request (Reference 4)
PROD - Production mode, optional since 'Yes' by default (read PRES8 input from DPO)
PGE - PGE name, optional and set to 'CER2.3P2'
ERBELIKEHOME - erbelike parent directory, same as CERESHOME
InputArchive - location of ASDC DPO, by default set to '/ASDC_archive'

4.2.3 Execution Frequency (daily, hourly, or monthly)

monthly (1/month) - This PGE, along with PGE **CER2.3P1**, is to be processed once per month, immediately before PGE **CER3.1P1**.

4.2.4 Memory/Disk Space/Time Requirements

Memory: 5.3 MB
Disk Space: 13 MB
Total Run Time: 18 seconds

4.2.5 Restrictions Imposed in Processing Order

Relative to the target PGE CER3.1P1 data date, this PGE depends on the last day of the previous month. For the input requirements (see Section 4.3).

4.3 Processor Dependencies (Previous PGEs, Ingest Data)

Note: Include all required inputs such as .met files, header files, etc.

4.3.1 Input Dataset Name (#1): preES-8

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

   $InputArchive/CERES/PRES8/$SS1_$PS1_0/yyyy/mm/CER_PRES8_$SS1_$PS1_0_$CC1_2.yyyymmdd

   1. Mandatory/Optional: **This file is mandatory.**
   2. Time Related Dependency: **The data date must match the runtime parameters: yyyy, mm, dd.**
   3. Waiting Period: **None, process when all input data are available.**

b. Source of Information (Source is PGE name or Ingest Source):

   Source PGE: CER1.2P1

c. Alternate Data Set, if one exists (maximum waiting period): **None.**

d. File Disposition after successful execution: **Do not remove until monthly processing (Subsystem 3.0) is complete. The file for "<u>the last day of the month</u>" cannot be removed until the monthly processing of the following month is complete.**

e. Typical file size (MB): **283**

4.3.2 Input Dataset Name (#2): SNOW

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/erbelike/data/CERES/SNOW/CERES_NSIDC/yyyy/mm/CER_SNOW_$SS2_1_$PS2_1_$CC2_1.yyyymm

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency: **The data date must match the PGE CER3.1P1 runtime parameters yyyy, mm (See *CERES ERBE-like Averaging to Monthly TOA Fluxes Subsystem 3.0 Operator's Manual*, Table 1-4)**
3. Waiting Period: **One month, process when all input data are available.**

b. Source of Information (Source is PGE name or Ingest Source):

Source PGE: CER2.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **None.**

d. File Disposition after successful execution: **Do not remove.**

e. Typical file size (MB): **.03**

4.3.3 Input Dataset Name (#3): Spectral Response and Correction Coefficients

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/erbelike/data/CERES/SCCD/$SS2_$PS2_4/yyyy/mm
CER_SCCD_$SS2_$PS2_4_$CC2_4.yyyymmdd
$CERESHOME/erbelike/data/CERES/SCCN/$SS2_$PS2_4/yyyy/mm
CER_SCCN_$SS2_$PS2_4_$CC2_4.yyyymmdd

1. Mandatory/Optional: **This file is mandatory for final processing (see Section 4.2.5**).
2. Time Related Dependency: **The data date must match the runtime parameters: yyyymm.**
3. Waiting Period: **One month, process when all input data are available.**

b. Source of Information (PGE name or Ingest source):

PGE: CER2.4P1

c. Alternate Data Set, if one exists (max waiting period): **the CERESlib data files:**

'ceres_SI_$INST_day.20020328' and 'ceres_SI_$INST_night.20020328' (Terra)
'ceres_SI_$INST_day.20030620' and 'ceres_SI_$INST_night.20030620' (Aqua)

are used for **Edition1** Processing until the **Edition2** Spectral Correction Coefficient data files for the data month **yyyymm** are generated (see Section **4.2.5)**.

d. File Disposition after successful execution: **Do not remove.**

e. Typical file size (MB): **.55, and .02**

4.4 Operating Procedures (Procedure for each part of the processor's elements)

Clear the output directories of files previously generated from this PGE (for this particular data instance) by executing script, **CER2.3P2_cleanup.pl**, with the runtime parameter data date year-month (the day is not needed since only the last of each month can be processed):

At the command-line (>) type:

> cd $CERESHOME/erbelike/CER2.3P2/rcf
> CER2.3P2_cleanup.pl –d yyyymm

The production script, **CER2.3P2.pl**, references a Process Control File (PCF) containing the file names and paths for the PGE. For manual processing, this PCF is created by first sourcing the ERBE-like-specific environment script mentioned in Section 4.2.2 above, then executing the PCF generator, **gen_pcf.CER2.3P2.pl**. If processing via **SGE**, the PCF generator will be called via the driver script **CER2.3P2-SGE_Driver.pl** followed by the runtime parameters of Table 4-3, as shown in Section 4.2.1.

4.4.1 How to Generate the PCF

The PCF file generator requires five command-line arguments: data date (yyyymm), the snow file parameter (always Actual (A)), ADM structure (either Original (F) or New (N)), Spectral Correction Algorithm (either Original (F), Slope Intercept Method (N), or Slope Intercept Method using the daily Spectral Response Function and Correction Coefficient Files generated by PGE CER2.4P1 (D)), and SW offsets (either day/night (D), thermal SW offsets (T), no offsets (Z), or Edition3 corrections (K)) (see Table 4-3).

At the command-line (>) type (**Note: this step is not needed for SGE testing**):

> gen_pcf.CER2.3P2.pl yyyymm snow adm spcor swoff

The following files are generated and located in **$CERESHOME/erbelike/CER2.3P2/rcf/pcf/**:

CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd
CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd.log

4.4.2 How to Execute the Main-Processor

Before running the program, make sure the executables (**CER2.2P1_inv_ppc64.exe**, **CER3.1P1_ddbint_ppc64.exe, and CER3.1P1_ddbupd_ppc64.exe**) are in the **$CERESHOME/erbelike/bin** directory. If processing manually, execute the production script by typing the script name, **CER2.3P2.pl**, followed by a string designating the instance of the data. The string should be formatted, "Sampling Strategy"_"Production Strategy"_"Configuration Code"."DataDate". The date parameter is formatted yyyymmdd, where yyyy is the data year, mm is the data month, and dd is the data day (see Table 4-3).

At the **command-line** (>) type (**Note: this step is not needed for SGE testing**):

> CER2.3P2.pl $SS2_$PS2_$CC2.yyyymmdd

To run using **SGE** instead, type:

> CER2.3P2-SGE_Driver.pl –d yyyymm -- snow adm spcor swoff

To run using **SGE** for **multiple sequential dates**, type:

> CER2.3P2-SGE_Driver.pl –s y1m1 –e y2m2 -- snow adm spcor swoff

where **y1m1** and **y2m2** are the start and end dates, respectively.

The **CER2.3P2-SGE_Driver.pl** script will search for the required input data files and any existing data product files for the requested data date(s) and time(s) provided. If all the input data files are available and previously created output for this data date does not exist, the job will be submitted to the SGE queue. However, if any mandatory data files are missing the script will not submit the job to the SGE queue. Instead the information on which data files are missing or already exist can be found in the **CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd.log** file. Mandatory files may then be staged or existing output files can be deleted before attempting to rerun this job.

Here are the optional arguments for **CER2.3P2-SGE_Driver.pl:**

[-clean]	Delete any existing outputs encountered during PGE execution
[-platform CPU]	Run the PGE on the platform designated by CPU (i.e., *p6* or *x86*)
[-date YYYYMM]	Run the PGE for the last day of the month specified by YYYYMM.
[-start YYYYMM]	Run the PGE starting with the month specfied by YYYYMM.
[-end YYYYMM]	Run the PGE stopping with the month specified by YYYYMM.

The extra argument following '--' are mandatory for each run. Below are typical examples:

To run 2 Edition1-CV months on the *p6* platform:

> CER2.3P2-SGE_Driver.pl –s 200911 –e 200912 –p p6 -- A F N T

To run 2 Edition3 months on the *x86* platform:

> CER2.3P2-SGE_Driver.pl –s 200911 –e 200912 –p x86 -- A F M K

4.4.3 Special Case Considerations

N/A, at this time. Special case considerations will be handled on a case-by-case basis, where instructions will accompany each special request.

4.4.4 Special Reprocessing Instructions

1. All output files are opened with Status = NEW in the CER2.3P2 software. These files must be removed before rerunning these procedures. A script, which removes PGE created files, **clr_dir.PGE2.3P2.csh**, is located in directory

$CERESHOME/erbelike/CER2.3P1/rcf. Using yyyymmdd as a command line argument:

> **clr_dir.PGE2.3P2.csh yyyymmdd**

2. See reprocessing requirements in the "CERES DMT to DAAC Processing Request" available on the Web at: http://ceres.larc.nasa.gov/dmt2daac.php .

4.5 Execution Evaluation

4.5.1 Exit Codes

The processor CER2.3P2 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 4-4. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person for assistance (see Table 1-1).

Table 4-4. Exit Codes for CER2.3P2

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
198	Fatal	"PCF: CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd DoesNOT exist". Inform the primary contact in Table 1-1.
75	Fatal	"JSS invalid date error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
151	Fatal	"PCF file write error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
152	Fatal	"PCF parameter error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).
200	Fatal	"Non-specific PGE error". Check the Log files, inform the primary contact in Table 1-1, and take the appropriate action (see Appendix B).

4.5.2 Screen Messages (Use Table format for large number of messages.)

Table 4-5. Screen Messages for Execution of CER2.3P2

Message	Definition/Action
Cannot access <filename>: No such file or directory	This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

Table 4-5. Screen Messages for Execution of CER2.3P2

Message	Definition/Action
CER2.3P2 CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd SUCCESSFULLY terminated Exit Status = 0	This message is written to the screen to signify that PGE CER2.3P2 has successfully completed. Proceed normally.
PCF: CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd DoesNOT exist Exit Status = 198	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.3P2 CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in inversion Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.3P2 CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in ddbint Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.3P2 CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd UNSUCCESSFULLY terminated in ddbupd Exit Status = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).

4.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in the directory: **$CERESHOME/erbelike/runlogs/CER2.3P2**.

4.5.3.1 Report Log File: CER2.3P2_LogReport_$SS2_$PS2_$CC2.yyyymmdd

The Report Log File contains the PGE **CER2.3P2** generated messages. These messages may be strictly informative (Error Type = Status or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

4.5.3.2 Status Log File: CER2.3P2_LogStatus_$SS2_$PS2_$CC2.yyyymmdd

The Status Log File contains all messages created by the Toolkit. If an abnormal exit is encountered by the PGE, this file should be examined for '_F_', fatal message type. The responsible person should be advised (see Table 1-1).

4.5.3.3 User Log File: CER2.3P2_LogUser_$SS2_$PS2_$CC2.yyyymmdd

The User Log File is not used at this time, but exists to satisfy the Toolkit requirements. Typically the '_U_' and '_N_' (User information and Notice) will be written to the User Log File and the Status Log File.

4.5.4 Solutions to Possible Problems

If problems occur, consult the primary contact in Table 1-1.

4.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

   Please refer to Appendix B for a descriptive list of all errors and the result of those errors.

b. Target PGE Termination

   Please refer to Appendix B for a descriptive list of all errors and the result of those errors. If .met files have not been created, the target PGE should not run. Target PGEs should not be processed in instances of PGE failure.

4.6 Expected Output Dataset(s)

(Note: Include all expected Web files.)
The expected output datasets are listed below for each instance of the PGE. This PGE is expected to run once a month.

Table 4-6. Expected Output File Listing for CER2.3P2

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]	Available Through Ordering Tool
CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/CER2.3P2/rcf/pcf)	m	0.030	1/month	N/A	Archive rm	No
CER2.3P2_PCF_$SS2_$PS2_$CC2.yyyymmdd.log @($CERESHOME/erbelike/CER2.3P2/rcf/pcf)	m	0.002	1/month	N/A	Archive rm	No
CER2.3P2_$SS2_$PS2_$CC2.yyyymm.summary or CER2.3P2_$SS2_$PS2_$CC2.y1m1-y2m2.summary @($CERESHOME/erbelike/CER2.3P2/rcf/pcf/summary)	o	0.005	1/run	N/A	No Archive rm	No
CER2.3P2_LogReport_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/runlogs/CER2.3P2)	m	0.010	1/month	N/A	No Archive rm	No
CER2.3P2_LogStatus_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/runlogs/CER2.3P2)	m	0.006	1/month	N/A	No Archive rm	No
CER2.3P2_LogUser_$SS2_$PS2_$CC2.yyyymmdd @($CERESHOME/erbelike/runlogs/CER2.3P2)	m	0.001	1/month	N/A	No Archive rm	No
CER2.3P2_$SS2_$PS2_$CC2.yyyymm.o# @($CERESHOME/erbelike/sge_logs/CER2.3P2)	o		1/month	N/A	Archive rm	No
CER_CQCIX_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CQCIX/ $SS2_$PS2/yyyy/mm)	m	0.11	1/month	N/A	Web, Archive rm	No
CER_EID6X_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/EID6X/ $SS2_$PS2/yyyy/mm)	o	11.85	1/month	N/A	Archive rm	No
CER_CXDR_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CXDR/ $SS2_$PS2/yyyy/mm)	o	1.10	1/month	CER3.1P1[d]	Archive	No
CER_CQCD_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CQCD/ $SS2_$PS2/yyyy/mm)	o	0.05	1/month	N/A	Web, Archive rm	No
CER_CMSGX_$SS2_$PS2_$CC2.yyyymmdd (.met) @($CERESHOME/erbelike/data/CERES/CMSGX/ $SS2_$PS2/yyyy/mm)	m	0.015	1/month	N/A	Archive rm	No

a. See Section 4.2 for information on variable data values.
If "(.met)" is written next to an expected output filename, then the metadata file with the identical filename and .met extension must exist.
Note: yyyy - 4-digit year (See Runtime Parameters Table 4-3)
mm - 2-digit month {valid values: 01 .. 12} (See Runtime Parameters Table 4-3)
dd - 2-digit day {valid values: 01 .. 31} (See Runtime Parameters Table 4-3)
- SGE job number, generated upon job submission

b. Note: m - mandatory output
o - optional output
c. Note: rm - remove
d. Only data for the preferred cross track instrument will be produced for the Edition3 subsystem3 products. The input files to subystem3 are the EID6s from 2.2P1 and CXDRs from 2.3P1/2. Hence, for Edition3 there will be one X-track EID6/CXDR file for Terra (with $SS2 = Terra-Xtrk) and one X-track EID6/CXDR file for Aqua (with $SS2 = Aqua-Xtrk). For Terra, the preferred cross track instrument alternates between FM1 and FM2 prior to March 2006. From March 2006 forward, FM1 is consistently the preferred Terra cross track instrument. Similarly for Aqua, the preferred cross track instrument alternates up through March 2005, but the FM3 instrument is consistently the preferred cross track from April 2005 forward.

4.7 Expected Temporary Files/Directories

Table 4-7. Temporary Files Listing for CER2.3P2

Directory	File Name
$CERESHOME/erbelike/CER2.3P2/data/scr	ShmMem

5.0 PGEName: CER2.4P1

CERES ERBE-like Spectral Response Functions and Correction Coefficients

5.1 PGE Details

5.1.1 Responsible Persons

See Table 1-1, Subsystem Software Analysts Contacts.

5.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 1-1.

5.1.3 Parent PGE(s)

A parent PGE generates data for input to the current PGE, **CER2.4P1**. PGE **CER2.4P1** is only dependent on outside data sources and has no parent PGE(s).

5.1.4 Target PGE(s)

A target PGE requires input data generated from the current PGE, **CER2.4P1**.

Table 5-1. Target PGEs after CER2.4P1

PGEName	Description
CER2.2P1	CERES ERBE-like Daily Inversion to Instantaneous TOA Fluxes Main-Processor for FAPS+RAPS data for a Single Instrument.
CER2.3P1	CERES ERBE-like Monthly Inversion to Instantaneous TOA Fluxes Overlap-Processor for FAPS+RAPS data for a Single Instrument for the First Day of the Next Month.
CER2.3P2	CERES ERBE-like Monthly Inversion to Instantaneous TOA Fluxes Overlap-Processor for FAPS+RAPS data for a Single Instrument for the Last Day of the Previous Month.
CER4.5-6.1P2	CERES Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Main Processor and HDF Postprocessor

5.2 Operating Environment

5.2.1 Runtime Parameters (List all dynamic parameters needed at runtime.)

Table 5-2. Runtime Parameters for CER2.4P1

Parameter[a]	Description	Valid Values
yyyy	4-digit CERDataDateYear	>= 1984
mm	2-digit CERDataDateMonth	01 .. 12
xxx	1 to 3-digit instrument channel designator for any combination of Shortwave, Total, or Window channels	1,2,3, 12,13,23, or 123
e	1 to 3-digit edition indicator: Ed3 (Edition3 quadratic coefficients that account for SW thermal leak) or G (Baseline1-QC, Edition1-CV and Edition2)	G or Ed3

a. All character strings.

5.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 3) for a detailed description of the CERES environment parameters. For the current values of the Sampling Strategy and Production Strategy variables listed below, see "CERES DMT to DAAC Processing Requests." (URL: http://ceres.larc.nasa.gov/dmt2daac.php)

One environment script is required. It is named '**ENVerbelike-env.csh**' and contains the following parameters:

SS2 - Sampling Strategy for CER2.2P1, see Production Request (Reference 4)
PS2_4 - Production Strategy for CER2.4P1, see Production Request (Reference 4)
CC2_4 - Configuration Code for CER2.4P1, see CM Database
SAT - Satellite, see Production Request (Reference 4)
INST - Instrument, see Production Request (Reference 4)
SW2 - Software SCCR number for CER2.4P1, see CM Database
DATA2 - Data SCCR number for CER2.4P1, see CM Database

5.2.3 Execution Frequency (daily, hourly, or monthly)

Monthly (1/month) - This PGE is to be processed once per month, when input is available.

5.2.4 Memory/Disk Space/Time Requirements

Memory: 7.5 MB
Disk Space: 4480 MB
Total Run Time: 32:54 minutes

5.2.5 Restrictions Imposed in Processing Order

PGE CER2.4P1 requires the time dependent spectral response function file that matches the runtime parameter data date or two time dependent spectral response function files for each instrument channel being processed corresponding to data dates needed for interpolation or extrapolation to the runtime parameter data date. If the required number of input files are not available, contact the Subsystem software analysts from Table 1-1.

5.3 Processor Dependencies (Previous PGEs, Ingest Data)

Note: Include all required inputs such as .met files, header files, etc.

5.3.1 Input Dataset Name (#1): Time dependent spectral response functions

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/erbelike/CER2.4P1/data/input :
SRF_$SS2_SW.datadate.proddate
SRF_$SS2_TOT.datadate.proddate
SRF_$SS2_WN.datadate.proddate

where, proddate is the date the files were produced. The proddate is formatted, yyyymmdd, where yyyy is the production year, mm is the production month, and dd is the production day (see Table 5-2). The data date, datadate, is formatted yyyymm15, where yyyy is the data year, mm is the data month, and 15 is the data day (see Table 5-2).

If a time dependent spectral response function file date exists for the runtime parameter data date, then only that time dependent spectral response function file is needed for input. If a time dependent spectral response function file date does not exist for the runtime parameter data date, then two input files are need for interpolation or extrapolation.

1. Mandatory/Optional: **These files are optional. The CERES instrument team will determine the use of these files.**
2. Time Related Dependency: **The data date must match the runtime parameters: yyyymm.**
3. Waiting Period: **Run PGE when data for the data day are available.**

b. Source of Information (Source PGE name or Ingest Source):

Ingest Source - CERES Instrument Team.

c. Alternate Data Set, if one exists (maximum waiting period): **None.**

d. File Disposition after successful execution: **Do not remove until daily processing (Subsystem 2.0) is complete.**

e. Typical file size (KB): **8.5, 17.9, & 21.8**

5.4 Operating Procedures (Procedure for each part of the processor's elements)

The production script, **CER2.4P1**, references a Process Control File (PCF) which contains the file names and paths for the PGE. This PCF is created by executing an ASCII file and PCF generator, **gen_pcf.CER2.4P1**.

5.4.1 How to Generate the ASCII File and PCF

The ASCII file and PCF generator requires three command-line arguments: data date (yyyymmdd), the instrument channel designator (either 1, 2, 3, 12, 13, 23, or 123) (see Table 5-2) and an edition code e (G for Baseline1-QC, Edition1-CV and Edition2 and Ed3 for Edition3).

At the command-line (>) type in **$CERESHOME/erbelike/CER2.4P1/rcf** :

> CER2.4P1_gen_pcf.pl yyyymm xxx e

The following files are generated and located in **$CERESHOME/erbelike/CER2.4P1/rcf/pcf/**:

CER2.4P1_PCF_$SS2_$PS2_4_$CC2_4.yyyymm15
CER2.4P1_PCF_$SS2_$PS2_4_$CC2_4.yyyymm15.log

5.4.2 How to Execute the Main-Processor

Clear the output directories of files previously generated from this PGE by executing script, **clr_dir.PGE2.4**, with the runtime parameter data date. Before running the program, make sure the executables (**CER2.4P1_calbkn_ppc64.exe, CER2.4P1_regr_lw_ppc64.exe, CER2.4P1_spcoef_night_ppc64.exe, CER2.4P1_checker_ppc64.exe, CER2.4P1_regr_ppc64.exe, CER2.4P1_spcoef_ppc64.exe, CER2.4P1_interp_resp_ppc64.exe, CER2.4P1_spcoef_lnd_ppc64.exe, CER2.4P1_stitch_ppc64.exe, CER2.4P1_meta_ppc64.exe, CER2.4P1_spcoef_night_lnd_ppc64.exe**) are in the **$CERESHOME/erbelike/CER2.4P1/bin** directory. Execute the production script by typing the script name, **CER2.4P1**, followed by a string which designates the instance of the data. The string should be formatted, "Sampling Strategy"_"Production Strategy"_"Configuration Code"."DataDate". The date parameter is formatted, yyyymm, where yyyy is the data year and mm is the data month (see Table 5-2).

At the command-line (>) type:

> CER2.4P1_clr_dir.csh yyyymm
> CER2.4P1_run.pl $SS2_$PS2_4_$CC2_4.yyyymm

To run using **SGE (Note the PCF file is generated by the SGE_Driver script below)**
> CER2.4P1_clr_dir.csh yyyymm
>CER2.4P1-SGE_Driver.pl -d yyyymm -- xxx e

There are several options for running the SGE driver:

[-help]	**Display this help message.**
[-clean]	**Delete any existing outputs that are encountered.**
[-p CPU]	**Run the PGE on the platform designated by CPU (i.e. p6 or x86)**
[-d YYYYMM]	**Run the PGE on the data month specified by YYYYMM.**
[-start YYYYMM]	**Run the PGE starting on the data month specfied by YYYYMM.**
[-end YYYYMM]	**Run the PGE stopping on the data month specified by YYYYMM.**

Examples of most likely used options:

(running consecutive months)

>CER2.4P1-SGE_Driver.pl –start 201109 –end 201112 -- 12 Ed3

(running on *p6*)

>CER2.4P1-SGE_Driver.pl –d 201109 –p p6 -- 1 G

(running on an x*86*)

>CER2.4P1-SGE_Driver.pl –d 201109 –p x86 -- 2 Ed3

5.4.3 Special Case Considerations

N/A, at this time. Special case considerations will be handled on a case-by-case basis, where instructions will accompany each special request.

5.4.4 Special Reprocessing Instructions

1. All output files are opened with Status = NEW in the **CER2.4P1** software. These files must be removed before rerunning these procedures. A script, which removes PGE created files, **PGE2.4_clr_dir.csh**, is located in directory **$CERESHOME/erbelike/CER2.4P1/rcf**. Using data date as a command line argument:

   > CER2.4P1_clr_dir.csh yyyymm

2. See reprocessing requirements in "CERES DMT to DAAC Processing Requests" available on the Web at: http://ceres.larc.nasa.gov/docs.php .

5.5 Execution Evaluation

5.5.1 Exit Codes

The processor CER2.4P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 5-3. Other exit codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person for assistance (see Table 1-1).

Table 5-3. Exit Codes for CER2.4P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
152	Fatal	Consult PR for command line arguments. Error message should include an example.
198	Fatal	"PCF: CER2.4P1_PCF_$SS2_$PS2_4_$CC2_4.yyyymm. DoesNOT exist". Inform the primary contact in Table 1-1.
200	Fatal	Check the Report_Log files and sge_log files, inform the primary contact from Table 1-1, and take the appropriate action (see Appendix B).

5.5.2 Screen Messages (Use Table format for large number of messages)

Table 5-4. Screen Messages for Execution of CER2.4P1

Message	Definition/Action
Cannot access <filename>: No such file or directory	This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.
CER2.4P1 CER2.4P1_PCF_$SS2_$PS2_4_$CC2_4.yyyymmdd SUCCESSFULLY terminated Exit Status = 0	This message is written to the screen to signify that PGE CER2.4P1 has successfully completed. Proceed normally.
CER2.4P1 ___ error___ Check Command Line Arguments(s) <-Example Call-> CER2.4P1_gen_pcf.pl 200908 12 G Exit Code = 152	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.4P1 Third argument should be Ed3 for Edition 3 or G for Edition 2 Exit Code = 152	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.4P1 ___ error___ SAT not defined You Entered Only Aqua, Terra and NPP are supported Exit Code = 152	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.4P1 ___ error___ Terra instruments are FM1 or FM2 You Entered Exit Code = 152	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).

Table 5-4. Screen Messages for Execution of CER2.4P1

Message	Definition/Action
CER2.4P1 ___ error___ Aqua instruments are FM3 or FM4 You Entered Exit Code = 152	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.4P1 ___ error___ NPP instrument is FM5 You Entered Exit Code = 152	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.4P1 ___ error___ input channel_code not an option Acceptable channel_codes are { 1, 2, 3, 12, 23, 13 or 123 } was Entered Exit Code = 152	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.4P1 ___ error___ Date Entered pre-dates Terra You Entered Exit Code = 152	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
PCF: CER2.4P1_PCF_$SS2_$PS2_4_$CC2_4.yyyymmdd DoesNOT exist Exit Code = 198	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B).
CER2.4P1 __ error___ non-zero status for CER2.4P1_interp_resp_$PLATFORM.exe CER2.4P1_PCF_$SS2_$PS2_4_$CC2_4.yyyymmdd UNSUCCESSFULLY terminated Invalid Channel_Code Exit Code = 200	This message is written to the screen signifying a fatal error has occurred. Refer to the Log files for more detailed information (see Appendix B)

5.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in the directory: **$CERESHOME/erbelike/runlogs/CER2.4P1**.

5.5.3.1 Report Log File: CER2.4P1_LogReport_$SS2_$PS2_4_$CC2_4.yyyymmdd

The Report Log File contains the PGE CER2.4P1 generated messages. These messages may be strictly informative (Error Type = Status or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

5.5.3.2 Status Log File: CER2.4P1_LogStatus_$SS2_$PS2_4_$CC2_4.yyyymmdd

The Status Log File contains all messages created by the Toolkit. If an abnormal exit is encountered by the PGE, this file should be examined for '_F_', fatal message type. The responsible person should be advised (see Table 1-1).

5.5.3.3 User Log File: CER2.4P1_LogUser_$SS2_$PS2_4_$CC2_4.yyyymmdd

The User Log File is not used at this time, but exists to satisfy the Toolkit requirements. Typically the '_U_' and '_N_' (User information and Notice) will be written to the User Log File and the Status Log File.

5.5.4 Solutions to Possible Problems

If problems occur, consult the primary contact in Table 1-1.

5.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

   All output files are opened with status "NEW". If files exist, the program will terminate.

b. Target PGE Termination

   Please refer to Appendix B for a descriptive list of all errors and the result of those errors. If .met files have not been created, the target PGE should not run. Target PGEs should not be processed in instances of PGE failure.

5.6 Expected Output Dataset(s)

(Note: Include all expected Web files.)
The expected output datasets are listed below for each instance of the PGE. This PGE is expected to run once per day.

Table 5-5. Expected Output File Listing for CER2.4P1

File Name[a]/Directory	m/o[b]	File Size (MB)	Freq/ PGE	Target PGE	Destination[c]	Available Through Ordering Tool
CER2.4P1_PCF_$SS2_$PS2_4_$CC2_4.yyyymm15 @($CERESHOME/erbelike/CER2.4P1/rcf/pcf)	m	0.044	1/month	N/A	Archive rm	No
CER2.4P1_PCF_$SS2_$PS2_4_$CC2_4.yyyymm15.log @($CERESHOME/erbelike/CER2.4P1/rcf/pcf)	m	0.002	1/month	N/A	Archive rm	No
CER2.4P1_$SS2_$PS2_$CC2.yyyymm.summary or CER2.4P1_$SS2_$PS2_$CC2.y1m1-y2m2.summary @($CERESHOME/erbelike/CER2.4P1/rcf/pcf/summary)	o	0.002	1/run	N/A	No Archive rm	No
CER2.4P1_LogReport_$SS2_$PS2_4_$CC2_4.yyyymm15 @($CERESHOME/erbelike/runlogs/CER2.4P1)	m	0.131	1/month	N/A	No Archive rm	No
CER2.4P1_LogStatus_$SS2_$PS2_4_$CC2_4.yyyymm15 @($CERESHOME/erbelike/runlogs/CER2.4P1)	m	0.102	1/month	N/A	No Archive rm	No
CER2.4P1_LogUser_$SS2_$PS2_4_$CC2_4.yyyymm15 @($CERESHOME/erbelike/runlogs/CER2.4P1)	m	0.099	1/month	N/A	No Archive rm	No
CER2.4P1_$SS2_$PS2_$CC2.yyyymm.o# @($CERESHOME/erbelike/sge_logs/CER2.4P1)	o		1/month	N/A	Archive rm	No
CER_SCCD_$SS2_$PS2_4_$CC2_4.yyyymm15 (.met) @($CERESHOME/erbelike/data/CERES/SCCD/ $SS2_$PS2_4/yyyy/mm)	m	0.543	1/month	CER2.2P1 CER2.3P1 CER2.3P2 CER4.5-6.1P2	Archive	No
CER_SCCN_$SS2_$PS2_4_$CC2_4.yyyymm15 (.met) @($CERESHOME/erbelike/data/CERES/SCCN/ $SS2_$PS2_4/yyyy/mm)	m	0.023	1/month	CER2.2P1 CER2.3P1 CER2.3P2 CER4.5-6.1P2	Archive	No

a. See Section 5.2 for information on variable data values.
If "(.met)" is written next to an expected output filename, then the metadata file with the identical filename and .met extension must exist.
yyyy - 4-digit year (See Runtime Parameters Table 5-2)
mm - 2-digit month {valid values: 01 .. 12} (See Runtime Parameters Table 5-2)
- SGE job number, generated upon job submission

b. Note: m - mandatory output
o - optional output

c. Note: rm - remove

5.7 Expected Temporary Files/Directories

Table 5-6. Temporary Files Listing for CER2.4P1

Directory[a]	File Name
$CERESHOME/erbelike/CER2.4P1/data/scr/ CER2.4P1_$SS2_$PS2_4_$CC2_4.yyyymm15	SRF_$SS2_SW.yyyymm15
$CERESHOME/erbelike/CER2.4P1/data/scr/ CER2.4P1_$SS2_$PS2_4_$CC2_4.yyyymm15	SRF_$SS2_TOT.yyyymm15
$CERESHOME/erbelike/CER2.4P1/data/scr/ CER2.4P1_$SS2_$PS2_4_$CC2_4.yyyymm15	SRF_$SS2_WN.yyyymm15

a. See Section 5.2 for information on variable data values.

References

1. CERES Data Management System, Software Requirements Documents, Release 1, Version 1, January, 1995.
2. CERES ERBE-like Averaging to Monthly TOA Fluxes (Subsystem 3.0) Operator's Manual.
3. Reference "Sampling Strategy, Production Strategy, and Configuration Code Implementation at the Langley TRMM and Terra Information System (LATIS)" internal paper for detail description of the CERES environment parameters. URL: http://ceres.larc.nasa.gov/Internal/intern_docs.php
4. Reference "DMT to DAAC Production Request." URL: http://ceres.larc.nasa.gov/dmt2daac.php

Appendix A
Acronyms and Abbreviations

ASDC	Atmospheric Science Data Center
CERES	Clouds and the Earth's Radiant Energy System
CM	Configuration Management
DAAC	Distributed Active Archive Center
DB	Data Base
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
FAPS	Fixed Azimuth Plane Scan
FAPS+RAPS	Indicates FAPS and RAPS data processed together
FAPS, RAPS	Indicates FAPS and RAPS data processed separately
FOV	Field Of View
HDF	Hierarchical Data Format
LaRC	Langley Research Center
LaTIS	Langley TRMM Information System
LW	Longwave
MB	Megabytes
met	metadata file
μm	microns
N/A	Not Applicable
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
NSIDC	National Snow and Ice Data Center
PCF	Process Control File
PGE	Product Generation Executives
PSF	Point Spread Function
QC	Quality Control
RAPS	Rotating Azimuth Plane Scan
SMF	Status Message File
SSAI	Science Systems and Applications, Inc.
SW	Shortwave
TOA	Top-of-Atmosphere
TRMM	Tropical Rainfall Measuring Mission
VD	Validation Days

Appendix B
Error Messages for Subsystem 2.0

Appendix B contains a list of messages that may be generated during the execution of PGEs CER2.1P1 through CER2.3P2. These messages are used to inform the operator or analyst of specific circumstances encountered during data processing. These messages may be strictly informative (Error Type = Status or Warning), or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal). All messages are written to the LogReport file of the processing instance.

Table B-1 contains a list of the PGE CER2.1P1 diagnostic messages. This table contains for each error the error message and error type, and the recommended action that should be taken when the message is encountered.

Table B-2 contains a list of the PGE CER2.2P1 diagnostic messages. This table contains for each error the error message content, the source module name, the error type, and the recommended action that should be taken when the message is encountered.

Table B-3 contains a list of the PGEs CER2.3P1 and CER2.3P2 diagnostic messages. This table contains for each error the error message content, the source module name, the error type, and the recommended action that should be taken when the message is encountered.

Table B-4 contains a list of the PGE CER2.4P1 diagnostic messages. This table contains for each error the error message, the error type, and the recommended action that should be taken when the message is encountered.

Operator Instructions:

If a PGE prematurely terminates, then take the following steps:

1. Look at the last few records on the LogStatus file.
2. Find the error message in the following Error Message listing(s), and follow the appropriate ACTION.
3. If an error message is not in the LogStatus File, then repeat steps 1 and 2 using the LogReport File.
4. If no information is derived, then call the responsible Subsystem Software Analyst[1].
5. If the appropriate ACTION failed, then call the responsible Subsystem Software Analyst[1].
6. In all cases, log all steps that were taken after the PGE failure, and send a copy to the responsible Subsystem Software Analyst[1].

1. Throughout this Appendix, "Subsystem Software Analyst" refers to the contact person found in Table 1-1 for PGEs CER2.1P1, CER2.2P1 - CER2.3P2, and CER2.4P1

Table B-1. PGE CER2.1P1 Error Messages

Message	Error Type	Action[a]
Subroutine Name(): Error ... Failed to close albedo file.	Fatal	A file listed in the PCF for logic IDs # 25 through 28 was not closed. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Failed to close iigs file.	Fatal	The file listed in the PCF for logic ID # 1000 was not closed. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Failed to read albedo file.	Fatal	A file listed in the PCF for logic IDs # 25 through 28 was not read. Verify that the file size is correct.
Subroutine Name(): Error ... Failed to write iigs file.	Fatal	The iigs data failed to write to the Snow PGE's output file listed in the PCF for logic ID # 1000. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... LW Threshold is out of range.	Fatal	The long wave data value is not within acceptable limits. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Month index is out of range.	Fatal	The software value for month contains an invalid number. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Unable to close file.	Fatal	A file listed in the PCF for logic ID # 15, 1001 or 1002 was not closed. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Unable to close PermSno file.	Fatal	A file listed in the PCF for logic ID # 13 or 16 was not closed. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Unable to close seasonal LW file.	Fatal	A file listed in the PCF for logic IDs # 30 through 33 was not closed. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Unable to close TempENV file.	Fatal	The file listed in the PCF for logic ID # 1003 was not closed. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Unable to get Month.	Fatal	The software was unable to retrieve the data month given in the PCF for logic ID # 10. Check the PCF ascii input file and PCF file for correctness.
Subroutine Name(): Error ... Unable to get Parameter.	Fatal	The software was unable to retrieve the parameter name given in the PCF for logic ID # 142, 143, or 148. Check the PCF ascii input file and PCF file for correctness.
Subroutine Name(): Error ... Unable to get Year.	Fatal	The software was unable to retrieve the data year given in the PCF for logic ID # 9. Check the PCF ascii input file and PCF file for correctness.
Subroutine Name(): Error ... Unable to open file.	Fatal	The file listed in the PCF for logic ID # 25 through 28, 30 through 33, or 1000 was not opened. Verify that file exists. Check the PCF ascii input file and PCF file for correctness.
Subroutine Name(): Error ... Unable to open Geobase file.	Fatal	The file listed in the PCF for logic ID # 15 was not opened. Verify that file exists. Check the PCF ascii input file and PCF file for correctness.
Subroutine Name(): Error ... Unable to open PermSno file.	Fatal	A file listed in the PCF for logic ID # 13 or 16 was not opened. Verify that file exists. Check the PCF ascii input file and PCF file for correctness.
Subroutine Name(): Error ... Unable to open TempENV file.	Fatal	The file listed in the PCF for logic ID # 1003 was not opened. Check the PCF ascii input file and PCF file for correctness.

Table B-1. PGE CER2.1P1 Error Messages

Message	Error Type	Action[a]
Subroutine Name(): Error ... Unable to read Min NSIDC files.	Fatal	The minimum number of files listed in the PCF for logic IDs # 201 through 231 was not read. Verify that file exists. Check the PCF ascii input file and PCF file for correctness.
Subroutine Name(): Error ... Unable to read PermSno file.	Fatal	A file listed in the PCF for logic ID # 13 or 16 was not read. Verify that the file size is correct.
Subroutine Name(): Error ... Unable to read seasonal LW file.	Fatal	A file listed in the PCF for logic IDs # 30 through 33 was not read. Verify that the file size is correct.
Subroutine Name(): Error ... Unable to write to fmt file.	Fatal	The iigs data failed to write to the Snow PGE's output file listed in the PCF for logic ID # 1001. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Unable to write to TempENV file.	Fatal	The temporary data failed to write to the Snow PGE's output file listed in the PCF for logic ID # 1003. Contact the Subsystem Software Analyst.
Subroutine Name(): Error ... Unable to write to web file.	Fatal	The iigs data failed to write to the Snow PGE's output file listed in the PCF for logic ID # 1002. Contact the Subsystem Software Analyst.
Subroutine Name(): Warning ... Unable to close QC file.	Warning	The file listed in the PCF for logic ID # 900 was not closed. Contact the Subsystem Software Analyst.
Subroutine Name(): Warning ... Unable to open QC file.	Warning	The file listed in the PCF for logic ID # 900 was not opened. Check the PCF ascii input file and PCF file for correctness.
Subroutine Name(): Warning ... Unable to write to QC file.	Warning	The QC report data failed to write to the Snow PGE's output file listed in the PCF for logic ID # 900. Contact the Subsystem Software Analyst.
Subroutine Name(): Warning ... Unable to read NSIDC file.	Warning	A file listed in the PCF for logic IDs # 201 through 231 was not read. Verify that file exists. Check the PCF ascii input file and PCF file for correctness.

a. In this table, "Subsystem Software Analyst" refers to the contact person found in Table 1-1.

Variables used in Table B-2, Table B-3, and Table B-4 and in the following Action Item Codes are defined as follows:

yyyy = 4-digit CERDataDateYear (> 1996)
mm = 2-digit CERDataDateMonth (1 .. 12)
dd = 2-digit CERDataDateDay (01 .. 31)
nn = 01 .. 36

The following are Action Item Codes. These codes appear in the Action column of Table B-2, Table B-3 and Table B-4 as bold type.

A. Verify ancillary input namelist file, NIPSC, is valid. (PCF Logic ID = 40)
B. Verify SNOW input file is valid. (PCF Logic ID = 43)
C. Verify CXDR file is valid. (PCF Logic ID = 240)
D. Verify PLTF file is valid. (PCF Logic ID = 101 - 136)
E. Verify PSCHSK file is valid. (PCF Logic ID = 137)
F. Verify PRES8 input file is valid. (PCF Logic ID = 22)
G. Verify PRES8 input header is valid. (PCF Logic ID = 22)

a. See error message file for further information.
b. See QC report for further information.
c. Notify Primary Contact from Table 1-1.

Table B-2. PGEs CER2.2P1 Error Messages

Message	Module Name	Error Type	Action
MESSAGE NUMBER : 100 strt5(): Notice ... No Valid FAPS Alongtrack Data to Process.	inv	Notice	None
MESSAGE NUMBER : 100 strt5(): Notice ... No Valid FAPS Crosstrack Data to Process.	inv	Notice	None
MESSAGE NUMBER : 100 strt5(): Notice ... No Valid RAPS Data to Process.	inv	Notice	None
MESSAGE NUMBER : 101 Error ... Matching Instrument Name Supplied in PCF.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening Error Message File.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening Output EID-6 File.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening Namelist File.	inv	Fatal	**(A,a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening PRE-ES8 or ES8 File.	inv	Fatal	If ES-8 file is used as input, verify its validity. **(F,a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening QC Report File.	inv	Fatal	Verify output QC-7 Report is valid. (PCF Logic ID = 53) **(a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening Scene Identification File.	inv	Fatal	Verify binary seasonally varying scene ID files BIILW are valid. Verify binary temporally invariant scene ID file BIISW02 is valid. (PCF Logic ID = 45 - 49) **(B,a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening Spectral Correction File.	inv	Fatal	Verify ancillary input spectral correction file NIISC is valid. (PCF Logic ID = 31) **(a,c)**
MESSAGE NUMBER : 101 scinv(): Error ... Opening Output ES8N File.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 101 toolkit_open(): Error ... Opening Spec_Corr Coeff File.	si_spcor	Fatal	Verify ancillary input spectral correction file is valid. (PCF Logic ID = 61 and 62) **(a,c)**
MESSAGE NUMBER : 101 gen_pres8(): Error ... Opening PRES8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 101 gen_pres8(): Error ... Opening S-8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 101 gen_pres8(): Error ... Opening Temp File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 101 getoffs(): Error ... Opening Offset File.	gen_pres8	Fatal	**(a,c)**

Table B-2. PGEs CER2.2P1 Error Messages

Message	Module Name	Error Type	Action
MESSAGE NUMBER : 102 strt5(): Error ... Reading Spectral Correction File.	inv	Fatal	**(F,a,c)**
MESSAGE NUMBER : 102 patvfy(): Error ... Reading PRE-ES8 File Header.	inv	Fatal	**(G,a,c)**
MESSAGE NUMBER : 102 reader() : Error ... Reading Input Data File.	inv	Fatal	**(F,a,c)**
MESSAGE NUMBER : 102 valscan(): Error ... Reading ES8 File.	inv	Fatal	Verify ES-8 file is valid. (PCF Logic ID = 701) **(a,c)**
MESSAGE NUMBER : 102 si_begin(): Error ... Reading Spec_Corr Coeff File.	si_spcor	Fatal	**(F,a,c)**
MESSAGE NUMBER : 102 gen_pres8(): Error ... Reading Scale Factors.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 102 getoffs(): Error ... Reading Offset File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 102 gbfhed(): Error ... Reading Header Information.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 102 getrec(): Error ... Reading Temp File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 102 getrec(): Error ... Reading S-8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 103 scinv(): Error ... Writing Output ES8N File.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 103 nadir_write(): Error ... Writing ES8 Nadir Scan File.	nadir_util	Fatal	**(a,c)**
MESSAGE NUMBER : 103 gen_pres8(): Error ... Writing Temp File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 104 si_begin(): Error ... Closing Spec_Corr Coeff File.	si_spcor	Fatal	**(a,c)**
MESSAGE NUMBER : 104 gen_pres8(): Error ... Closing PRES8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 104 gen_pres8(): Error ... Closing S-8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 104 getoffs(): Error ... Closing Offset File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 104 gen_pres8(): Error ... Closing Temp File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 113 gen_pres8(): Notice ... NOAA9 Offsets applied.	gen_pres8	Notice	Verify spacecraft equals "NOAA9" (PCF Logic ID = 503)
MESSAGE NUMBER : 114 strt5(): Notice ... EID6 Output Flag is Turned OFF.	inv	Notice	Verify iscout in PCF equals the file ID for the EID-6 file. (PCF Logic ID = 651) **(a,c)**
MESSAGE NUMBER : 122 strt5(): Notice ... ES8 Output Flag is Turned OFF.	inv	Notice	Verify i12out in PCF equals the file ID for the ES-8 file. (PCF Logic ID = 652) **(a,c)**
MESSAGE NUMBER : 130 patvfy(): Error ... SS Indicator and/or the Product Code Not Verified.	inv	Fatal	**(A,G,a,c)**
MESSAGE NUMBER : 138 chkreq():Error ... Reading data date or spacecraft.	inv	Fatal	Verify data date and spacecraft are correct in PCF. (PCF Logic ID = 601 - 607) **(G,a,c)**
MESSAGE NUMBER : 138 gen_pres8(): Error ... Failed to Get Data Date.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 138 gen_pres8(): Error ... Failed to Get Scft Code.	gen_pres8	Fatal	**(a,c)**

Table B-2. PGEs CER2.2P1 Error Messages

Message	Module Name	Error Type	Action
MESSAGE NUMBER : 141 gen_pres8(): Error ... Failed to Get Record.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 142 gen_pres8(): Error ... Failed to Get Offsets.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 148 rdati(): Error ... EOF Read During Initial Read Attempt.	inv	Fatal	**(F,a,c)**
MESSAGE NUMBER : 215 scinv(): Warning ... Failed to process nadir scan.	inv	Warning	None
MESSAGE NUMBER : 216 rdpat(): Error ... ES8 Data Not Chronologically Sequenced.	inv	Fatal	**(A,F,a,c)**
MESSAGE NUMBER : 218 swzeroe(): Warning ... IORB Greater Than 15.	inv	Warning	None
MESSAGE NUMBER : 219 spcor_new(): Error ... Invalid Scene Type.	inv	Fatal	**(B,a,c)**
MESSAGE NUMBER : 221 spcor_new(): Error ... Invalid Scene Type.	inv	Fatal	Verify ancillary input spectral correction file NIISC is valid. (PCF Logic ID = 31) **(a,c)**
MESSAGE NUMBER : 222 scnid(): Error ... Cloud Cover Index Cannot be Determined.	inv	Fatal	Verify binary seasonally varying scene ID files BIILW are valid. Verify binary temporally invariant scene ID file BIISW02 is valid. (PCF Logic ID = 45 - 49) **(A,B,F,a,c)**
MESSAGE NUMBER : 223 scacum(): Notice ... Opening a Second 2.5-DEG Active Scanner Region.	inv	Notice	None. **(a)**
MESSAGE NUMBER : 224 scacum(): Error ... No More Active Region Storage.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 230 scacum(): Error ... Scanner Region Indexing Problem.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 540 geoscn(): Error ... Invalid Scene Type.	inv	Fatal	**(B,a,c)**
pgspci(): Error ... Getting PC Parameter Value.	inv	Fatal	Verify PCF is valid - the module is trying to retrieve a particular parameter. **(a,c)**
maines8(): Error ... SWopen Failed	ConvertES8	Fatal	HDF function swopen cannot open ES-8 HDF-EOS file. Verify file exists and is valid. (PCF Logic ID = 701) **(c)**
maines8(): Error ... SWcreate Failed	ConvertES8	Fatal	HDF function swcreate cannot create a swath for the ES-8 HDF-EOS file.**(c)**
maines8(): Error ... SWdefdim Failed	ConvertES8	Fatal	HDF function swdefdim cannot define a dimension within the newly created swath. **(c)**
maines8(): Error ... SWdefgfld Failed	ConvertES8	Fatal	HDF function swdefgfld cannot define a geolocation field within the newly created swath. **(c)**
maines8(): Error ... SWdefdfld Failed	ConvertES8	Fatal	HDF function swdefdfld cannot define a data field within the newly created swath. **(c)**
maines8(): Error ... SWdetach Failed	ConvertES8	Fatal	HDF function swdetach cannot close the newly created swath. **(c)**
maines8(): Error ... SWclose Failed	ConvertES8	Fatal	HDF function swclose cannot close the ES-8 HDF-EOS file. **(c)**
maines8(): Error ... Writing 64-Bit VData	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Writing 32-Bit VData	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Writing SDS Data	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Writing Measurement Flag Words	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Writing Scanner Operation Flag Words	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Attaching Swath Failed	ConvertES8	Fatal	**(a,c)**

Table B-2. PGEs CER2.2P1 Error Messages

Message	Module Name	Error Type	Action
maines8(): Error ... Sfstart Failed	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Writing Units	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Writing Range	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Writing Fill Value	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Hopen Failed	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Closing File	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Vsfdtch Failed	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Hclose Failed	ConvertES8	Fatal	**(a,c)**
maines8(): Error ... Opening ES8 File	MainES8	Fatal	Cannot open ES-8 Binary file. Verify file exists and is valid. **(c)**
maines8(): Error ... GetFileName for HDF output File	MainES8	Fatal	Error retrieving output filename from PCF. Verify PCF. **(c)**
maines8(): Error ... Reading data from binary ES-8 FileReading ES8 File	MainES8	Fatal	Cannot read ES-8 Binary file. Verify file exists and is valid. (PCF Logic ID = 701) **(c)**
read_qc(): Error ... Closing ERBE-like Monthly QC.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Unable to close eMail subject file.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Unable to close Bad Data file.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Unable to close QCcheck.list file.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Failed to get filename using Logic ID.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Unable to open eMail subject file.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Opening ERBE-like Monthly QC Report.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Opening ERBE-like QC Checklist file.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Opening ERBE-like QC Bad Data file.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Unable to read QCcheck.list file.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Read_row_col failed.	read_qc	Fatal	**(a,c)**
read_qc(): Error ... Row in QCcheck list is too large.	read_qc	Fatal	**(a,c)**

Table B-3. PGEs CER2.3P1 - CER2.3P2 Error Messages

Message	Module Name	Error Type	Action
MESSAGE NUMBER : 100 strt5(): Notice ... No Valid FAPS Alongtrack Data to Process.	inv	Notice	None
MESSAGE NUMBER : 100 strt5(): Notice ... No Valid FAPS Crosstrack Data to Process.	inv	Notice	None
MESSAGE NUMBER : 100 strt5(): Notice ... No Valid RAPS Data to Process.	inv	Notice	None
MESSAGE NUMBER : 101 inutil(): Error ... Opening Error Message File.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening Namelist File.	inv	Fatal	**(A,a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening Output EID-6 File.	inv	Fatal	**(a,c)**

Table B-3. PGEs CER2.3P1 - CER2.3P2 Error Messages

Message	Module Name	Error Type	Action
MESSAGE NUMBER : 101 strt5(): Error ... Opening PRE-ES8 or ES8 File.	inv	Fatal	If ES-8 file is used as input, verify its validity. (PCF Logic ID = 22) **(F,a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening QC Report File.	inv	Fatal	Verify output QC-7 Report is valid. (PCF Logic ID = 53) **(a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening Scene Identification File.	inv	Fatal	Verify binary seasonally varying scene ID files BIILW are valid. Verify binary temporally invariant scene ID file BIISW02 is valid. (PCF Logic ID = 45 - 49) **(B,a,c)**
MESSAGE NUMBER : 101 strt5(): Error ... Opening Spectral Correction File.	inv	Fatal	Verify ancillary input spectral correction file NIISC is valid. (PCF Logic ID = 31) **(a,c)**
MESSAGE NUMBER : 101 toolkit_open(): Error ... Opening Spec_Corr Coeff File.	si_spcor	Fatal	Verify ancillary input spectral correction file is valid. (PCF Logic ID = 61 and 62) **(a,c)**
MESSAGE NUMBER : 101 gen_pres8(): Error ... Opening PRES8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 101 gen_pres8(): Error ... Opening S-8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 101 gen_pres8(): Error ... Opening Temp File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 101 getoffs(): Error ... Opening Offset File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 102 patvfy(): Error ... Reading PRE-ES8 File Header.	inv	Fatal	**(G,a,c)**
MESSAGE NUMBER : 102 reader(): Error ... Reading Input Data File.	inv	Fatal	**(F,a,c)**
MESSAGE NUMBER : 102 valscan(): Error ... Reading ES8 File.	inv	Fatal	Verify ES-8 file is valid. **(a,c)**
MESSAGE NUMBER : 102 si_begin(): Error ... Reading Spec_Corr Coeff File.	si_spcor	Fatal	**(F,a,c)**
MESSAGE NUMBER : 102 gen_pres8(): Error ... Reading Scale Factors.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 102 getoffs(): Error ... Reading Offset File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 102 gbfhed(): Error ... Reading Header Information.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 102 getrec(): Error ... Reading Temp File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 102 getrec(): Error ... Reading S-8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 103 gen_pres8(): Error ... Writing Temp File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 104 si_begin(): Error ... Closing Spec_Corr Coeff File.	si_spcor	Fatal	**(a,c)**
MESSAGE NUMBER : 104 gen_pres8(): Error ... Closing PRES8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 104 gen_pres8(): Error ... Closing S-8 data file.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 104 getoffs(): Error ... Closing Offset File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 104 gen_pres8(): Error ... Closing Temp File.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 113 gen_pres8(): Notice ... NOAA9 Offsets applied.	gen_pres8	Notice	Verify spacecraft equals "NOAA9" (PCF Logic ID = 503)

Table B-3. PGEs CER2.3P1 - CER2.3P2 Error Messages

Message	Module Name	Error Type	Action
MESSAGE NUMBER : 114 strt5(): Notice ... EID6 Output Flag is Turned OFF.	inv	Notice	Verify iscout in PCF equals the file ID for the EID-6 file. (PCF Logic ID = 651) **(a,c)**
MESSAGE NUMBER : 122 strt5(): Notice ... ES8 Output Flag is Turned OFF.	inv	Notice	Verify i12out in PCF equals the file ID for the ES-8 file. (PCF Logic ID = 652) **(a,c)**
MESSAGE NUMBER : 123 strt5(): Notice ... ES8N Output Flag is Turned OFF.	inv	Notice	Verify nadir_unit in PCF equals the file ID for the ES-8 nadir file. (PCF Logic ID = 653) **(a,c)**
MESSAGE NUMBER : 130 patvfy(): Error ... SS Indicator and/or the Product Code Not Verified.	inv	Fatal	**(A,G,a,c)**
MESSAGE NUMBER : 138 chkreq(): Error ... Reading data date or spacecraft.	inv	Fatal	Verify data date and spacecraft are correct in PCF. (PCF Logic ID = 601 - 607) **(G,a,c)**
MESSAGE NUMBER : 138 gen_pres8(): Error ... Failed to Get Data Date.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 138 gen_pres8(): Error ... Failed to Get Scft Code.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 141 gen_pres8(): Error ... Failed to Get Record.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 142 gen_pres8(): Error ... Failed to Get Offsets.	gen_pres8	Fatal	**(a,c)**
MESSAGE NUMBER : 148 rdati(): Error ... EOF Read During Initial Read Attempt.	inv	Fatal	**(F,a,c)**
MESSAGE NUMBER : 216 rdpat(): Error ... ES8 Data Not Chronologically Sequenced.	inv	Fatal	**(A,F,a,c)**
MESSAGE NUMBER : 218 swzero(): Warning ... IORB Greater Than 15.	inv	Warning	None
MESSAGE NUMBER : 219 spcor_new(): Error ... Invalid Scene Type.	inv	Fatal	**(B,a,c)**
MESSAGE NUMBER : 221 spcor_new(): Error ... Invalid Scene Type.	inv	Fatal	Verify ancillary input spectral correction file NIISC is valid. (PCF Logic ID = 31) **(a,c)**
MESSAGE NUMBER : 222 scnid(): Error ... Cloud Cover Index Cannot be Determined.	inv	Fatal	Verify binary seasonally varying scene ID files BIILW are valid. Verify binary temporally invariant scene ID file BIISW02 is valid. (PCF Logic ID = 45 - 49) **(A,B,F,a,c)**
MESSAGE NUMBER : 223 scacum(): Notice ... Opening a Second 2.5-DEG Active Scanner Region.	inv	Notice	None. **(a)**
MESSAGE NUMBER : 224 scacum(): Error ... No More Active Region Storage.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 230 scacum(): Error ... Scanner Region Indexing Problem.	inv	Fatal	**(a,c)**
MESSAGE NUMBER : 540 geoscn(): Error ... Invalid Scene Type.	inv	Fatal	**(B,a,c)**
pgspci(): Error ... Getting PC Parameter Value.	inv	Fatal	Verify PCF is valid - the module is trying to retrieve a particular parameter. **(a,c)**
MESSAGE NUMBER : 1 ddbint():Error ... Opening House Keeping File.	ddbint	Fatal	**(E,a,c)**
MESSAGE NUMBER : 3 ddbint(): Error ... Writing House Keeping File.	ddbint	Fatal	**(E,a,c)**
MESSAGE NUMBER : 3 sinhsk(): Error ... Writing House Keeping File.	ddbint	Fatal	**(E,a,c)**
pgspci(): Error ... Getting PC Parameter Value.	ddbint	Fatal	Verify PCF is valid - the module is trying to retrieve a particular parameter. **(a,c)**

Table B-3. PGEs CER2.3P1 - CER2.3P2 Error Messages

Message	Module Name	Error Type	Action
MESSAGE NUMBER : 9024 regrep(): Warning ... Error Resolution.	ddbint	Warning	**(a,c)**
MESSAGE NUMBER : 1 suopdb(): Error ... Opening House Keeping File.	ddbupd	Fatal	**(E,a,b,c)**
MESSAGE NUMBER : 1 suopdb(): Error ... Opening Latitude File.	ddbupd	Fatal	**(B,a,b,c)**
MESSAGE NUMBER : 1 suopdb(): Error ... Opening Overlap File.	ddbupd	Fatal	**(C,a,b,c)**
MESSAGE NUMBER : 1 suopin(): Error ... Opening Inversion EID6 File.	ddbupd	Fatal	Verify the EID-6 file is valid. (PCF Logic ID = 301) **(a,b,c)**
MESSAGE NUMBER : 1 suwrep(): Error ... Opening QC Report File.	ddbupd	Fatal	Verify the QC Report is valid. (PCF Logic ID = 250) **(a,b,c)**
MESSAGE NUMBER : 2 sucldb(): Error ... Reading House Keeping File.	ddbupd	Fatal	**(E,a,b,c)**
MESSAGE NUMBER : 2 suopdb(): Error ... Reading House Keeping File.	ddbupd	Fatal	**(E,a,b,c)**
MESSAGE NUMBER : 3 sucldb(): Error ... Writing House Keeping File.	ddbupd	Fatal	**(E,a,b,c)**
MESSAGE NUMBER : 3 sucldb(): Error ... Writing Overlap File.	ddbupd	Fatal	**(C,a,b,c)**
MESSAGE NUMBER : 3 suscan(): Error ... Writing Latitude File.	ddbupd	Fatal	**(D,a,b,c)**
MESSAGE NUMBER : 3 suscan(): Error ... Writing Overlap File.	ddbupd	Fatal	**(C,a,b,c)**
MESSAGE NUMBER : 6 suscan(): Warning ... Region Number out of Range.	ddbupd	Warning	Program continues to process the next record. **(a,b)**
MESSAGE NUMBER : 8 suopdb(): Error ... Overlap Data Already Processed.	ddbupd	Fatal	**(E,a,c)**
MESSAGE NUMBER : 16 suopdb(): Error ... Opening Latitude File.	ddbupd	Fatal	This error will accompany one or more of the "MESSAGE 1 FROM SUOPDB: ERROR OPENING LATITUDINAL FILE PLTFnn" error messages. Follow the recommended action for them. (PCF Logic ID = 101 - 136) **(c)**
MESSAGE NUMBER : 301 suscan(): Error ... Reading Inversion EID6 File.	ddbupd	Fatal	Verify the EID-6 file is valid. (PCF Logic ID = 301) **(a,b,c)**
pgspci(): Error ... Getting PC Parameter Value.	ddbupd	Fatal	Verify PCF is valid - the module is trying to retrieve a particular parameter. **(a,c)**
MESSAGE NUMBER : 9024 regrep(): Warning ... Error Resolution.	ddbupd	Warning	**(a,c)**

Table B-4. PGEs CER2.4P1 Error Messages

Message	Error Type	Action
Subroutine Name():Notice ... Beginning of scc software.	Notice	None
Subroutine Name():Error ... Cannot process singular matrix.	Fatal	**(a,c)**
MESSAGE NUMBER : 100 *Subroutine Name*(): Error ... Incorrect input.	Fatal	**(a,c)**
MESSAGE NUMBER : 100 *Subroutine Name*(): Error ... Input command line argument incorrect.	Fatal	**(a,c)**
MESSAGE NUMBER : 100 *Subroutine Name*(): Error ... Failed to get interpolation interval.	Fatal	**(a,c)**
MESSAGE NUMBER : 100 *Subroutine Name*(): Error ... Character was not converted to number.	Fatal	**(a,c)**
MESSAGE NUMBER : 101 *Subroutine Name*(): Error ... Opening Spectral Response File.	Fatal	Verify output QC-7 Report is valid. (PCF Logic ID = 53) **(a,c)**
MESSAGE NUMBER : 101 *Subroutine Name*(): Error ... Opening Modtran File (*tp7)	Fatal	Verify ancillary input file is valid. (PCF Logic IDs = 2001 - 2030) **(a,c)**
MESSAGE NUMBER : 101 *Subroutine Name*(): Opening Coef File (*coef)	Fatal	Verify intermediate coeficient file is valid. (PCF Logic IDs = 3001 - 3180) **(a,c)**
MESSAGE NUMBER : 101 *Subroutine Name*(): Error ... Opening Regression File (*regr)	Fatal	Verify intermediate regression file is valid. (PCF Logic ID = 4001 - 4188) **(a,c)**
MESSAGE NUMBER : 101 *Subroutine Name*(): Error ... Opening Regression Out File (*regr*.out)	Fatal	Verify intermediate regression file is valid. (PCF Logic ID = 4001 - 4188) **(a,c)**
MESSAGE NUMBER : 102 *Subroutine Name*(): Error ... Reading Coef File (*coef)	Fatal	**(a,c)**
MESSAGE NUMBER : 102 *Subroutine Name*(): Error ... Reading Spectral Response File.	Fatal	**(a,c)**
MESSAGE NUMBER : 102 *Subroutine Name*(): Error ... Reading Modtran File (*tp7)	Fatal	**(a,c)**
MESSAGE NUMBER : 103 *Subroutine Name*(): Error ... Writing Coef File (*coef)	Fatal	**(a,c)**
MESSAGE NUMBER : 103 *Subroutine Name*(): Error ... Writing Regression File (*regr)	Fatal	**(a,c)**
MESSAGE NUMBER : 103 *Subroutine Name*(): Error ... Writing Regression Out File (*regr*.out)	Fatal	**(a,c)**
MESSAGE NUMBER : 103 *Subroutine Name*(): Error ... Writing Spectral Response File.	Fatal	**(a,c)**
MESSAGE NUMBER : 104 *Subroutine Name*(): Error ... Closing Spectral Response File.	Fatal	**(a,c)**
MESSAGE NUMBER : 104 *Subroutine Name*(): Error ... Closing Modtran File (*tp7).	Fatal	**(a,c)**
MESSAGE NUMBER : 104 *Subroutine Name*(): Error ... Closing Coef File (*coef).	Fatal	**(a,c)**
MESSAGE NUMBER : 104 *Subroutine Name*(): Error ... Closing Regression File (*regr)	Fatal	**(a,c)**
MESSAGE NUMBER : 104 *Subroutine Name*(): Error ... Closing Regression Out File (*regr*.out)	Fatal	**(a,c)**
MESSAGE NUMBER : 112 Subroutine Name(): Error ... File Header doesnot match intrument.	Fatal	**(a,c)**
MESSAGE NUMBER : 113 Subroutine Name(): Error ... File Header doesnot match channel.	Fatal	**(a,c)**

Table B-4. PGEs CER2.4P1 Error Messages

Message	Error Type	Action
MESSAGE NUMBER : 114 Subroutine Name(): Error ... File Header doesnot match interpolation date.	Fatal	**(a,c)**