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

Data Management System

Operator's Manual

Synoptic Surface and Atmospheric Radiation Budget (SARB) Subsystem (Subsystem 7.2)

CER7.2.1P1

Release 5
Version 5

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Document Revision Record

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

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
06/19/03	R3V1	445	• Initial version of document.	All
			• Updated format to comply with standards.	All
08/13/04	R3V2	550	• Added names and descriptions of files introduced with this delivery.	Overview & Table 0-1
			• Added names for new parent PGEs.	Sec. 1.1.3 & Table 1-2
			• Added new environment variable names.	Sec. 1.2.2
			• Updated execution frequency, runtime, and memory requirements for PGE.	Secs. 1.2.3 & 1.2.4
			• Used "instance-dependent" in section description.	Sec. 1.3
			• Updated input file sizes.	Secs. 1.3.1 & 1.3.2
			• Updated information for aerosol input files.	Sec. 1.3.3
			• Added sections for new input files.	Secs. 1.3.4.1 - 1.3.4.7
			• Added notes about running multiple jobs.	Sec. 1.5.4
			• Added table for listing temporary output.	Sec. 1.7
			• Updated ASCII file listing.	App. C
			• Updated format to comply with standards.	All
08/11/06	R3V3	634	• Added names and descriptions of files introduced with this delivery.	Overview & Table 0-1
			• Changed names of scripts to reflect conversion to Perl.	Secs. 1.2.2 & 1.4
			• Added new environment variable names.	Sec. 1.2.2
			• Updated execution frequency, runtime, and memory requirements for PGE.	Sec. 1.2.4
			• Added sections for data input set descriptions.	Secs. 1.3.4 - 1.3.12
			• Updated output file sizes.	Table 1-6

Document Revision Record

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08/11/06 (Cont'd)	R3V3	634	• Updated ASCII file listing. • The SYNI file was changed from "Archive, rm" to "Archive, do not remove." • Updated format to comply with standards.	App. C Table 1-6 All
04/05/07	R3V4	652	• Added section for data input set description. • Modified mandatory/optional sections of file descriptions.	Sec. 1.3.13 Secs. 1.3.11 & 1.3.12
12/12/07	R4V1	663	• Added description of new SYNS product. • Added new file names. • Updated contact information. • Removed references to unneeded environment variables. • Updated execution information. • Updated memory requirements. • Updated year information. • Added description of new input file and modified relevant parameters. • Added Aqua to data set descriptions. • Added information for new SYNS product. • Updated with new ASCII file example. • Added new environment variable to specify collection of MATCH data. • Removed Appendix C - Sample ASCII (PCFin) File Listing since PCFin files are no longer required. (09/16/2009)	Overview Table 0-1 Table 1-1 Sec. 1.2.2 Sec. 1.2.3 Sec. 1.2.4 Sec. 1.3.3 Sec. 1.3.5 Secs. 1.3.6 - 1.3.10, & 1.3.13 Table 1-6 App. C Sec. 1.2.2 App. C
08/19/09	R5V1	721	• Updated input data information. • Updated directory information. • /QA was removed from the footnotes of the expected output file listing table. (06/07/2010)	Sec. 1.3.5 Secs. 1.4.2, 1.4.3, 1.4.5, 1.5.3, & Table 1-6 Table 1-6
07/19/10	R5V2	797	• Added environment variables for SAH map inputs. • Added new path for Synoptic MATCH files.	Sec. 1.2.2 Secs. 1.3.3 & 1.3.4

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09/09/10	R5V3	804	• Removed ASCII file script references.	Sec. 1.4
			• Added instructions for using SGE.	Sec. 1.4.2
			• Updated file paths.	Table 0-1, Sec. 1.3, & Table 1-6
			• Updated runtime variables.	Secs. 1.2.1, 1.3, & Tables 1-6 & 1-7
			• Added new environment variables for SAH maps.	Sec. 1.2.2
			• Removed outdated test information.	Sec. 1.2.3
			• Updated test information.	Secs. 1.2.4, 1.4, & 1.5.3
			• Added "Available Through Ordering Tool" column and removed red "meta" from expected output tables.	All Expected Output Tables
			• Modified the SAH input filename. (09/24/2010)	Sec. 1.3.5
			• The PCFin output file was deleted. (09/24/2010)	Table 1-6
			• Modified "SS7_2_MATCH" to read "SS7 2_MATCH." (11/17/2010)	Sec. 1.2.2
			• Modified "7.1.1P1" to read "7.3.1P1." (11/19/2010)	Table 1-2
			• Modified "SS7 2_MATCH" to read "SS72_MATCH." (01/12/2011)	Sec. 1.2.2
			• Modified 7_1 to read 7_3 and added environment scripts SAT, INST, and IMAG. (01/25/2012)	Sec. 1.2.2
			• Modified input filename to read 7_3 instead of 7_1, and deleted an "_" after /TSIB/. (01/25/2012)	Sec. 1.3.1
			• Modified Terra data set information to Terra and Terra-Aqua. (01/25/2012)	Sec. 1.3.7
			• Added new 1.3.8 section to describe additional ECS 213 Aqua input file; remaining sections incremented in number. (01/25/2012)	Sec. 1.3.8
			• Removed obsolete filenames. (02/08/2012)	Table 1-4
			• Added SGE run options. (02/08/2012)	Sec. 1.4.2
			• Added PCF log file and modified PCF and PCF log file size. (02/10/2012)	Table 1-6
			• Added more examples for SGE runs. (02/21/20012)	Sec. 1.4.2

Document Revision Record

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09/09/10 (Cont'd)	R5V3	804	• The line "Below are some examples of executing the driver script with these arguments" was added. (03/12/2012)	Sec. 1.4.2
			• Modified a link and document title name. (04/10/2012)	References
			• Modified disposition of MATCH input files and surface albedo history input file. (11/08/2012)	Secs. 1.3.3 & 1.3.5
			• Updated MATCH file names to reflect collection type. (11/08/2012)	Secs. 1.3.3 & 1.3.4
12/12/12	R5V4	938	• Updated contact information.	Table 1-1
			• Removed platform option for SGE instructions.	Table 1-4
			• Updated environment script names.	Secs. 1.2.2 & 1.4.2
			• Updated runlog path.	Sec. 1.5.3
			• Changed env variable CC4_0 to CC4_0P1.	Secs. 1.2.2, 1.3.9, & 1.3.10
			• Changed PS4_0 and CC4_0P1 to PS4_0_8 and CC4_0P1_8. Added PS4_0_16 and CC4_0P1_16. (03/22/2013)	Sec. 1.2.2
			• Updated env variable names for 1/8 grid snow/ice maps. (03/22/2013)	Secs. 1.3.9 & 1.3.10
			• New sections for 1/16 grid snow ice maps. (03/22/2013)	Secs. 1.3.11 & 1.3.12
			• Updated input and output file dispositions. (09/04/2013)	Sec. 1.3.1-1.3.16 & Table 1-6
			• Modified table to read "N/A" instead of "None" in Target PGE column. (10/04/2013)	Table 1-6
			• Fixed some cross reference link issues. (10/10/2013)	All
2/25/14	R5V5	1002	• Updated input data descriptions to specify valid processing period.	Secs. 1.3.14 & 1.3.15
			• Added new input data sections.	Secs. 1.3.16 & 1.3.17
			• Changed input data paths for MATCH files. (03/17/2014)	Secs. 1.3.3 & 1.3.4
			• Removed MATCH files from static data list. (03/17/2014)	Table 0-1

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 Synoptic Surface and Atmospheric Radiation Budget (SARB) Subsystem 7.2 Release 3 Operator's Manual, is part of the CERES Subsystem 7.2 Release 3 delivery package provided to the Atmospheric Science Data Center (ASDC). It provides a description of the CERES Synoptic SARB Subsystem Release 3 Product Generation Executive (PGE) and explains the procedures for executing the software. A description of acronyms and abbreviations is provided in Appendix A, and a comprehensive lists of messages that can be generated during the execution of PGE CER7.2.1P1 are contained in Appendix B.

This document is organized as follows:

Introduction
Document Overview
Subsystem Overview
1.0 PGEName: CER7.2.1P1
References

Appendix A - Acronyms and Abbreviations
Appendix B - Error Messages for Subsystem 7.2

Subsystem Overview

The Synoptic SARB Subsystem software computes longwave, shortwave, and window channel vertical flux profiles that span from the Earth's surface to the Top-of-Atmosphere. These profiles are stored on the Synoptic Intermediate (SYNI) product. Each SYNI contains data from one instrument for one month for a single one-degree latitudinal zone, and directly corresponds to a Time and Space Interpolate Binary (TSIB) product for the same month, instrument, and zone. The TSIB and SYNI data are both stored on a subset product (SYNS), which contains data for specific locations designated by the Science Team.

CER7.2.1P1 - Synoptic SARB Subsystem Main-Processor

PGE CER7.2.1P1 consists of a Main-Processor. The primary output from the Main-Processor is the SYNI, which serves as input for CERES Subsystem 8.0. An ASCII QC report is also generated.

In addition to the input files listed in the sections that follow, various static ancillary input data files are also required for the Synoptic SARB PGEs to process. The majority of these ancillary input data sets are also accessed by the Instantaneous SARB Subsystem, PGE CER5.1P1. These files are listed in Table 0-1.

Table 0-1. Synoptic SARB Subsystem Static Ancillary Input Data Files

File Name	Description
$CERESHOME/sarb/ancillary/CER7.2.1P1/SS5_DrivTab_19990315	Precomputed derivative table values
$CERESHOME/sarb/ancillary/CER7.2.1P1/SigTab_Synoptic_20040730	Precomputed sigma table values for the Synoptic SARB Subsystem only
$CERESHOME/sarb/ancillary/CER7.2.1P1/Control File_20070920	Drives selection of data sources based on specified record conditions
$CERESHOME/sarb/ancillary/CER7.2.1P1/sitelist.txt	Drives generation of subset files based on designated locations
$CERESHOME/sarb/ancillary/CER7.2.1P1/IGBP_Ver3.0	Static, global vegetation/scene-type map index
$CERESHOME/sarb/ancillary//MATCH/Edition2/aot/MATCH_TERRA_AOTS_CLIM_MODIS.*CurrYearCurrMonth*	*The* MATCH_TERRA_AOTS_CLIM_ MODIS *files are monthly climatology files.*
$CERESHOME/sarb/ancillary/CER7.2.1P1/flsa0404_lut.2s.coef	Surface albedo-related coefficients required by the Fu-Liou Radiative Transfer Model.
$CERESHOME/sarb/ancillary/CER7.2.1P1/flsa3_lut.4s.coef_19991215	Surface albedo-related coefficients required by the Fu-Liou Radiative Transfer Model.

Table 0-1. Synoptic SARB Subsystem Static Ancillary Input Data Files

File Name	Description
$CERESHOME/sarb/ancillary/CER7.2.1P1/flsa4_lut.2s.coef_19991215	Surface albedo-related coefficients required by the Fu-Liou Radiative Transfer Model.
$CERESHOME/sarb/ancillary/CER7.2.1P1/flsa200508c.fubin.tab	Surface albedo-related coefficients required by the Fu-Liou Radiative Transfer Model.
$CERESHOME/sarb/ancillary/CER7.2.1P1/SS5_ZJin_OcnAlb_20031101	Zhonghai Jin ocean spectral albedo lookup table.
$CERESHOME/sarb/ancillary/CER7.2.1P1/chlor_clim/chlor_clim.*CurrMonth*	Global monthly file of Chlorophyl amount used as an input for Ocean surface albedo.
$CERESHOME/sarb/ancillary/CER7.2.1P1/iceage/indxs_nesds.dat	File containing latitude longitude conversion indexes for the polar stereographic projection of the NOAA coordinate system into the 10' Ceres grid system.
$CERESHOME/sarb/ancillary/CER7.2.1P1/seawifs/seawifs_chlor.yyyymm	Monthly chlorophyll based on seawifs data
$CERESHOME/sarb/ancillary/CER7.2.1P1/zjin/zjin.ice.bin.1 $CERESHOME/sarb/ancillary/CER7.2.1P1/zjin/zjin.snow.bin.1 $CERESHOME/sarb/ancillary/CER7.2.1P1/zjin/zjin.ocean_feb04.bin	Binary lookup table data file for spectral surface albedo of Sea Ice. Binary lookup table data file for spectral surface albedo of Snow. Binary lookup table data file for spectral surface albedo of Ocean.
$CERESHOME/sarb/ancillary/CER7.2.1P1/sah_ed2/SAH.v5.yyyymm	Surface albedo history map.
$CERESHOME/sarb/ancillary/CER7.2.1P1/sitelist.txt	List of sites included in SYNS product

1.0 PGEName: CER7.2.1P1

CER7.2.1P1 - CERES Synoptic Surface and Atmospheric Radiation Budget (SARB) Main-Processor

1.1 PGE Details

1.1.1 Responsible Persons

The Subsystem software analysts responsible for the development of PGE CER7.2.1P1 are listed in Table 1-1.

Table 1-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Tom Caldwell	Victor Sothcott
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	(757) 951-1621	(757) 951-1683
Fax	(757) 951-1900	(757) 951-1900
LaRC e-mail	Thomas.E.Caldwell@nasa.gov	Victor.E.Sothcott@nasa.gov

1.1.2 E-mail Distribution List

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

1.1.3 Parent PGE(s)

The PGEs listed in Table 1-2 must successfully execute for the specified data set prior to executing PGE CER7.2.1P1.

Table 1-2. Parent PGEs for CER7.2.1P1

PGEName	Description
CER7.3.1P1	Process Time Interpolation and Synoptic Flux Computation
CER4.1-4.0P1 CER4.1-4.2P2	Various CERES Clouds Subsystem PGEs
CER12.1P1	Regrid Meteorological, Ozone, and Aerosol (MOA) Subsystem

1.1.4 Target PGE(s)

Table 1-3 lists the PGEs dependent on output from PGE CER7.2.1P1.

Table 1-3. Target PGEs after CER7.2.1P1

PGEName	Description
CER8.1P1	Monthly Regional, Zonal and Global Radiation Fluxes and Cloud Properties

1.2 Operating Environment

1.2.1 Runtime Parameters (A List of all Dynamic Parameters needed at Runtime)

The runtime parameters listed in Table 1-4 are required for the instructions given in the remainder of Section 1.0 to process PGE CER7.2.1P1.

Table 1-4. Runtime Parameters for CER7.2.1P1

Parameter	Description	Data Type	Valid Values
Year	Year--yyyy, where yyyy = four-digit year	I(4), where year = (I4.4)	 >2000
Month	Month--mm, where mm = two-digit month	I(2), where month = (I2.2)	 01 .. 12
Zone	Zone--ZNum, where Z = "Z" (constant) Num = Latitudinal zone index	ASCII, where Z = ASCII Num = (I3.3)	 Z 001 .. 180
SGE options	-clean -date yyyymm -start yyyymm -end yyyymm -zone zzz -start_zone zzz -end_zone zzz	ASCII yyyy = 4 digit year mm = 2 digit month zzz = 3 digit zone	No value needed >2000 01 .. 12 1 .. 180

1.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters required by the CERES PGEs.

PGE CER7.2.1P1 references the following environment variables:

SAT - Satellite: see Production Request
INST - Instrument: see Production Request

IMAG	-	Imager: see Production Request
SS7_3	-	Sampling Strategy for Time Interpolation: see Production Request
PS7_3	-	Production Strategy for Time Interpolation: see Production Request
CC7_3	-	Configuration Code for Time Interpolation: see CM Database
SS7_2	-	Sampling Strategy for Synoptic SARB: see Production Request
SS72_MATCH	-	C4 if using collection 4 MATCH, C5 for collection 5 MATCH
SS4_2	-	Sampling Strategy for OHSAlb maps: see Production Request
SS4_0	-	Sampling Strategy for Snow/Ice maps: see Production Request
PS7_2	-	Production Strategy for Synoptic SARB: see Production Request
PS4_2	-	Production Strategy for OHSAlb maps: see Production Request
PS4_0_8	-	Production Strategy for 1/8 Snow/Ice maps: see Production Request
PS4_0_16	-	Production Strategy for 1/16 Snow/Ice maps: see Production Request
CC7_2	-	Configuration Code for Synoptic SARB: see CM Database
CC4_2	-	Configuration Code for OHSAlb maps: see CM Database
CC4_0P1_8	-	Configuration Code for 1/8 Snow/Ice maps: see CM Database
CC4_0P1_16	-	Configuration Code for 1/16 Snow/Ice maps: see CM Database
SW7_2	-	SCCR number for current version of Synoptic SARB software: see CM Database
DATA7_2	-	SCCR number for current version of Synoptic SARB input data: see CM Database
SS12	-	Sampling Strategy for Regrid MOA: see Production Request
PS12	-	Production Strategy for Regrid MOA: see Production Request
CC12	-	Configuration Code for Regrid MOA: see CM Database
SS5	-	Sampling Strategy for SAH maps: see Production Request
PS5	-	Production Strategy for SAH maps: see Production Request
CC5	-	Configuration Code for SAH maps: see CM Database
InputArchive	-	Directory from which to read the input data products
OutputArchive	-	Directory for writing the output data products. This is needed for SSIT testing
SS5	-	Sampling Strategy for SAH maps: see Production Request
PS5	-	Production Strategy for SAH maps: see Production Request
CC5	-	Configuration Code for SAH maps: see CM Database
InputCheck	-	Variable to enable or disable PCF input checking: see CM database
PROD	-	Yes if being run in production, no if being run in testing

1.2.3 Execution Frequency

CER7.2.1P1 executes once for each one-degree latitudinal zone for each instrument for each month, i.e., CER7.2.1P1 executes 180 times per data month for each instrument on board Terra or Aqua.

1.2.4 Memory/Disk Space/Time Requirements

CER7.2.1P1 jobs that process data from polar zones (zones 1-20, and 160-180) complete quickly, while jobs that process data from more equatorial zones (zones 60-120) take much longer. The following resource estimates are for the more equatorial zones.

Memory:	70 MB
Disk Space:	8603 MB
Total Run Time:	9 hours 54 minutes

1.2.5 Restrictions Imposed in Processing Order

A zone may be processed at any time, providing that the appropriate TSIB input file has been produced. There are no restrictions imposed on the ordering of the zones. Should there be multiple months that are ready for processing through PGE CER7.2.1P1, there are no restrictions imposed on the ordering of the months.

1.3 Processor Dependencies (Previous PGEs, Ingest Data)

This section describes the instance-dependent input files that are required for PGE CER7.2.1P1 processing. See Section 1.2 for variable information contained in the listed filenames.

1.3.1 Input Dataset Name (#1): CER_TSIB - Time Space Interpolate

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

$InputArchive/CERES/TSIB/$SS7_3_$PS7_3/$Year/$Month/CER_TSIB_$SS7_3_$PS7_3_$CC7_3.$Year$Month$Zone

1. Mandatory/optional: **Mandatory.**
2. Time Related Dependency: **Input file must be for same month and zone to be processed.**
3. Waiting Period: **As soon as available.**

b. Source of Information (Source is PGE name or Ingest Source): **PGE CER7.1.1P1**

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **294 MB**

1.3.2 Input Dataset Name (#2): CER_MOA - CERES Hourly Meteorological, Ozone, and Aerosol Ancillary Input Data Set

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

$InputArchive/CERES/MOA/$SS12_$PS12/$Year/$Month

CER_MOA_$SS12_$PS12_$CC12.$Year$Month$dd$hh

where $dd = 01 .. 31
$hh = 00, 06, 12, 18

and

CER_MOA_$SS12_$PS12_$CC12.$Year$NextMonth"0100"
where $NextMonth is the data month immediately following $Month

1. Mandatory/optional: **Mandatory.**
2. Time Related Dependency: **Input files must be for same data month to be processed.**
3. Waiting Period: **As soon as all MOA files for the month are available.**

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

PGE CER12.1P1

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **41 MB**

1.3.3 Input Dataset Name (#3): MATCH_TERRA_AOTS_MODIS - Daily MATCH Climatological Aerosol Files

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

For collection 4 runs:

$InputArchive/CERES/MATCH/TERRA_AOTS_MODIS/$yyyy/$mm/ MATCH_TERRA_AOTS_MODIS.$yyyy$mm$dd

For collection 5 runs:

$InputArchive/CERES/MATCH/TERRA_AOTS_MODIS.C5/$yyyy/$mm/ MATCH_TERRA_AOTS_MODIS.C5.$yyyy$mm$dd

where $yyyy = 2000 .. 2013, $mm= 01 .. 12, $dd= 01 .. 31

1. Mandatory/optional: **Mandatory.**
2. Time Related Dependency: **Input files must be for same month to be processed.**
3. Waiting Period: **As soon as available.**

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

Provided by responsible persons listed in Table 1-1

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): **388 K**

1.3.4 Input Dataset Name (#4): MATCH_TERRA_VERTICAL_MODIS - Daily MATCH Climatological Vertical Aerosol Files

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

For collection 4 runs:

$InputArchive/CERES/MATCH/TERRA_VERTICAL_MODIS/$yyyy/$mm/ MATCH_TERRA_VERTICAL_MODIS.$yyyy$mm$dd

For collection 5 runs:

$InputArchive/CERES/MATCH/TERRA_VERTICAL_MODIS.C5/$yyyy/$mm/ MATCH_TERRA_VERTICAL_MODIS.C5.$yyyy$mm$dd

1. Mandatory/optional: **Mandatory.**
2. Time Related Dependency: **Input file must be for same day to be processed.**
3. Waiting Period: **As soon as available.**

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

Provided by responsible persons listed in Table 1-1

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): **4.9 MB**

1.3.5 Input Dataset Name (#5): Monthly Surface Albedo History File

a. Directory Location/Inputs Expected

$InputArchive/CERES/SAH/$ENV{'SS5'}_$ENV{'PS5'}/$Year/$Month/CER_SAH_$ENV{'SS5'}_$ENV{'PS5'}_$ENV{'CC5'}.$Year$Month

1. Mandatory/optional: **This file is mandatory for Terra and Aqua data sets if available.** ***IF NOT AVAILABLE, CONTACT THE RESPONSIBLE PERSONS LISTED IN Table 1-1 BEFORE ATTEMPTING TO RUN WITHOUT THE FILES*****. The files may be available, just not delivered to the operational environment. This file is not available for TRMM data sets.**
2. Time Related Dependency: **Input file must be for the same month as data being processed.**
3. Waiting Period: **As soon as available.**

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

Provided by responsible persons listed in Table 1-1, using the CM delivery process.

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **14 MB**

1.3.6 Input Dataset Name (#6): ECS-OA0063m (Clear sky albedo map for 0.6μm)

a. Directory Location/Inputs Expected

$InputArchive/CERES/ECS-OA0063m/$SS4_2_$PS4_2/$Year/$Month/ CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.$Year$Month$dd

where $dd= 01 .. 31

1. Mandatory/optional: **These files are mandatory if available for Terra and Aqua data sets. These files are not available for TRMM data sets.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

PGE CER4.1-4.2P2

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

d. File Disposition after successful execution:

e. Typical file size (MB): **18 MB**

1.3.7 Input Dataset Name (#7): ECS-OA0160m (Clear sky albedo map for 1.6μm)

a. Directory Location/Inputs Expected

$InputArchive/CERES/ECS-OA0160m/$SS4_2_$PS4_2/$Year/$Month/ CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.$Year$Month$dd

where $dd= 01 .. 31

1. Mandatory/optional: **These files are mandatory if available for Terra and merged Terra-Aqua data sets. These files are not available for TRMM data sets.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

PGE CER4.1-4.2P2

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **18 MB**

1.3.8 Input Dataset Name (#8): ECS-OA0213m (Clear sky albedo map for 2.13μm)

a. Directory Location/Inputs Expected

$InputArchive/CERES/ECS-OA0213m/$SS4_2_$PS4_2/$Year/$Month/ CER_ECS-OA0213m_$SS4_2_$PS4_2_$CC4_2.$Year$Month$dd

where $dd= 01 .. 31

1. Mandatory/optional: **These files are mandatory if available for Aqua data sets. These files are not available for TRMM data sets.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

PGE CER4.1-4.2P2

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **18 MB**

1.3.9 Input Dataset Name (#9): EICE (Ice map) (1/8 grid)

a. Directory Location/Inputs Expected

$InputArchive/CERES/EICE/$SS4_0_$PS4_0_8/$Year/$Month/CER_EICE_$SS4_0_$PS4_0_8_$CC4_0P1_8.$Year$Month$dd

where $dd= 01 .. 31

1. Mandatory/optional: **These files are mandatory if available for TRMM, Terra, and Aqua data sets.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

PGE CER4.1-4.0P1

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **2.2 MB**

1.3.10 Input Dataset Name (#10): ESNOW (Snow map) (1/8 grid)

a. Directory Location/Inputs Expected

$InputArchive/CERES/ESNOW/$SS4_0_$PS4_0_8/$Year/$Month/CER_ESNOW_$SS4_0_$PS4_0_8_$CC4_0P1_8.$Year$Month$dd

where $dd= 01 .. 31

1. Mandatory/optional: **These files are mandatory if available for Terra and Aqua data sets. These files are not available for TRMM data sets.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

PGE CER4.1-4.0P1

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **2.2 MB**

1.3.11 Input Dataset Name (#11): EICE (Ice map) (1/16 grid)

a. Directory Location/Inputs Expected

$InputArchive/CERES/EICE/$SS4_0_$PS4_0_16/$Year/$Month/CER_EICE_$SS4_0_$PS4_0_16_$CC4_0P1_16.$Year$Month$dd

where $dd= 01 .. 31

1. Mandatory/optional: **These files are mandatory if the EICE maps described in Section 1.3.9 are unavailable.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

PGE CER4.1-4.0P1

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **2.2 MB**

1.3.12 Input Dataset Name (#12): ESNOW (Snow map) (1/16 grid)

a. Directory Location/Inputs Expected

$InputArchive/CERES/ESNOW/$SS4_0_$PS4_0_16/$Year/$Month/CER_ESNOW_$SS4_0_$PS4_0_16_$CC4_0P1_16.$Year$Month$dd

where $dd= 01 .. 31

1. Mandatory/optional: **These files are mandatory if the ESNOW maps described in Section 1.3.10 are unavailable.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

PGE CER4.1-4.0P1

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **2.2 MB**

1.3.13 Input Dataset Name (#13): Emissivity Maps (For 8.5μm, 10.8μm, and 11.9μm)

a. Directory Location/Inputs Expected

$CERESHOME/sarb/ancillary/CER7.2.1P1/emiss/
CER_EM0855_CERES_015000.XXXX$mm,
CER_EM1080_CERES_015000.XXXX$mm,
CER_EM1190_CERES_015000.XXXX$mm

where $mm = 01 .. 12

1. Mandatory/optional: **The 1080 and 1190 files are mandatory for all satellites. The 0855 file is mandatory for Terra and Aqua but is not available for TRMM.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

Ingest Source: ISCCP DX

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): **4.4 MB**

1.3.14 Input Dataset Name (#14): NOAA_SNOW (North orbital snow and ice file)

NOTE: These files are used for data months through March 2013. For later months, use files listed in Section 1.3.16.

a. Directory Location/Inputs Expected

$InputArchive/NCEP/NOAA_SNOW/$Year/$Month/ noaa_snow_f$nn.north.$yyyymmdd$hh.$yyyymmdd$hh

where $yyyy = 1998 .. 2013, $mm = 01 .. 12, $nn = 13, 14, and 15

1. Mandatory/optional: **These files are mandatory for all data sets. Use the files whose values of $yyyy and $mm match the year and month of data being processed. Load every available file.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

Ingest Source: National Environmental Satellite, Data and Information Services (NESDIS)

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **9.5 MB**

1.3.15 Input Dataset Name (#15): NOAA_SNOW (South orbital snow and ice file)

NOTE: These files are used for data months through March 2013. For later months, use files listed in Section 1.3.17.

a. Directory Location/Inputs Expected

$InputArchive/NCEP/NOAA_SNOW/$Year/$Month/noaa_snow_f$nn.south.$yyy ymmdd$hh.$yyyymmdd$hh

where $yyyy = 1998 .. 2013, $mm = 01 .. 12, $nn = 13, 14, or 15

1. Mandatory/optional: **These files are mandatory for all data sets. Use the files whose values of $yyyy and $mm match the year and month of data being processed. Load every available file.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

Ingest Source: National Environmental Satellite, Data and Information Services (NESDIS)

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **9.5 MB**

1.3.16 Input Dataset Name (#16): CLASS Mesh 8 map (North snow and ice map)

NOTE: These files are used for data months after March 2013. For earlier months, use files listed in Section 1.3.14.

a. Directory Location/Inputs Expected

$InputArchive/NCEP/CLASS_MESH8/$Year/
PRD.SPPROD.EDR15N.Syyjjj06.Eyyjjj12

where $yy = 13 .. forward, $jjj = 001 .. 365

1. Mandatory/optional: **These files are mandatory for all data sets. Use the files whose values of $yy match the year being processed. The script will calculate $jjj for the month being processed. Load every available file.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

Ingest Source: Comprehensive Large Array-data Stewardship System (CLASS)

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **9.5 MB**

1.3.17 Input Dataset Name (#17): CLASS Mesh 8 map (South snow and ice map)

NOTE: These files are used for data months after March 2013. For earlier months, use files listed in Section 1.3.15.

a. Directory Location/Inputs Expected

$InputArchive/NCEP/CLASS_MESH8/$Year/
PRD.SPPROD.EDR15S.Syyjjj06.Eyyjjj12

where $yy = 13 .. forward, $jjj = 001 .. 365

1. Mandatory/optional: **These files are mandatory for all data sets. Use the files whose values of $yy match the year being processed. The script will calculate $jjj for the month being processed. Load every available file.**
2. Time Related Dependency: **Input files must be for the same month and instrument as data being processed.**
3. Waiting Period: **As soon as available.**

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

Ingest Source: Comprehensive Large Array-data Stewardship System (CLASS)

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

d. File Disposition after successful execution: **N/A**

e. Typical file size (MB): **9.5 MB**

1.3.18 Input Dataset Name (#18): Seawifs (Chlorophyll data file)

a. Directory Location/Inputs Expected

$CERESHOME/sarb/ancillary/CER7.2.1P1/seawifs/
seawifs_chlor.$yyyy$mm

where $yyyy = 1999 .. 2006, $mm = 01 .. 12

1. **Mandatory/optional: This file is mandatory for Terra and Aqua data if available.** ***IF NOT AVAILABLE, CONTACT THE RESPONSIBLE PERSONS LISTED IN Table 1-1 BEFORE ATTEMPTING TO RUN WITHOUT THE FILES*****. The files may be available, just not delivered to the operational environment. This file is not available for TRMM data sets.**
2. Time Related Dependency: **Input files must be for the same month as data being processed.**
3. Waiting Period: **As soon as available.**

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

Provided by responsible persons listed in Table 1-1, using the CM delivery process.

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): **253 KB**

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

The Synoptic SARB Subsystem Main-Processor production script, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. This PCF is created by executing the PCF generator, **CER7.2.1P1_pcfgen.pl**.

1.4.1 How to Generate the PCF File

The PCF generator, **CER7.2.1P1_pcfgen.pl**, is executed using the data date and zone as a command-line argument. See Section 1.2 for variable information.

At the command-line (denoted by ">") type:

> cd $CERESHOME/sarb/CER7.2.1P1/rcf
> ./CER7.2.1P1_pcfgen.pl $Year$Month$Zone

The following PCF will be generated in **$CERESHOME/sarb/CER7.2.1P1/rcf/pcf/**:

CER7.2.1P1_PCF_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone
CER7.2.1P1_PCF_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone.log

1.4.2 How to Execute the Main Processor

Execute the production script by typing the script name, run_CER7.2.1P1.pl, followed by a string which designates the name of the required PCF file. See Section 1.2 for variable information.

At the command-line (denoted by ">") type:

> cd $CERESHOME/sarb/CER7.2.1P1/rcf
> ./run_CER7.2.1P1.pl
CER7.2.1P1_PCF_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone

To run using SGE:

Note: It is not necessary to manually create the PCF as described above when submitting a job using the SGE submission script.

To run a single date:

> cd $CERESHOME/sarb/CER7.2.1P1/rcf
> CER7.2.1P1-SGE_Driver.pl –date $Year$Month –zone $zonenum

where $zonenum is the latitude zone number for the run
To run multiple sequential dates:

> cd $CERESHOME/sarb/CER7.2.1P1/rcf
> CER7.2.1P1-SGE_Driver –start $Year$Month –end $Year$Month -all

There are several options for running jobs for multiple months or multiple zones in a given month. Specific platforms can also be designated.

Here are the optional arguments for CER7.2.1P1-SGE-Driver.pl:

[-clean]	Delete any existing outputs that are encountered
[-date 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
[-zone ZZZ]	Run the PGE on the data zone specified by ZZZ
[-start_zone ZZZ]	Run the PGE starting on the data zone specified by ZZZ
[-end_zone ZZZ]	Run the PGE stopping on the data zone specified by ZZZ

Below are some examples of executing the driver script with these arguments.

To run a single zone for a given month:

> **CER7.2.1P1-SGE_Driver.pl –date 200801 –zone 001**

To run a range of zones for a given month:

> **CER7.2.1P1-SGE_Driver.pl –date 200801 –start_zone 001 –end_zone 009**

Not specifying any zones means that all zones will be processed. "-all" isn't really an option for this PGE. For example:

> **CER7.2.1P1-SGE_Driver.pl –date 200801**

To run a range of months (all zones):

> **CER7.2.1P1-SGE_Driver.pl –start 200801 –end 200803**

To run a range of months with a range of zones:

> **CER7.2.1P1-SGE_Driver.pl –start 200801 –end 200803 –start_zone 001 –end_zone 009**

The example above runs January 2008 zones 1-9, February 2008 zones 1-9, and March 2008 zones 1-9.

The **CER7.2.1P1-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 **CER7.2.1P1_PCF_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone.log** file. Mandatory files may then be staged or existing output files can be deleted before attempting to rerun this job.

1.4.3 Special Case Considerations

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

1.4.4 Special Reprocessing Instructions

All output files are opened with Status = NEW in CER7.2.1P1 software. These files must be removed before reprocessing.

At the command-line (denoted by ">") type:

> cd $CERESHOME/sarb/CER7.2.1P1/rcf
> ./cleanup_7.2.1P1.pl
CER7.2.1P1_PCF_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone

The script, **cleanup_7.2.1P1.pl**, removes all files generated by the PCF generator, along with files generated during the execution of **run_CER7.2.1P1.pl**.

1.5 Execution Evaluation

1.5.1 Exit Codes

The PGE CER7.2.1P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 1-5. 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 (see Table 1-1) for assistance.

Table 1-5. Exit Codes for CER7.2.1P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
203	Failure	Check the Log Files and take the appropriate action (see Appendix B)

1.5.2 Screen Messages

When running the production script, runsarbsyn, the system message, "No match," may be written to the screen. This message occurs when the scripts try to remove an old output file that does not exist. This does not signify a problem.

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 directory: **$CERESHOME/sarb/runlogs/CER7.2.1P1**. See Section 1.2 for information on variable fields within the file names.

1. **Report Log File: CER7.2.1P1_LogReport_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone**

The Report Log File contains the Synoptic SARB-related messages. These messages may be strictly informative (Error Type = Notice or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Error). A comprehensive list of these messages, that can be generated during the execution of the PGE, is given in Table B-1.

2. **Status Log File: CER7.2.1P1_LogStatus_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone**

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.

3. **User Log File: CER7.2.1P1_LogUser_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone**

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 User Log File and Status Log File.

1.5.4 Solutions to Possible Problems

As mentioned in Section 1.4.4, all output files are opened with Status = NEW in the PGE CER7.2.1P1 software. These files must be removed before reprocessing.
If multiple jobs are processing simultaneously and all abort simultaneously, it may be a resource issue. Delete all output files and resubmit all but one of the jobs.

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

a. Subsystem Termination

If the exit code indicates failure, halt all further Target PGE processing.

b. Target PGE Termination

If any of the **.met** files are missing from the expected output, this condition must terminate all further Target PGE processing.

1.6 Expected Output Dataset(s)

The expected output datasets for each instance of the PGE are listed in Table 1-6. This PGE is expected to process 180 times per month per instrument.

Table 1-6. Expected Output File Listing for CER7.2.1P1

File Name[a]/Directory	m/o	File Size (MB)	Freq/PGE	Target PGE	Destination[b]	Available Through Ordering Tool
CER7.2.1P1_PCF_$SS7_2_$PS7_2_$CC7_2.$Year$Month $Zone[c]@($CERESHOME/sarb/CER7.2.1P1/rcf/pcf)	m	0.04	180/month	N/A	Archive, rm	No
CER7.2.1P1_PCF_$SS7_2_$PS7_2_$CC7_2.$Year$Month $Zone.log[c]@($CERESHOME/sarb/CER7.2.1P1/rcf/pcf)	m	0.04	180/month	N/A	Archive, rm	No
CER7.2.1P1_LogReport_$SS7_2_$PS7_2_$CC7_2.$Year $Month$Zone[c]@($CERESHOME/sarb/runlogs/CER7.2.1P1)	m	x	180/month	N/A	Archive, rm	No
CER7.2.1P1_LogStatus_$SS7_2_$PS7_2_$CC7_2.$Year $Month$Zone[c] @($CERESHOME/sarb/runlogs/CER7.2.1P1)	m	x	180/month	N/A	Archive, rm	No
CER7.2.1P1_LogUser_$SS7_2_$PS7_2_$CC7_2.$Year $Month$Zone[c]@($CERESHOME/sarb/runlogs/CER7.2.1P1)	m	x	180/month	N/A	Archive, rm	No
CER_SYNI_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone[c] (.met)@($OutputArchive/CERES/SYNI/$SS7_2_$PS7_2/ $Year/$Month)	m	200	180/month	CER8.1P1	Archive, rm	No
CER_SYNS_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone[c] (.met)@($OutputArchive/CERES/SYNI/$SS7_2_$PS7_2/ $Year/$Month)	o	?	90/month	N/A	Archive, rm	No
CER_KQCR_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone[c] (.met)@($OutputArchive/CERES/KQCR/$SS7_2_$PS7_2/ $Year/$Month)	m	0.01	180/month	N/A	Archive, rm	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 **must** exist with the identical filename and .met extension

b. DB - File content is to be entered into the LaTIS Database
rm - remove
m - mandatory output
o - optional output
EOD - End of data month

c. DataMonthZone - Data Month and zone (yyyymmZnum), where
yyyy = four-digit year, mm = two-digit month, Z = "Z" (constant), and num = 3-digit latitudinal zone index
example: 199807Z090 = July 1998, Zone 90

1.7 Expected Temporary Files/Directories.

Table 1-7. Expected Temporary File Listing for CER7.2.1P1

Temporary CRH file @($CERESHOME/sarb/data/scr)
CER_SARBCRH_$SS7_2_$PS7_2_$CC7_2.$Year$Month$Zone

References

1. CERES Internal Paper, "Sampling Strategy, Production Strategy, and Configuration Code Implementation at the Langley TRMM and Terra Information System (LATIS)." URL: http://ceres.larc.nasa.gov/Internal/intern_docs.php

Appendix A
Acronyms and Abbreviations

ASDC	Atmospheric Science Data Center
CERES	Clouds and the Earth's Radiant Energy System
DAAC	Distributed Active Archive Center
EOS	Earth Observing System
EOS-AM	EOS Morning Crossing Mission
EOS-PM	EOS Afternoon Crossing Mission
ERBE	Earth Radiation Budget Experiment
ERBS	Earth Radiation Budget Satellite
GFDL	Geophysical Fluid Dynamics Laboratory
GSFC	Goddard Space Flight Center
IMA	Interpolated Daily MODIS Aerosol
LaTIS	Langley TRMM Information System
MB	Megabytes
met	metadata file
μm	microns
MOA	Meteorological, Ozone, and Aerosol
MODIS	Moderate Resolution Imaging Spectrometer
N/A	Not Applicable
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
PCF	Process Control File
PGE	Product Generation Executives
QC	Quality Control
SAH	Surface Albedo History
SAIC	Science Applications International Corporation
SARB	Surface and Atmospheric Radiation Budget
SMF	Status Message File
SSAI	Science Systems and Applications, Inc.
SSF	Single Satellite CERES Footprint TOA and Surface Fluxes, Clouds
SYNI	Synoptic Intermediate Product
TOA	Top-of-Atmosphere
TRMM	Tropical Rainfall Measuring Mission
TSI	Time Space Interpolate product
VD	Validation Days

Appendix B
Error Messages for Subsystem 7.2

Appendix B contains a comprehensive list of messages that can be generated during the execution of PGE CER7.2.1P1. 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 = Notice or Warning), or may indicate a fatal condition that results in premature PGE termination (Error Type = Error). All messages are written to the LogReport file and/or the LogStatus File of the processing instance.

Table B-1 contains a list of the diagnostic messages for PGE CER7.2.1P1. Each table entry includes the message pneumonic, a brief description of the error, and the recommended action that should be taken when the message is encountered. The message pneumonic indicates the error type.

NOTE: Some messages may be generated from any one of multiple origins within the software. Instead of repeating the messages for each possible origin, these messages are simply preceded with "_____(),” and are located last in the table.

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.

   ACTION CODE = 1 ; Verify that file exists
   = 2 ; Verify that the file size is correct
   = 3 ; Check the ASCII input file and PCF file for correctness
   = 4 ; No Action, call the Responsible Person in Table 1-1 for PGE CER7.2.1P1
   = 5 ; No Action, the PGE’s QC report notifies the responsible person
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 person (see ACTION CODE 4).
5. If the appropriate ACTION failed, then call the responsible person (see ACTION CODE 4).
6. In all cases, log all steps that were taken after the PGE failure, and send a copy to the responsible person (see ACTION CODE 4).

B.1 Error Messages for PGE CER7.2.1P1

Table B-1. TK (SMF) Utility Message Table for PGE CER7.2.1P1

Error Message/Description	Action Code
_____(): ERROR ... Determining if file exists Error encountered determining whether or not a file exists	3
_____(): ERROR ... Failure closing file Error encountered closing a file	4
_____(): ERROR ... Failure opening file Error encountered opening a file	3
_____(): ERROR ... Missing Day run-time LID Retrieval of day run-time parameter requested, but no LID provided	4
_____(): ERROR ... Missing Hour run-time LID Retrieval of hour run-time parameter requested, but no LID provided	4
_____(): ERROR ... Missing Month run-time LID Retrieval of month run-time parameter requested, but no LID provided	4
_____(): ERROR ... Missing Year run-time LID Retrieval of year run-time parameter requested, but no LID provided	4
_____(): ERROR ... No DA file record length No record length provided for opening a direct access file	4
_____(): ERROR ... Retrieving Day PCF run-time Error encountered retrieving day from PCF	3
_____(): ERROR ... Retrieving file name Error encountered retrieving filename from PCF	3
_____(): ERROR ... Retrieving Hour PCF run-time Error encountered retrieving hour from PCF	3
_____(): ERROR ... Retrieving Month PCF run-time Error encountered retrieving month from PCF	3
_____(): ERROR ... Retrieving Year PCF run-time Error encountered retrieving year from PCF	3
AerClim_OpenDrive (): Error ... Could not read MATCH data Error retrieving Collins aerosol climatology static ancillary input data filename from PCF; PCF logic ID # 4	1,3
AerClim_OpenDrive (): Error ... Could not retrieve filename Error retrieving Collins aerosol climatology static ancillary input data filename from PCF; PCF logic ID # 4	3
AerClim_OpenDrive (): Error ... Determining existence of Aer file Error determining the existence of the Collins aerosol climatology static ancillary input data file; PCF logic ID # 4	3

Table B-1. TK (SMF) Utility Message Table for PGE CER7.2.1P1

Error Message/Description	Action Code
Close_Syn_IO (): ERROR ... Unable to write SYNI header record Error writing header record to the SYNI output file	4
DataDate_Retrieve (): Error ... Retrieval of Month from PCF Error retrieving the data month from the PCF; PCF logic ID # 145	3
DataDate_Retrieve (): Error ... Retrieval of Year from PCF Error retrieving the data year from the PCF; PCF logic ID # 144	3
Deriv_Init(): Error ... Unable to open DrivTab file Error opening derivative table input file; PCF logic ID # 1	1
dt_load(): Error ... bt read error Error reading the derivative tables from the static ancillary file; PCF logic ID # 1	2,3
dt_load(): Error ... ntbl is greater than maxsubtab Error reading the number of derivative tables from static ancillary file; PCF logic ID # 1	2,3
dt_load(): Error ... ntbl read error Error reading the derivative tables from the static ancillary file; PCF logic ID # 1	2,3
dt_load(): Error ... nword read error Error reading the sizes of the derivative tables from static ancillary file; PCF logic ID # 1	2,3
dt_tune_mem(): Warning ... Error in cloud fractional area adjustment Error encountered in constrainment algorithm for indicated FOV. Store values from initial pass on output. Processing for current hour continues with next FOV.	5
FLSA_LUT_Ingest (): Error ... Cannot close FLSALUT file Cannot close Fu-Liou Surface Albedo Lookup table input file; PCF logic ID # 18	2,3
FLSA_LUT_Ingest (): Error ... Cannot open FLSALUT file Cannot open Fu-Liou Surface Albedo Lookup table input file; PCF logic ID # 18	1,3
FLSA_LUT_Ingest (): Error ... Cannot read FLSALUT file Cannot read Fu-Liou Surface Albedo Lookup table input file; PCF logic ID # 18	2,3
FluxRange_Check(): Warning ... Constr Dir/Diff Invalid Invalid direct/diffuse ratio value from constrained pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Constr Dn LW Clr Invalid Invalid LW downwards clear sky flux profile value from constrained pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Constr Dn LW Tot Invalid Invalid LW downwards total sky flux profile value from constrained pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Constr Dn SW Clr Invalid Invalid SW downwards clear sky flux profile value from constrained pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Constr Dn SW Tot Invalid Invalid SW downwards total sky flux profile value from constrained pass for indicated FOV. Processing for current hour continues with next FOV.	5

Table B-1. TK (SMF) Utility Message Table for PGE CER7.2.1P1

Error Message/Description	Action Code
FluxRange_Check(): Warning ... Constr Up LW Clr Invalid Invalid LW upwards clear sky flux profile value from constrained pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Constr Up LW Tot Invalid Invalid LW upwards total sky flux profile value from constrained pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Constr Up SW Clr Invalid Invalid SW upwards clear sky flux profile value from constrained pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Constr Up SW Tot Invalid Invalid SW upwards total sky flux profile value from constrained pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Init Dir/Diff Invalid Invalid direct/diffuse ratio value from initial pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Initial Dn LW Clr Invalid Invalid LW downwards clear sky flux profile value from initial pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Initial Dn LW Tot Invalid Invalid LW downwards total sky flux profile value from initial pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Initial Dn SW Clr Invalid Invalid SW downwards clear sky flux profile value from initial pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Initial Dn SW Tot Invalid Invalid SW downwards total sky flux profile value from initial pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Initial Up LW Clr Invalid Invalid LW upwards clear sky flux profile value from initial pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Initial Up LW Tot Invalid Invalid LW upwards total sky flux profile value from initial pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Initial Up SW Clr Invalid Invalid SW upwards clear sky flux profile value from initial pass for indicated FOV. Processing for current hour continues with next FOV.	5
FluxRange_Check(): Warning ... Initial Up SW Tot Invalid Invalid SW upwards total sky flux profile value from initial pass for indicated FOV. Processing for current hour continues with next FOV.	5
IGBP_Ingest (): Error ... Cannot close IGBP file Error closing IGBP ancillary input data file; PCF logic ID # 13	2,3

Table B-1. TK (SMF) Utility Message Table for PGE CER7.2.1P1

Error Message/Description	Action Code
IGBP_Ingest (): Error ... Cannot open IGBP file Error opening IGBP ancillary input data file; PCF logic ID # 13	1,3
IGBP_Ingest (): Error ... Cannot read IGBP file Error reading IGBP ancillary input data file; PCF logic ID # 13	2,3
LUDCOMP(): Warning ... Matrix is singular Error encountered in constrainment algorithm for indicated FOV. Store values from initial pass on output. Processing for current hour continues with next FOV.	5
MonSA_Ingest (): Error ... Cannot close monthly SA file Error closing Monthly Surface Albedo History ancillary input data file; PCF logic ID # 17	2,3
MonSA_Ingest (): Error ... Cannot open monthly SA file Error opening Monthly Surface Albedo History ancillary input data file; PCF logic ID # 17	1,3
MonSA_Ingest (): Error ... Cannot read monthly SA file Error reading Monthly Surface Albedo History ancillary input data file; PCF logic ID # 17	2,3
MonSA_Output (): Error ... Cannot close monthly SA file Error closing Monthly Surface Albedo History output data file; PCF logic ID # 17	2,3
MonSA_Output (): Error ... Cannot open monthly SA file Error opening Monthly Surface Albedo History output data file; PCF logic ID # 17	1,3
QC5_Close(): Error ... QC report close failed Error closing Instantaneous SARB QC Report output file; PCF Logic ID # 57	4
QC5_Open(): Error ... QC report open failed Error opening Instantaneous SARB QC Report output file; PCF Logic ID # 57	3
ReadTSI_Data(): Error ... Unable to read TSI file Error encountered reading record from TSI file	1, 3
SfcAlb_Drv(): Warning ... Sbr. SfcAlb_Drv -- Invalid CERES scene id Invalid CERES scene type value for indicated FOV. Processing for current hour continues with next FOV.	5
st_get_nl(): Warning ... Sbr. st_get_nl -- Sigma table maxtune Unable to retrieve correct sigma table value. Value for iav (1,ia) exceeds value for maxtune parameter for indicated FOV. Processing for current hour continues with next FOV.	5
st_get_nl(): Warning ... Sbr. st_get_nl -- Sigma table mcldc Unable to retrieve correct sigma table value. Value for iav (2,ia) exceeds value for mcldc parameter for indicated FOV. Processing for current hour continues with next FOV.	5
st_get_nl(): Warning ... Sbr. st_get_nl -- Sigma table nsid Unable to retrieve correct sigma table value. Value for iav (3,ia) exceeds value for nsid parameter for indicated FOV. Processing for current hour continues with next FOV.	5
st_load(): Error ... NCASE is greater than MCASE Invalid value of either NCASE or MCASE parameters in the static ancillary input data file; PCF logic ID # 2	2,3

Table B-1. TK (SMF) Utility Message Table for PGE CER7.2.1P1

Error Message/Description	Action Code
st_load(): Error ... NSID is greater than MSID Invalid value of either NSID or MSID parameters in the static ancillary input data file; PCF logic ID # 2	2,3
st_load(): Error ... Sigma LUT pointer out of range Error encountered in constrainment algorithm for indicated FOV. Store values from initial pass on output. Processing for current hour continues with next FOV.	5
st_load(): Error ... Unable to read namelist ST_CASE Unable to read namelist ST_CASE from the static ancillary input data file; PCF logic ID # 2	2,3
st_load(): Error ... Unable to read namelist ST_SIGF Unable to read namelist ST_SIGF from the static ancillary input data file; PCF logic ID # 2	2,3
st_load(): Error ... Unable to read namelist ST_SIGV Unable to read namelist ST_SIGV from the static ancillary input data file; PCF logic ID # 2	2,3
st_load(): Error ... Unable to read namelist ST_VERS Error reading sigma table-static ancillary input data file version number; PCF logic ID # 2	2,3
st_load(): Error ... Unable to read sigma table parameters Error reading sigma table-static ancillary input data file; PCF logic ID # 2	2,3
SynSARB_Meta_Drv (): Error ... Write fail on SYNI metadata Error writing metadata file for the SYNI product	4
SynSARB_Meta_Drv ():Error ... Write fail on Syn SARB QC metadata Error writing metadata file for the Synoptic SARB QC Report output file	4
tridag(): Warning ... Sbr. tridag, Constr -- Pause 1 Invalid value encountered for indicated FOV in radiative transfer model at first Fu-Liou PAUSE during the constrained pass. Processing for current hour continues with next FOV.	5
tridag(): Warning ... Sbr. tridag, Constr -- Pause 2 Invalid value encountered for indicated FOV in radiative transfer model at second Fu-Liou PAUSE during the constrained pass. Processing for current hour continues with next FOV.	5
tridag(): Warning ... Sbr. tridag, Initial -- Pause 1 Invalid value encountered for indicated FOV in radiative transfer model at first Fu-Liou PAUSE during the initial pass. Processing for current hour continues with next FOV.	5
tridag(): Warning ... Sbr. tridag, Initial -- Pause 2 Invalid value encountered for indicated FOV in radiative transfer model at second Fu-Liou PAUSE during the initial pass. Processing for current hour continues with next FOV.	5
Tune_Drv(): Warning ... Aerosol Optical Depth Out Of Range Adjusted aerosol optical depth value out-of-range for indicated FOV. Store values from initial pass on output. Processing for current hour continues with next FOV.	5
tune_xxx(): Warning ... Adjusted cloud fractional area out of range Error encountered in constrainment algorithm for indicated FOV. Store values from initial pass on output. Processing for current hour continues with next FOV.	5

Table B-1. TK (SMF) Utility Message Table for PGE CER7.2.1P1

Error Message/Description	Action Code
tune_xxx(): Warning ... Tunexxx is in error Error encountered in constrainment algorithm for indicated FOV. Store values from initial pass on output. Processing for current hour continues with next FOV.	5