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

Data Management System

Operator's Manual

Cloud Retrieval and Convolution
(Subsystems 4.1 through 4.4)

CER4.1-4.0P1
CER4.1-4.1P1
CER4.1-4.1P2
CER4.1-4.1P3
CER4.1-4.2P1
CER4.1-4.2P2
CER4.1-4.3P1
CER4.1-4.4P1

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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 (1 of 3)

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
05/24/01	R3V4	262	• Added instructions for Edition2 TRMM processing. • Updated CPU Time and Disk Storage in tables. • Updated the PCF sample code in Appendix C. • Added error tables to Appendix B for PGEs CER4.1-4.3P1 and CER4.1-4.4P1. Added a new error message to Table B-2. • Updated master pages to reflect the current version and date. • Changed the date and version on the cover page. • Updated format to comply with standards.	All
07/06/01	R3V5	273	• Added PGE CER4.1-4.1P2. • Changed error table in Appendix B to apply to both PGE CER4.1-4.1P1 and CER4.1-4.1P2. • Added sample PCFin file for CER4.1-4.1P2 in Appendix C. • Updated format to comply with standards.	All Appendix B Appendix C All
08/07/01	R3V6	284	• Changed number of subset files to 1-33 in PGEs 4.1-4.1P1 and 4.1-4.1P2. • Changed optional ("o") to mandatory ("m") for some output files for PGEs 4.1-4.1P1 and 4.1-4.1P2. • Added error code 99 to PGEs 4.1-4.1P1 and 4.1-4.1P2. • Added failed to stage .met file to error 14. • Updated format to comply with standards.	2.6 & 3.6 2.6 & 3.6 2.5.1 & 3.5.1 Appendix B All
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12/04/02	R3V9	404	• Added PRODUCTION environmental variable. • Removed TRMM from 1P2 and 2P2 descriptions. • Updated error message. • Updated sampling strategy in PCFin examples. • Updated format to comply with standards.	2.2.2 and 3.2.2 Appendix B Appendix C All
1/29/03	R3V10	421	• Added PGE CER4.1-4.1P3. • Updated PGE CER4.1-4.2P2 for Aqua. • Added PGE CER4.1-4.1P3 to list of main processor errors. • Updated error message. • Updated format to comply with standards.	6.0, Preface 8.0 Appendix B Appendix C All
3/14/03	R3V11	425	• Added environmental variable CER4.1-4.2P1. • Added PCFin from CER4.1-4.1P3. • Added CER4.1-4.1P3 as source for CER4.1-4.2P1. • Updated format to comply with standards.	5.0 All
9/05/03	R3V12	467	• Reduce run time and disk storage for CER4.1-4.1P2. • Added requirement for additional MOA files for CER4.1-4.1P2. • Added special requirements for clear sky map for CER4.1-4.1P1 and CER4.1-4.1P2. • Added command line inputs to PCF Generator scripts for MODIS version information. • Added CRH file for 1.60 and change name for 0.63 micrometer files. • Added CRH files for 1.60 micrometer to CER4.1-4.2P2 processing. • Updated sample ASCII file listing for CER4.1-4.1P2. • Updated format to comply with standards.	3.2.4 3.3.2 3.3.5 3.4 3.6 6.3 Appendix C All

Document Revision Record (3 of 3)

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
12/22/03	R3V13	490	• Added VRG and VA to run time parameters for PGE4.1-4.1P2 and CER4.1-4.1P3. • Reduce run time and disk storage for CER4.1-4.1P3. • Added requirement for additional MOA files for CER4.1-4.1P3. • Added special requirements for clear sky map for CER4.1-4.1P3. • Added command line inputs to PCF Generator scripts for MODIS version information. • Added additional explanation on MODIS file requirements. • Removed 4.1-4.1P2 from Section 5.3.9. • Added Section 7.3.3. • Sample PCFin file for CER4.1-4.1P2 and CER4.1-4.1P3. • Updated format to comply with standards.	3.2.1 & 4.2.1 4.2.4 4.3.2 4.3.5 4.4 3.3.1 & 4.3.1 5.3.9 7.3.3 Appendix C All
8/13/04	R3V14	549	• Increased the number of CldVis Subset files possible per hour to 56. • Updated format to comply with standards.	4.6 All

Preface

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

The DMS consists of 12 subsystems; each subsystem contains one or more Product Generation Executables (PGEs). 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. This document describes all PGEs for this Subsystem and contains the Runtime Parameters, Production Request Parameters, the required inputs, the steps used to execute, and the expected outputs for each of these PGEs. In addition, all subsystem error messages and subsequent actions required by the ASDC operations staff are included.

Acknowledgment is given to Tammy Ayers of Science Applications International Corporation (SAIC) for her support in the preparation of this document and to Maria Vallas Mitchum, NASA Langley Research Center, and Sandra K. Nolan, SAIC, for structuring the manual guidelines and organization.

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Introduction

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

Document Overview

This document, CERES Cloud Retrieval and Convolution Subsystems 4.1 through 4.4 Release 3 Operator's Manual is part of the CERES Subsystems 4.1 through 4.4 Release 3 delivery package provided to the Langley Atmospheric Sciences Data Center (ASDC). It provides a description of the CERES Cloud Retrieval and Convolution Release 3 software and explains the procedures for executing the software. A description of acronyms and abbreviations is provided in Appendix A, a comprehensive list of messages that can be generated during the execution of PGEs CER4.1-4.0P1, CER4.1-4.1P1, CER4.1-4.1P2, CER4.1-4.2P1, CER4.1-4.2P2, CER4.1-4.3P1 and CER4.1-4.4P1 are contained in Appendix B, an Input File Listing is provided in Appendix C, and a sample environment script along with details on handling multiple instrument processing is provided in Appendix D.

This document is organized as follows:

Introduction
Document Overview
Subsystem Overview
1.0 PGEName: CER4.1-4.0P1
2.0 PGEName: CER4.1-4.1P1
3.0 PGEName: CER4.1-4.1P2
4.0 PGEName: CER4.1-4.1P3

5.0 PGEName: CER4.1-4.2P1
6.0 PGEName: CER4.1-4.2P2
7.0 PGEName: CER4.1-4.3P1
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References
Appendix A - Acronyms and Abbreviations
Appendix B - Error Messages for Subsystems 4.1-4.4
Appendix C - Sample ASCII (PCFin) File Listing(s) for Subsystems 4.1-4.4
Appendix D - Subsystem Environment File

Subsystem Overview

CER4.1-4.0P1 - Snow and Ice Processor

The CERES "Determine Cloud Properties, TOA and Surface Fluxes" Subsystem (Subsystem 4) requires snow and ice information on a ten-minute grid. This information, received from the National Snow and Ice Data Center, is prepared on a 25-km equal area grid. This PGE re-projects the snow and ice data onto a 10 minute equal-angle grid.

CER4.1-4.1P1 - Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical Property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor

The CERES "Determine Cloud Properties, TOA and Surface Fluxes" Subsystem (Subsystem 4) has been divided into two separate subsystems. They are the "Determine Cloud Properties" Subsystem and the "Determine TOA and Surface Fluxes" Subsystem. The "Determine Cloud Properties" Subsystem has been further divided into two major components. Separate sets of executable code have been developed for each component, but they are contained within one PGE. The first major component (Cloud Retrieval) combines the functions described in Algorithm Theoretical Basis Documents (ATBDs) 4.1, 4.2, and 4.3, and provides the identification of clear-sky and clouds (cloud mask), cloud layer pressure determination, and cloud optical properties for the cloud imager data on a per-pixel basis. For convenience throughout the rest of this document, this component is referenced as "cloud retrieval." The second major component is Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function (PSF), corresponding to ATBD 4.4. For convenience throughout the rest of this document, this component is referenced as "convolution." Convolution accepts the pixel-level cloud data produced by the cloud retrieval component of the Determine Cloud Properties Subsystem and convolves it with the CERES footprint field-of-view (FOV) data obtained from the Instrument Earth Scans (IES) datasets to produce an intermediate Single Scanner Footprint (SSFI) output data product. The "Determine TOA and Surface Fluxes" Subsystem (ATBDs 4.5 and 4.6) completes Subsystem 4.0 and the SSF archive product by producing fluxes at the top of the atmosphere (TOA) and at the surface and is covered in another operations manual.

CER4.1-4.1P2 - Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical Property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Terra-MODIS Main Processor

This version of the PGE was designed to handle changes in cloud retrieval and convolution processing for the Moderate-Resolution Imaging Spectroradiometer on the Terra satellite without requiring the VIRS-TRMM processing to be modified.

CER4.1-4.1P3 - Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical Property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Aqua-MODIS Main Processor

This version of the PGE was designed to handle changes in cloud retrieval and convolution processing for the Moderate-Resolution Imaging Spectroradiometer on the Aqua satellite without requiring the VIRS-TRMM or Terra-MODIS processing to be modified.

CER4.1-4.2P1 - Imager Clear Sky Map Update and Daily QC Processor

The CERES "Determine Cloud Properties, TOA and Surface Fluxes" Subsystem (Subsystem 4) has the requirement to detect clouds from the imager radiances. One detection method compares the current pixel reflectance to a historical map of reflectance occurring under clear sky conditions. A similar procedure using clear sky brightness temperature is also used. A data product of imager albedo and brightness temperatures for clear pixels is produced for each execution of CER4.1-4.1P1. At regularly scheduled intervals, the hourly information is compared to the historical file. Any daily value that are significantly different from the running average contained in the historical file are updated. To facilitate algorithm validation, daily QC products are produced. This PGE takes as input the hourly QC reports produced by CER4.1-4.1P1 or CER4.1-4.1P2.

CER4.1-4.2P2 - Imager Clear Sky Map Update Processor

The CERES "Determine Cloud Properties, TOA and Surface Fluxes" Subsystem (Subsystem 4) has the requirement to detect clouds from the imager radiances. One detection method compares the current pixel reflectance to a historical map of reflectance occurring under clear sky conditions. A similar procedure using clear sky brightness temperature is also used. A data product of imager albedo and brightness temperatures for clear pixels is produced for each execution of CER4.1-4.1P1. At regularly scheduled intervals, the hourly information is compared to the historical file. Any daily value that are significantly different from the running average contained in the historical file are updated.

CER4.1-4.3P1 - Monthly QC Processor

To facilitate algorithm validation, monthly QC products are produced. This PGE takes as input the daily QC reports produced by CER4.1-4.2P1.

CER4.1-4.4P1 - Subset Imager Data

This PGE takes as input an imager data file and produces a file that contains only those scanlines which nadir pixel passes over a CERES Validation Region. The list of CERES Validation Regions is contained in CERESlib.

1.0 PGEName: CER4.1-4.0P1

CER4.1-4.0P1 - Snow and Ice Processor

1.1 PGE Details

1.1.1 Responsible Persons

Table 1-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Sunny Sun-Mack	Walter Miller
Organization	SAIC	SAIC
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	827-4870	827-4886
Fax	825-9129	825-9129
LaRC email	s.sun-mack@larc.nasa.gov	w.f.miller@larc.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)

Table 1-2. Parent PGEs for CER4.1-4.0P1

PGEName	Description
None	

1.1.4 Target PGE(s)

Table 1-3. Target PGEs after CER4.1-4.0P1

PGEName	Description
CER4.1-4.1P1	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for TRMM
CER4.1-4.1P2	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for Terra
CER5.1P1	Compute Surface and Atmospheric Radiative Fluxes

1.2 Operating Environment

1.2.1 Runtime Parameters

Table 1-4. Runtime Parameters for CER4.1-4.0P1

Parameter	Description	Data Type	Valid Values
YYYY	CERDataDateYear	I(4)	>1996
MM	CERDataDateMonth	I(2)	01.. 12
DD	CERDataDateDay	I(2)	01.. 31

1.2.2 Environment Script Requirements

One environment script, named 'CER4.1-4.env', is required and contains the following parameters:

CC4_0P1 - Configuration Code for CER4.1-4.0P1, see CM Database
PS4_0 - Production Strategy for CER4.1-4.0P1, see Production Request
SS4_0 - Sampling Strategy for CER4.1-4.0P1, see Production Request
SW4_1 - Software SSCR # for Clouds, see CM Database

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

Also see Appendix D of this document for a detailed description of the Subsystem specific environment.

1.2.3 Execution Frequency

Daily (1/day) - This PGE is to be processed once per data-day, a maximum total of 31 days per month, when input is available.

1.2.4 Memory/Disk Space/Time Requirements

Table 1-5. Memory/Disk Space/Time Requirements for CER4.1-4.0P1

PGE Number	PGE Name	Total Run Time (HR:MN:SEC)	Memory (MB)	Disk Storage (MB)
CER4.1-4.0P1	Snow and Ice Processor	0:00:05	76	5

1.2.5 Restrictions Imposed in Processing Order

None. Process when Input Data are available (see Section 1.3).

1.3 Processor Dependencies

1.3.1 Input Dataset Name (#1): SSMIF

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

   $CERESHOME/clouds/data/input/SnowIce/NSIDC/ NISE_SSMIF13_YYYYMMDD.HDFEOS

   1. Mandatory/Optional: **This file is mandatory.**
   2. Time Related Dependency:

      The DataDate 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):

   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: **Remove**

e. Typical file size (mb): **2.13**

1.3.2 Input Dataset Name (#2): SNOW

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

   $CERESHOME/clouds/data/input/SnowIce/NESDIS/
   noaa_snow_fnn.ddddd.YYYYMMDDHH.YYYYMMDDHH
   where ddddd is either north or south and nn is 14, 15, or 13 in priority order.

   1. Mandatory/Optional: **This file is mandatory.**
   2. Time Related Dependency:

      The DataDate must be within the day specified for the run: 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):

   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: **Remove**

e. Typical file size (mb): **10.00**

1.4 Operating Procedures

The PGE CER4.1-4.0P1 production script, **Run.CER4.1-4.0P1**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. This PCF can be created by first sourcing the cloud retrieval-specific environment script, **CER4.1-4.env** then executing the PCF generator **CER4.1-4.0P1.PCFGen**.

1.4.1 How to Generate the PCF File

The PC file generator **CER4.1-4.0P1.PCFGen** requires three command-line arguments: 4-digit year (YYYY), 2-digit month (MM), 2-digit day (DD).

At the command-line (>) type:

```
> cd $CERESHOME/clouds/bin
> source $CERESHOME/clouds/bin/CER4.1-4.env
> $CERESHOME/clouds/bin/CER4.1-4.0P1.PCFGen YYYY MM DD
```

The following files will be generated in **$CERESHOME/clouds/rcf/**:

CER4.1-4.0P1_PCFin_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD and
CER4.1-4.0P1_PCF_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD.

1.4.2 How to Execute the Main Processor

Execute the production script by typing the script name, **Run.CER4.1-4.0P1**, followed by the fully specified path name for the PCFile.

At the command-line (>) type:

```
>cd $CERESHOME/clouds/bin
>$CERESHOME/clouds/bin/Run.CER4.1-4.0P1 $CERESHOME/clouds/rcf/
        CER4.1-4.0P1_PCF_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD
```

1.4.3 Special Case Considerations

None.

1.4.4 Special Reprocessing Instructions

All output files are opened with Status = NEW in Subsystem 4.1 through 4.4 software. The output from previous runs must be removed before reprocessing. A cleanup script has been provided as a convenience. It is to be run prior to reprocessing.
At the command-line (>) type:

```
>cd $CERESHOME/clouds/bin
>$CERESHOME/clouds/bin/Run.CER4.1-4.Cleanup $CERESHOME/clouds/rcf/
        CER4.1-4.0P1_PCF_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD
```

The cleanup script uses the generated PCFile to identify files to be removed. If no PCFile exists, one is generated.

1.5 Execution Evaluation

1.5.1 Exit Codes

The processor CER4.1-4.0P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 1-6. 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 1-6. Exit Codes for CER4.1-4.0P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
Other	Failure	

1.5.2 Screen Messages

When running the production script, Run.CER4.1-4.0P1, one of three possible screen messages will appear, a system problem notwithstanding. They are shown in Table 1-7.

Table 1-7. Screen Messages for CER4.1-4.0P1

Message	Implication
Processing Complete	Successful completion of the PGE.
Problem executing Exe.CER4.1-4.0P1.SnowIce	A problem with the execution
Problem with NSIDC Data retrieval	A problem reading the NSIDC data set. Check for the existence of the input file. Stage it, if absent.

1.5.3 Log and Status Files Results

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

1.5.3.1 Report Log File: CER4.1-4.0P1_LogReport_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD

The log report file contains informational messages for the PGE. They indicate progression through critical steps of the code or use of contingency code that will handle data problems. They point to algorithms that were executing when program problems occur. A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

1.5.3.2 Status Log File: CER4.1-4.0P1_LogStatus_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD

The Status Log File contains all messages created by the Toolkit and fatal processing messages. 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.

1.5.3.3 User Log File: CER4.1-4.0P1_LogUser_$SS4_0_$PS4_0_$CC4_0P1.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 User Log File and Status Log File.

1.5.3.4 ShmMem File: CER4.1-4.0P1_ShmMem

The ShmMem File exists to satisfy the Toolkit requirements and is not actively used by CER4.1-4.0P1.

1.5.4 Solutions to Possible Problems

As mentioned in Section 1.4.4, all output files are opened with Status = NEW in Subsystem 4.1 software. Prior to any reprocessing, please run the Cleanup script.

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

a. Subsystem Termination

   There are no foreseeable Subsystem terminating conditions at this time. If one day fails, continue processing the next day.

b. Target PGE Termination

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

1.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process 31 times, maximum, in a 31 day month.

Table 1-8. Expected Output File Listing for CER4.1-4.0P1

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_ESNOW_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD (.met) @($CERESHOME/clouds/data/out_comp/data/CER_ESAI)	m	2.3	1/day	CER4.1-4.1P1, CER5.1P1, CER7.2.1P1	Archive
CER_EICE_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD (.met) @($CERESHOME/clouds/data/out_comp/data/CER_ESAI)	m	2.3	1/day	CER4.1-4.1P1, CER5.1P1, CER7.2.1P1	Archive
CER4.1-4.0P1_PCF_$SS4_0_$PS4_0_$CC4_ 0P1.YYYYMMDD@($CERESHOME/clouds/rcf)	m	0.02	1/day	N/A	Archive, rm
CER4.1-4.0P1_PCFin_$SS4_0_$PS4_0_$CC4_ 0P1.YYYYMMDD@($CERESHOME/clouds/rcf)	m	0.004	1/day	N/A	Archive, rm
CER4.1-4.0P1_LogReport_$SS4_0_$PS4_0_$CC4_ 0P1.YYYYMMDD@($CERESHOME/clouds/data/runlogs)	m	0.001	1/day	N/A	Archive, rm
CER4.1-4.0P1_LogStatus_$SS4_0_$PS4_0_$CC4_ 0P1.YYYYMMDD@($CERESHOME/clouds/data/runlogs)	m	0.002	1/day	N/A	Archive, rm
CER4.1-4.0P1_LogUser_$SS4_0_$PS4_0_$CC4_ 0P1.YYYYMMDD@($CERESHOME/clouds/data/runlogs)	m	0.001	1/day	N/A	Archive, rm

a. See Section 1.2.2 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. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4 digit year
MM - 2 digit month {valid values: 01 .. 12}
DD - 2 digit day {valid values: 01 .. 31
HH - 2 digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month

1.7 Expected Temporary Files/Directories.

The toolkit creates a temporary file.

Table 1-9. Temporary Files Listing for CER4.1-4.0P1

Directory	File Name
/CERES/clouds/data/runlogs	CER4.1-4.0P1_ShmMem

2.0 PGEName: CER4.1-4.1P1

CER4.1-4.1P1 - Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical Property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for TRMM.

2.1 PGE Details

2.1.1 Responsible Persons

Responsible persons can be obtained from the primary contact listed in Table 1-1.

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)

Table 2-1. Parent PGEs for CER4.1-4.1P1

PGEName	Description
CER1.1P1	CERES Geolocate and Calibrate Radiance - TRMM
CER4.1-4.0P1	Snow and Ice Processor
CER4.1-4.2P1	Imager Clear Sky Map Update Processor
CER4.1-4.4P1	Subset Imager Data by CERES Validation Region
CER12.1P1	Regrid Humidity and Temperature Fields Processor (MOA Product)

2.1.4 Target PGE(s)

Table 2-2. Target PGEs after CER4.1-4.1P1

PGEName	Description
CER4.5-6.1P1	Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Main Processor
CER4.1-4.2P1	Imager Clear Sky Map Update Processor

2.2 Operating Environment

2.2.1 Runtime Parameters

Table 2-3. Runtime Parameters for CER4.1-4.1P1

Parameter	Description	Data Type	Valid Values
YYYY	CERDataDateYear	I(4)	>1996
MM	CERDataDateMonth	I(2)	01 .. 12
DD	CERDataDateDay	I(2)	01 .. 31
HH	CERHrOfDay	I(2)	00 .. 23

2.2.2 Environment Script Requirements

One environment script, named 'CER4.1-4.env', is required and contains the following parameters:

CC1 - Configuration Code for IES, see CM Database
CC4_0P1 - Configuration Code for Snow and Ice Map, see CM Database
CC4_1P1 - Configuration Code for CER4.1-4.1P1, see CM Database
CC4_2 - Configuration Code for Clear Sky Map, see CM Database and Production Request
CC12 - Configuration Code for MOA, see CM Database
DATA4_1 - Data SCCR# for Clouds, see CM Database
IMAG - Imager Short Name (VIRS)
INST - CERES Instrument Short Name (PFM, SIM)
PRODUCTION - Set to "YES" when run on a production computer
PS1 - Production Strategy for IES, see Production Request
PS4_0 - Production Strategy for Snow and Ice Map, see Production Request
PS4_1 - Production Strategy for CER4.1-4.1P1, see Production Request
PS4_2 - Production Strategy for Clear Sky Map, see Production Request
PS12 - Production Strategy for MOA, see Production Request
SAT - Satellite Short Name (TRMM)
SS1 - Sampling Strategy for IES, see Production Request
SS4_0 - Sampling Strategy for Snow and Ice Map, see Production Request
SS4_1 - Sampling Strategy for CER4.1-4.1P1, see Production Request
SS4_2 - Sampling Strategy for Clear Sky Map, see Production Request
SS4_4 - Sampling Strategy for CER4.1-4.1P1, see Production Request
SS12 - Sampling Strategy for MOA, see Production Request
SW4_1 - Software SSCR # for Clouds, see CM Database

NOTE: In sequential processing, CC4_2, PS4_2, and SS4_2 would be the same as CC4_1P1, PS4_1, and SS4_1 respectively. On the first data day following a configuration code change, CC4_2 would have the configuration code used on the previous day. The other variables would not change.

During nonsequential processing, CC4_2, PS4_2, and SS4_2 will contain the values for the best Clear Sky Map available. This information may be supplied through the Production Request or obtained from the responsible person in Table 1-1. These would be different from CC4_1P1, PS4_1, and SS4_1.

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

Also see Appendix D of this document for a detailed description of the Subsystem specific environment.

2.2.3 Execution Frequency

Hourly (1/hr/sat) - This PGE is to be processed once per data-hour, for a maximum total of 744 hours per month per satellite.

2.2.4 Memory/Disk Space/Time Requirements

Table 2-4. Memory/Disk Space/Time Requirements for CER4.1-4.1P1

PGE Number	PGE Name	Platform	Total Run Time (HR:MN:SEC)	Memory (MB)	Disk Storage (MB)
CER4.1-4.1P1	Cloud Property Retrieval and Convolution	TRMM	3:11:00	286	425
		Subset TRMM	0:30:00	280	60

2.2.5 Restrictions Imposed in Processing Order

Please process each given day in sequential order. For individual hours within a given day order is unimportant. That is, process all hours from January 1, 1998 before processing January 2, 1998. This allows for updating the Clear Reflectance History (CRH) (CER4.1-4.2P1) for a given day which is input into the next day's PGEs.

NOTE: For TRMM Edition2 processing, the requirement to process each day in sequence is removed from January 1, 1998 to August 31, 1998 and March, 2000.

2.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

2.3.1 Input Dataset Name (#1): ECID

2.3.1.1 VIRS Data

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

   $CERESHOME/clouds/data/input/VIRS/
   1B01.YYMMDD.OOOO.CC_V.HDF, and if needed
   1B01.YYMMDD.OOOP.CC_V.HDF (see item f)

   1. Mandatory/Optional: **This file is mandatory.**
   2. Time Related Dependency:

      The DataDate must match the Runtime Parameters: YYYY,MM,DD
      OOOO represents the orbit number of the first VIRS file, OOOP represents the next orbit of VIRS data, CC_V is the VIRS version number.

   3. Waiting Period: **None. Process when all input data are available.**

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

   INGEST Source: Goddard DAAC -or-
   PGE Source: CER4.1-4.4P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **91.9**

f. Special Requirements: There is a preprocessor script that reads the start and end time of the file and assigns them a file link to the hours that are covered by the orbit. This information is used to place the correct VIRS file name in the PCF file. There are instances where the entire hour including overlap are included in a single orbit. In these cases, only one VIRS file will be included in the PCF. The renaming steps for Subsetted VIRS files are identical.

To Rename the VIRS files, execute the following sequence of commands.

```
> source $CERESHOME/clouds/bin/CER4.1-4env
> $CERESHOME/clouds/bin/Run.CER4.1-4.0P1.RenameVIRS <filename>
```

where <filename> is the fully specified pathname of the VIRS file to be renamed. The links created by the rename program needs to be removed when transitioning from full VIRS files to subsets. Only the VIRS full or subset file being used should be in the directory.

2.3.2 Input Dataset Name (#2): MOA

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

$CERESHOME/sarb/data/out_comp/data/regridmoa/
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDHH, and if needed
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDhh
where hh = HH + 6 (see item f)

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

   The DataDate must bracket the Runtime Parameters: YYYY,MM,DD,HH

3. Waiting Period: **None. Process when all input data are available.**

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

Source PGE: CER12.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **43.8**

f. Special Requirements: MOA data are produced as six hour files named according to their start hour. To process an hour that is not hour 00, 06, 12, or 18, operators must stage the two bracketing MOA files, getting the file for hour 00 from 'tomorrow' if necessary.

2.3.3 Input Dataset Name (#3): ESNOW

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

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_ESNOW_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **None. Process when all input data are available.**

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

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **2.333**

2.3.4 Input Dataset Name (#4): EICE

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

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/
CER_EICE_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **None. Process when all input data are available.**

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

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **2.333**

2.3.5 Input Dataset Name (#5): ECS-OA0063m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0063m_$SS4_2_StartUp_015000.XXXXMM
CER_ECS-SOA0063m_$SS4_2_StartUp_015000.XXXXMM.met

or for 19980101 to 19980901 and 20000301 to 20000401

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0063m_015000.YYYYMMDD
CER_ECS-SOA0063m_015000.YYYYMMDD.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

f. Special Requirements: In sequential processing (when the previous day has been run using the same configuration code, production strategy and sampling strategy, CC4_2, PS4_2, and SS4_2 would be the same as CC4_1P1, PS4_1, and SS4_1 respectively. **On the first data day following a configuration code change during the same production and sampling strategy, CC4_2 would have the configuration code used on the previous data day.** The other variables would not change. **During nonsequential processing and the first data day of sequential processing, CC4_2, PS4_2, and SS4_2 will contain the values for the best Clear Sky Map available. This information may be supplied through the Production Request or obtained from the responsible person in Table 1-1.** These would be different from CC4_1P1, PS4_1, and SS4_1.

2.3.6 Input Dataset Name (#6): ECS-OA0160m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0160m_015000.XXXXMM
CER_ECS-SOA0160m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

2.3.7 Input Dataset Name (#7): ECS-OA1663m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA1663m_015000.XXXXMM
CER_ECS-SOA1663m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s)

e. Typical file size (mb): **18.6**

2.3.8 Input Dataset Name (#8): ECS-OA0063s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0063s_015000.XXXXMM
CER_ECS-SOA0063s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

2.3.9 Input Dataset Name (#9): ECS-OA0160s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0160s_015000.XXXXMM
CER_ECS-SOA0160s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

2.3.10 Input Dataset Name (#10): ECS-OA1663s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA1663s_015000.XXXXMM
CER_ECS-SOA1663s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

2.3.11 Input Dataset Name (#11): ECS-BT1080m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS/
CER_ECS-SBT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-SBT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SBT1080m_015000.XXXXMM
CER_ECS-SBT1080m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.3**

2.3.12 Input Dataset Name (#12): ECS-BT1080s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-SBT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-SBT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SBT1080s_015000.XXXXMM
CER_ECS-SBT1080s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.3**

2.3.13 Input Dataset Name (#13): Ephemeris Data

This Data set is needed only for TRMM processing.

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

TRMM_ED9D_OR_YYYY-MM-PVDT00-00-00Z_V01.nat
TRMM_ED9D_OR_YYYY-MM-DDT00-00-00Z_V01.nat
TRMM_ED9D_OR_YYYY-MM-NXDT00-00-00Z_V01.nat
$CERESHOME/instrument/data/ancillary/dynamic

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD
   PVD is previous day, NXD is next day.

3. Waiting Period: **TBD**

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

Ingest Source: Goddard DAAC

c. Alternate Data Set, if one exists (maximum waiting period):

None.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **0.09**

2.3.14 Input Dataset Name (#14): Attitude Data

This Data set is needed only for TRMM processing.

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

TRMM_G500_LZ_YYYY-MM-PVDT00-00-00Z_V01.DAT1.nat
TRMM_G500_LZ_YYYY-MM-DDT00-00-00Z_V01.DAT1.nat
TRMM_G500_LZ_YYYY-MM-NXDT00-00-00Z_V01.DAT1.nat
$CERESHOME/instrument/data/ancillary/dynamic

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD
   PVD is previous day, NXD is next day.

3. Waiting Period: **TBD**

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

Ingest Source: Goddard DAAC

c. Alternate Data Set, if one exists (maximum waiting period):

None.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **0.11**

2.3.15 Input Dataset Name (#15): IES

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

For TRMM:
$CERESHOME/instrument/data/int_prod/
CER_IES_$SS1_$PS1_$CC1.YYYYMMDDHH
CER_IES_$SS1_$PS1_$CC1.YYYYMMDDHH.met

1. Mandatory/Optional: **This (these) file(s) is (are) optional. See 2.4.3.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY, MM, DD, HH

3. Waiting Period: **Five days after DataDate.**

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

Source PGE: CER1.1P1(TRMM)

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

d. File Disposition after successful execution: **Remove**.

e. Typical file size (mb): **34.700**

2.4 Operating Procedures

The PGE CER4.1-4.1P1 production script, **Run.CER4.1-4.1P1**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. This PCF can be created by first sourcing the cloud retrieval-specific environment script, **CER4.1-4.env** then executing the PCF generator **CER4.1-4.1P1.PCFGen**.

2.4.1 How to Generate the PCF File

The environment script requires two optional command-line arguments: 1-digit satellite (X) and character string prefix to production strategy (N). The default satellite is TRMM, 1-NOAA09, 2-TRMM, and 3-Terra. The prefix is usually Subset that generates special processing where only data in CERES validation regions is used. The PCF generator, **CER_4.1-4.1P1.PCFGen**, requires four command-line arguments: 4-digit year (YYYY), 2-digit month (MM), 2-digit day (DD), and 2-digit hour-of-day (HH).

At the command-line (>) type:

> source $CERESHOME/clouds/bin/CER4.1-4.env X N
> **$CERESHOME/clouds/bin/CER4.1-4.1P1.PCFGen YYYY MM DD HH**

The following files will be generated in **$CERESHOME/clouds/rcf/**:

CER4.1-4.1P1_PCFin_$SS4_4_$PS4_1_$CC4_1P1.YYYYMMDDHH and
CER4.1-4.1P1_PCF_$SS4_4_$PS4_1_$CC4_1P1.YYYYMMDDHH

2.4.2 How to Execute the Main Processor

Execute the production script by typing the script name, **Run.CER4.1-4.1P1**, followed by the PCF file name including directory.

At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>$CERESHOME/clouds/bin/Run.CER4.1-4.1P1 $CERESHOME/clouds/rcf/
CER4.1-4.1P1_PCF_$SS4_4_$PS4_1_$CC4_1P1.YYYYMMDDHH

2.4.3 Special Case Considerations

There is a need to process imager data even when CERES data (IES) is not available. The production request will indicate that CERES instrument be set to NONE. The SSFI, FQC, and FQCI files will not be produced for these cases. The exit code will be 202, because convolution would not have processed successfully.

Other special case considerations will be handled on a case-by-case basis, where special instructions will accompany each special request.

2.4.4 Special Reprocessing Instructions

All output files are opened with Status = NEW in Subsystem 4.1 through 4.4 software. The output from previous runs must be removed before reprocessing. A cleanup script has been provided as a convenience. It is to be run prior to reprocessing.

At the command-line (>) type:

```
>cd $CERESHOME/clouds/bin
>$CERESHOME/clouds/bin/Run.CER4.1-4.Cleanup $CERESHOME/clouds/rcf/
        CER4.1-4.1P1_PCF_$SS4_4_$PS4_1_$CC4_1P1.YYYYMMDD
```

The cleanup script uses the PCFile from the PCFile Generator to identify files to be removed.

2.5 Execution Evaluation

2.5.1 Exit Codes

The processor CER4.1-4.1P1 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 (see Table 1-1) for assistance.

Table 2-5. Exit Codes for CER4.1-4.1P1(1 of 2)

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
99	Failure	Check Imager input files for compression or corruption.
137	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B).

Table 2-5. Exit Codes for CER4.1-4.1P1(2 of 2)

Exit Code	Definition	Action
200	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B). Check to ensure IES was staged and imager file was produced. This includes the case when no matching imager data was available for CERES footprints.
201	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B). IES was not staged for convolution.
202	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B). Usually indicates a foreseeable input error.
203	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B).

2.5.2 Screen Messages

Screen Messages are not normally encountered when running the production script Run.CER4.1-4.1P1. All messages of significance are reported to the appropriate log file. The scripts utilized in the production environment will indicate general success or failure of a specific run, but that is all.

2.5.3 Log and Status Files Results

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

2.5.3.1 Report Log File: CER4.1-4.1P1_LogReport_$SS4_4_$PS4_1_$CC4_1P1.YYYYMMDDHH

The log report file contains informational messages for the PGE. They indicate progression through critical steps of the code or use of contingency code that will handle data problems. They point to algorithms that were executing when program problems occur. 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: CER4.1-4.1P1_LogStatus_$SS4_4_$PS4_1_$CC4_1P1.YYYYMMDDHH

The Status Log File contains all messages created by the Toolkit and fatal processing messages. 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.

2.5.3.3 User Log File: CER4.1-4.1P1_LogUser_$SS4_4_$PS4_1_$CC4_1P1.YYYYMMDDHH

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.

2.5.3.4 ShmMem File: CER4.1-4.1P1_ShmMem

The ShmMem File exists to satisfy the Toolkit requirements and is not actively used by CER4.1-4.1P1.

2.5.4 Solutions to Possible Problems

The most likely problems encountered are missing input or ancillary data files, or existing output files. These should be identified in the Status Log File. These errors could also be linked to missing .met files or other problems related to a temporary file needed to process metadata. As mentioned in Section 2.4.4, all output files are opened with Status = NEW in Subsystem 4.1 software. Prior to any reprocessing, please run the Cleanup script.

2.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is to be processed once per data-hour, for a maximum total of 744 hours per month per satellite. For satellites with multiple instruments, expect multiple outputs for the following datasets: CER_FQC, CER_FQCI, and CER_SSFI.

Table 2-6. Expected Output File Listing for CER4.1-4.1P1 (1 of 2)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_CRHU_$SS4_1_$PS4_1_$CC4_1P1.YYYY MMDDHH (.met) @(CERESHOME/clouds/data/out_comp/data/ CRH_Update)	o	.50	1/hr	CER4.1-4.2P1	Archive
CER_ECV_$SS4_1_$PS4_1_$CC4_1P1.YYYYMM DDHH (.met) @(CERESHOME/clouds/data/out_comp/data/CloudVis)	o	155.92	1/hr	N/A	Archive, rm
CER_ECVS_$SS4_1_$PS4_1_$CC4_1P1.YYYY MMDDHHR(1..33) (.met) @(CERESHOME/clouds/data/out_comp/data/Subset)	o	13.3	0-33/hr	N/A	Archive, rm
CER_EQCHG_$SS4_1_$PS4_1_$CC4_1P1.YYYY MMDDHH (.met) (was CER_EQCB) @(CERESHOME/clouds/data/out_comp/QA_Reports)	m	17	1/hr	CER4.1-4.2P1	Archive

Table 2-6. Expected Output File Listing for CER4.1-4.1P1 (2 of 2)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_EQCHB_$SS4_1_$PS4_1_$CC4_1P1.YYYY MMDDHH (.met) (was CER_EQCV) @(CERESHOME/clouds/data/out_comp/QA_Reports)	m	20.03	1/hr	CER4.1-4.2P1	Archive
CER_FQC_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P1.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/QA_Reports)	o	.03	1/hr/inst	N/A	/QA, Archive, rm
CER_FQCI_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P1.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/QA_Reports)	o	.10	1/hr/inst	CER4.5-6.1P1	No Archive
CER_SSFI_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P1.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/data/SSF_Int)	o	202.65	1/hr/inst	CER4.5-6.1P1	No Archive
CER4.1-4.1P1_PCF_$SS4_4_$PS4_1_$CC4_ 1P1.YYYYMMDDHH@($CERESHOME/clouds/rcf)	m	0.05	1/hr	N/A	Archive, rm
CER4.1-4.1P1_PCFin_$SS4_4_$PS4_1_$CC4_ 1P1.YYYYMMDDHH@($CERESHOME/clouds/rcf)	m	0.02	1/hr	N/A	Archive
CER4.1-4.1P1_LogReport_$SS4_4_$PS4_1_$CC4_ 1P1.YYYYMMDDHH@($CERESHOME/clouds/data/ runlogs)	m	0.5	1/hr	N/A	Archive, rm
CER4.1-4.1P1_LogStatus_$SS4_4_$PS4_1_$CC4_ 1P1.YYYYMMDDHH@($CERESHOME/clouds/data/ runlogs)	m	0.005	1/hr	N/A	Archive, rm
CER4.1-4.1P1_LogUser_$SS4_4_$PS4_1_$CC4_ 1P1.YYYYMMDDHH@($CERESHOME/clouds/data/ runlogs)	m	0.002	1/hr	N/A	Archive, rm

a. See Section 2.2.2 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. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4 digit year
MM - 2 digit month {valid values: 01 .. 12}
DD - 2 digit day {valid values: 01 .. 31
HH - 2 digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
inst - Instrument (PFM, FM1, FM2, ...)

2.7 Expected Temporary Files/Directories.

There is two named temporary file created with this PGE. The toolkit also creates several temporary files for CloudVis (pc[n...n]).

Table 2-7. Temporary Files Listing for CER4.1-4.1P1

Directory	File Name
/CERES/clouds/data/int_prod/Cookie	CER_EIPD_$SS4_1_$PS4_1_$CC4_1P1.YYYYMMDDHH (.met)
/CERES/clouds/data/scr	pcnnnnnnnnnnnnnnnnnnnnnnnnnnnn
/CERES/clouds/data/runlogs	CER4.1-4.1P1_ShmMem

3.0 PGEName: CER4.1-4.1P2

CER4.1-4.1P2 - Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical Property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Terra-MODIS Main Processor for Terra.

3.1 PGE Details

3.1.1 Responsible Persons

Responsible persons can be obtained from the primary contact listed in Table 1-1.

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)

Table 3-1. Parent PGEs for CER4.1-4.1P2

PGEName	Description
CER1.1P3	CERES Geolocate and Calibrate Radiance - Terra
CER1.1P5	CERES Geolocate and Calibrate Radiance - Aqua
CER4.1-4.0P1	Snow and Ice Processor
CER4.1-4.2P2	Imager Clear Sky Map Update Processor
CER12.1P1	Regrid Humidity and Temperature Fields Processor (MOA Product)

3.1.4 Target PGE(s)

Table 3-2. Target PGEs after CER4.1-4.1P2

PGEName	Description
CER4.5-6.1P2	Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Main Processor
CER4.1-4.2P1	Imager Clear Sky Map Update and Daily QC Processor
CER4.1-4.2P2	Imager Clear Sky Map Update Processor

3.2 Operating Environment

3.2.1 Runtime Parameters

Table 3-3. Runtime Parameters for CER4.1-4.1P2

Parameter	Description	Data Type	Valid Values
YYYY	CERDataDateYear	I(4)	>1996
MM	CERDataDateMonth	I(2)	01 .. 12
DD	CERDataDateDay	I(2)	01 .. 31
HH	CERHrOfDay	I(2)	00 .. 23
VRG	MODIS Radiance and Geolocation Version	I(1)	3 .. 4
VA	MODIS MOD04 Aerosol Version	I(1)	3 .. 4

3.2.2 Environment Script Requirements

One environment script, named 'CER4.1-4.env', is required and contains the following parameters:

CC1 - Configuration Code for IES, see CM Database
CC4_0P1 - Configuration Code for Snow and Ice Map, see CM Database
CC4_1P2 - Configuration Code for CER4.1-4.1P2, see CM Database
CC4_2 - Configuration Code for Clear Sky Map, see CM Database and Production Request
CC12 - Configuration Code for MOA, see CM Database
DATA4_1 - Data SCCR# for Clouds, see CM Database
IMAG - Imager Short Name (MODIS)
INST - CERES Instrument Short Name (FM1, FM2)
PRODUCTION - Set to "YES" when run on a production computer
PS1 - Production Strategy for IES, see Production Request
PS4_0 - Production Strategy for Snow and Ice Map, see Production Request
PS4_1 - Production Strategy for CER4.1-4.1P2, see Production Request
PS4_2 - Production Strategy for Clear Sky Map, see Production Request
PS12 - Production Strategy for MOA, see Production Request
SAT - Satellite Short Name (Terra)
SS1 - Sampling Strategy for IES, see Production Request
SS4_0 - Sampling Strategy for Snow and Ice Map, see Production Request
SS4_1 - Sampling Strategy for CER4.1-4.1P2, see Production Request
SS4_2 - Sampling Strategy for Clear Sky Map, see Production Request
SS4_4 - Sampling Strategy for CER4.1-4.1P2, see Production Request
SS12 - Sampling Strategy for MOA, see Production Request
SW4_1 - Software SSCR # for Clouds, see CM Database

NOTE: In sequential processing, CC4_2, PS4_2, and SS4_2 would be the same as CC4_1P2, PS4_1, and SS4_1 respectively. On the first data day following a configuration code change, CC4_2 would have the configuration code used on the previous day. The other variables would not change.

During nonsequential processing, CC4_2, PS4_2, and SS4_2 will contain the values for the best Clear Sky Map available. This information may be supplied through the Production Request or obtained from the responsible person in Table 1-1. These would be different from CC4_1P2, PS4_1, and SS4_1.

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

Also see Appendix D of this document for a detailed description of the Subsystem specific environment.

3.2.3 Execution Frequency

Hourly (1/hr/sat) - This PGE is to be processed once per data-hour, for a maximum total of 744 hours per month per satellite.

3.2.4 Memory/Disk Space/Time Requirements

Table 3-4. Memory/Disk Space/Time Requirements for CER4.1-4.1P2

PGE Number	PGE Name	Platform	Total Run Time (HR:MN:SEC)	Memory (MB)	Disk Storage (MB)
CER4.1-4.1P2	Cloud Property Retrieval and Convolution	Terra	3:00:00	465	425
		Subset Terra	0:20:00	454	90

3.2.5 Restrictions Imposed in Processing Order

Please process each given day in sequential order. For individual hours within a given day order is unimportant. That is, process all hours from January 1, 1998 before processing January 2, 1998. This allows for updating the Clear Reflectance History (CRH) (CER4.1-4.2P2) for a given day which is input into the next day's PGEs.

3.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

3.3.1 Input Dataset Name (1): ECIA

3.3.1.1 MODIS Radiance Data

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

$CERESHOME/clouds/data/input/MODIS/YYYYDDD/
MOD02SS1.SYYYYDDD.HHMM.CC_M.yyyydddhhmmss.hdf

1. Mandatory/Optional: **One radiance and geolocation granule pair is mandatory. Other granules are optional.**
2. Time Related Dependency:

YYYY	**four digit data year**
DDD	**three digit data Julian day**
HH	**two digit data start hour**
MM	**two digit data start minute**
CC_M	**MODIS version number**
yyyy	**four digit processing year**
ddd	**three digit processing Julian day**
hh	**two digit processing hour**
mm	**two digit processing minute**
ss	**two digit processing second**

3. Waiting Period: **None. Process when all input data are available.**

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

INGEST Source: Goddard DAAC -or-
PGE Source: CER4.1-4.4P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **50 per 5 minute granule**

f. Special Requirements: Lots of disk space. Processing normally requires sixteen granules. The two five minute granule immediately proceeding the hour (50 and 55), twelve granules within the hour, and two five minute granules immediately following the hour (00 and 05). The granules before or after the data hour can cross into different data day, month, and year.

3.3.1.2 MODIS Geolocation Data

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

$CERESHOME/clouds/data/input/MODIS/YYYYDDD/
MOD03.AYYYYDDD.HHMM.CC_M.yyyydddhhmmss.hdf

1. Mandatory/Optional: **One radiance and geolocation granule pair (same time) is mandatory. Other granules are optional.**
2. Time Related Dependency:

YYYY	**four digit data year**
DDD	**three digit data Julian day**
HH	**two digit data start hour**
MM	**two digit data start minute**
CC_M	**MODIS version number**
yyyy	**four digit processing year**
ddd	**three digit processing Julian day**
hh	**two digit processing hour**
mm	**two digit processing minute**
ss	**two digit processing second**

3. Waiting Period: **None. Process when all input data are available.**

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

INGEST Source: Goddard DAAC -or-
PGE Source: None

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **61 per 5 minute granule**

f. Special Requirements: Lots of disk space. Processing normally requires sixteen granules. The two five minute granule immediately proceeding the hour (50 and 55), twelve granules within the hour, and two five minute granules immediately following the hour (00 and 05). The granules before or after the data hour can cross into different data day, month, and year.

3.3.1.3 MODIS Aerosol Data

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

$CERESHOME/clouds/data/input/MODIS/YYYYDDD
MOD04_L2.AYYYYDDD.HHMM.CC_M.yyyydddhhmmss.hdf

1. Mandatory/Optional: **This file is optional.**

2. Time Related Dependency:

YYYY	**four digit data year**
DDD	**three digit data Julian day**
HH	**two digit data start hour**
MM	**two digit data start minute**
CC_M	**MODIS version number**
yyyy	**four digit processing year**
ddd	**three digit processing Julian day**
hh	**two digit processing hour**
mm	**two digit processing minute**
ss	**two digit processing second**

3. Waiting Period: **None. Process when all input data are available.**

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

INGEST Source: Goddard DAAC -or-
PGE Source: None

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **12 per 5 minute granule**

f. Special Requirements: Lots of disk space. Aerosol data only exists for daylight hours. There is no fixed rules for how many granules should be present. However, any granule that matches the time of the sixteen granules of radiance and geolocation data should be used.

3.3.2 Input Dataset Name (#2): MOA

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

$CERESHOME/sarb/data/out_comp/data/regridmoa/
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDHH,
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDhh1,
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDhh2,
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDhh3, and
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDhh4

where hhn = where n represents other files within a 24 hour period (see item f)

1. Mandatory/Optional: **This file is mandatory.**

2. Time Related Dependency:

The DataDate must bracket the Runtime Parameters: YYYY,MM,DD,HH

3. Waiting Period: **None. Process when all input data are available.**

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

Source PGE: CER12.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **43.8**

f. Special Requirements: MOA data are produced as six hour files named according to their start hour. To process an hour the files for a 24 hour period are needed. If the hour is between 0 and 18, all four files for that data day are used with the two files bracketing the data hour (before and after) then the remainder in increasing time. If the hour is after 18, then hour 18 from that data day and hour 00 from the next data day followed by hours 06 and 12 from that data day in order.

3.3.3 Input Dataset Name (#3): ESNOW

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

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/ CER_ESNOW_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **None. Process when all input data are available.**

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

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **2.333**

3.3.4 Input Dataset Name (#4): EICE

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

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/ CER_EICE_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD

1. Mandatory/Optional: **This file is mandatory.**

2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **None. Process when all input data are available.**

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

   Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

   Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **2.333**

3.3.5 Input Dataset Name (#5): ECS-OA0063m

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

   $CERESHOME/clouds/data/out_comp/data/CER_ECS
   CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
   CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**

2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

   Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

   $CERESHOME/clouds/data/ancillary/static/CER_ECS/
   CER_ECS-SOA0063m_$SS4_2_StartUp_015000.XXXXMM
   CER_ECS-SOA0063m_$SS4_2_StartUp_015000.XXXXMM.met

or for the period 19980101 to 19980901 and 20000301 to 20000401

   $CERESHOME/clouds/data/ancillary/static/CER_ECS/
   CER_ECS-SOA0063m_015000.YYYYMMDD
   CER_ECS-SOA0063m_015000.YYYYMMDD.met

   Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

   Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

f. Special Requirements: In sequential processing (when the previous day has been run using the same configuration code, production strategy and sampling strategy, CC4_2, PS4_2, and SS4_2 would be the same as CC4_1P2, PS4_1, and SS4_1 respectively. **On the first data day following a configuration code change during the same production and sampling strategy, CC4_2 would have the configuration code used on the previous data day.** The other variables would not change. **During nonsequential processing and the first data day of sequential processing, CC4_2, PS4_2, and SS4_2 will contain the values for the best Clear Sky Map available. This information may be supplied through the Production Request or obtained from the responsible person in Table 1-1.** These would be different from CC4_1P2, PS4_1, and SS4_1.

3.3.6 Input Dataset Name (#6): ECS-OA0160m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0160m_015000.XXXXMM
CER_ECS-SOA0160m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

3.3.7 Input Dataset Name (#7): ECS-OA1663m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA1663m_015000.XXXXMM
CER_ECS-SOA1663m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

3.3.8 Input Dataset Name (#8): ECS-OA0063s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0063s_015000.XXXXMM
CER_ECS-SOA0063s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

3.3.9 Input Dataset Name (#9): ECS-OA0160s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0160s_015000.XXXXMM
CER_ECS-SOA0160s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

3.3.10 Input Dataset Name (#10): ECS-OA1663s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA1663s_015000.XXXXMM
CER_ECS-SOA1663s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

3.3.11 Input Dataset Name (#11): ECS-BT1080m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS/
CER_ECS-SBT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-SBT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SBT1080m_015000.XXXXMM
CER_ECS-SBT1080m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.3**

3.3.12 Input Dataset Name (#12): ECS-BT1080s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-SBT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-SBT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SBT1080s_015000.XXXXMM
CER_ECS-SBT1080s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.3**

3.3.13 Input Dataset Name (#13): IES

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

For Terra:

$CERESHOME/instrument/data/int_prod/
CER_IES_$SAT-FM1_$PS1_$CC1.YYYYMMDDHH
CER_IES_$SAT-FM1_$PS1_$CC1.YYYYMMDDHH.met
CER_IES_$SAT-FM2_$PS1_$CC1.YYYYMMDDHH
CER_IES_$SAT-FM2_$PS1_$CC1.YYYYMMDDHH.met

1. Mandatory/Optional: **This (these) file(s) is (are) optional. See Section 3.4.3.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY, MM, DD, HH

3. Waiting Period: **Five days after DataDate.**

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

Source PGE: CER1.1P1(TRMM) -or- CER1.1P3 (Terra), CER1.1P5 (Aqua)

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

d. File Disposition after successful execution: **Remove**.

e. Typical file size (mb): **34.700**

3.4 Operating Procedures

The PGE CER4.1-4.1P2 production script, **Run.CER4.1-4.1P2**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. This PCF can be created by first sourcing the cloud retrieval-specific environment script, **CER4.1-4.env** then executing the PCF generator **CER4.1-4.1P2.PCFGen**.

3.4.1 How to Generate the PCF File

The environment script requires two optional command-line arguments: 1-digit satellite (X) and character string prefix to production strategy (N). The default satellite is TRMM, 1-NOAA09, 2-TRMM, and 3-Terra. The prefix is usually Subset that generates special processing where only data in CERES validation regions is used. The PCF generator, **CER_4.1-4.1P2.PCFGen**, requires six command-line arguments: 4-digit year (YYYY), 2-digit month (MM), 2-digit day (DD), and 2-digit hour-of-day (HH), 1-digit MODIS radiance and geolocation version number (VRG), and 1-digit MODIS aerosol version number (VA).

At the command-line (>) type:

> source $CERESHOME/clouds/bin/CER4.1-4.env X N
> $CERESHOME/clouds/bin/CER4.1-4.1P2.PCFGen YYYY MM DD HH VRG VA

The following files will be generated in **$CERESHOME/clouds/rcf/**:

CER4.1-4.1P2_PCFin_$SS4_4_$PS4_1_$CC4_1P2.YYYYMMDDHH and
CER4.1-4.1P2_PCF_$SS4_4_$PS4_1_$CC4_1P2.YYYYMMDDHH

3.4.2 How to Execute the Main Processor

Execute the production script by typing the script name, **Run.CER4.1-4.1P2**, followed by the PCF file name including directory.

At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>$CERESHOME/clouds/bin/Run.CER4.1-4.1P2 $CERESHOME/clouds/rcf/
CER4.1-4.1P2_PCF_$SS4_4_$PS4_1_$CC4_1P2.YYYYMMDDHH

3.4.3 Special Case Considerations

There is a need to process imager data even when CERES data (IES) is not available. The production request will indicate that CERES instrument be set to NONE. The SSFI, FQC, and FQCI files will not be produced for these cases. The exit code will be 202, because convolution would not have processed successfully.

There are two CERES instruments on the Terra spacecraft, but only one imager. To efficiently process the data, two IES are input to convolution producing two SSFI files. This type of operation is indicated by a instrument environmental variable that includes both CERES instrument names separated by a "+". Each SSFI file name will only contain data from one instrument.

If the MODIS radiance and geolocation and MODIS aerosol version is not provided it will default to Version 004. The default cannot be used with the option described below.

There is an option while creating the PCF to only include up to four 5-minute MODIS granules in the PCF. This was designed to assist in over ARM processing so that MODIS files that are not needed can remain in the directory. The new format of how to generate the PCF is:
At the command-line (>) type:

> source $CERESHOME/clouds/bin/CER4.1-4.env X N
> $CERESHOME/clouds/bin/CER4.1-4.1P2.PCFGen YYYY MM DD HH VRG VA MM1 MM2 MM3 MM4

Where MM1, MM2, MM3, and MM4 are minute values of the MODIS granules. All are optional.

The following files will be generated in **$CERESHOME/clouds/rcf/**:

CER4.1-4.1P2_PCFin_$SS4_4_$PS4_1_$CC4_1P2.YYYYMMDDHH and
CER4.1-4.1P2_PCF_$SS4_4_$PS4_1_$CC4_1P2.YYYYMMDDHH

Other special case considerations will be handled on a case-by-case basis, where special instructions will accompany each special request.

3.4.4 Special Reprocessing Instructions

All output files are opened with Status = NEW in Subsystem 4.1 through 4.4 software. The output from previous runs must be removed before reprocessing. A cleanup script has been provided as a convenience. It is to be run prior to reprocessing.
At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>$CERESHOME/clouds/bin/Run.CER4.1-4.Cleanup $CERESHOME/clouds/rcf/
CER4.1-4.1P2_PCF_$SS4_4_$PS4_1_$CC4_1P2.YYYYMMDD

The cleanup script uses the PCFile from the PCFile Generator to identify files to be removed.

3.5 Execution Evaluation

3.5.1 Exit Codes

The processor CER4.1-4.1P2 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 3-5. 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 3-5. Exit Codes for CER4.1-4.1P2 (1 of 2)

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
99	Failure	Check Imager input files for compression or corruption.
137	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B).

Table 3-5. Exit Codes for CER4.1-4.1P2 (2 of 2)

Exit Code	Definition	Action
200	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B). Check to ensure IES was staged and imager file was produced. This includes the case when no matching imager data was available for CERES footprints.
201	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B). IES was not staged for convolution.
202	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B). Usually indicates a foreseeable input error.
203	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B).

3.5.2 Screen Messages

Screen Messages are not normally encountered when running the production script Run.CER4.1-4.1P2. All messages of significance are reported to the appropriate log file. The scripts utilized in the production environment will indicate general success or failure of a specific run, but that is all.

3.5.3 Log and Status Files Results

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

3.5.3.1 Report Log File: CER4.1-4.1P2_LogReport_$SS4_4_$PS4_1_$CC4_1P2.YYYYMMDDHH

The log report file contains informational messages for the PGE. They indicate progression through critical steps of the code or use of contingency code that will handle data problems. They point to algorithms that were executing when program problems occur. 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: CER4.1-4.1P2_LogStatus_$SS4_4_$PS4_1_$CC4_1P2.YYYYMMDDHH

The Status Log File contains all messages created by the Toolkit and fatal processing messages. 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.

3.5.3.3 User Log File: CER4.1-4.1P2_LogUser_$SS4_4_$PS4_1_$CC4_1P2.YYYYMMDDHH

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.

3.5.3.4 ShmMem File: CER4.1-4.1P2_ShmMem

The ShmMem File exists to satisfy the Toolkit requirements and is not actively used by CER4.1-4.1P2.

3.5.4 Solutions to Possible Problems

The most likely problems encountered are missing input or ancillary data files, or existing output files. These should be identified in the Status Log File. These errors could also be linked to missing .met files or other problems related to a temporary file needed to process metadata. As mentioned in Section 3.4.4, all output files are opened with Status = NEW in Subsystem 4.1 software. Prior to any reprocessing, please run the Cleanup script.

3.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is to be processed once per data-hour, for a maximum total of 744 hours per month per satellite. For satellites with multiple instruments, expect multiple outputs for the following datasets: CER_FQC, CER_FQCI, and CER_SSFI.

Table 3-6. Expected Output File Listing for CER4.1-4.1P2 (1 of 2)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_CRHU-WL0063_$SS4_1_$PS4_1_$CC4_1P2.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/data/CRH_Update)	o	.50	1/hr	CER4.1-4.2P1	Archive
CER_CRHU-WL0160_$SS4_1_$PS4_1_$CC4_1P2.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/data/CRH_Update)	o	.50	1/hr	CER4.1-4.2P1	Archive
CER_ECV_$SS4_1_$PS4_1_$CC4_1P2.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/data/CloudVis)	o	155.92	1/hr	N/A	Archive, rm
CER_ECVS_$SS4_1_$PS4_1_$CC4_1P2.YYYYMMDDHHR(1..40) (.met) @(CERESHOME/clouds/data/out_comp/data/Subset)	o	13.3	0-33/hr	N/A	Archive, rm

Table 3-6. Expected Output File Listing for CER4.1-4.1P2 (2 of 2)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_EQCHG_$SS4_1_$PS4_1_$CC4_1P2.YYYY MMDDHH (.met) (was CER_EQCB) @(CERESHOME/clouds/data/out_comp/QA_Reports)	m	~17	1/hr	CER4.1-4.2P1	Archive
CER_EQCHB_$SS4_1_$PS4_1_$CC4_1P2.YYYY MMDDHH (.met) (was CER_EQCV) @(CERESHOME/clouds/data/out_comp/QA_Reports)	m	20.03	1/hr	CER4.1-4.2P1	Archive
CER_FQC_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P2.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/QA_Reports)	o	.03	1/hr/inst	N/A	/QA, Archive, rm
CER_FQCI_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P2.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/QA_Reports)	o	.10	1/hr/inst	CER4.5-6.1P1	No Archive
CER_SSFI_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P2.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/data/SSF_Int)	o	202.65	1/hr/inst	CER4.5-6.1P1	No Archive
CER_SSFAI_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P2.YYYYMMDDHH(.met) @(CERESHOME/clouds/data/out_comp/data/SSF_Int)	0	24.7	1/hr/inst	CER4.5-6.1P1	No Archive
CER4.1-4.1P2_PCFin_$SS4_4_$PS4_1_$CC4_ 1P2.YYYYMMDDHH@($CERESHOME/clouds/rcf)	m	0.05	1/hr	N/A	Archive
CER4.1-4.1P2_PCF_$SS4_4_$PS4_1_$CC4_ 1P2.YYYYMMDDHH@($CERESHOME/clouds/rcf)	m	0.02	1/hr	N/A	Archive, rm
CER4.1-4.1P2_LogReport_$SS4_4_$PS4_1_$CC4_ 1P2.YYYYMMDDHH@($CERESHOME/clouds/data/ runlogs)	m	0.7	1/hr	N/A	Archive, rm
CER4.1-4.1P2_LogStatus_$SS4_4_$PS4_1_$CC4_ 1P2.YYYYMMDDHH@($CERESHOME/clouds/data/ runlogs)	m	0.005	1/hr	N/A	Archive, rm
CER4.1-4.1P2_LogUser_$SS4_4_$PS4_1_$CC4_ 1P2.YYYYMMDDHH@($CERESHOME/clouds/data/ runlogs)	m	0.002	1/hr	N/A	Archive, rm

a. See Section 3.2.2 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.
VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4 digit year
MM - 2 digit month {valid values: 01 .. 12}
DD - 2 digit day {valid values: 01 .. 31
HH - 2 digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
inst - Instrument (PFM, FM1, FM2, ...)

3.7 Expected Temporary Files/Directories.

There is one named temporary file created with this PGE. The toolkit also creates several temporary files for CloudVis (pc[n...n]).

Table 3-7. Temporary Files Listing for CER4.1-4.1P2

Directory	File Name
/CERES/clouds/data/int_prod/Cookie	CER_EIPD_$SS4_1_$PS4_1_$CC4_1.YYYYMMDDHH (.met)
/CERES/clouds/data/scr	pcnnnnnnnnnnnnnnnnnnnnnnnnnnnn
/CERES/clouds/data/runlogs	CER4.1-4.1P2_ShmMem

4.0 PGEName: CER4.1-4.1P3

CER4.1-4.1P3 - Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical Property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Aqua-MODIS Main Processor for Aqua.

4.1 PGE Details

4.1.1 Responsible Persons

Responsible persons can be obtained from the primary contact listed in Table 1-1.

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)

Table 4-1. Parent PGEs for CER4.1-4.1P3

PGEName	Description
CER1.1P5	CERES Geolocate and Calibrate Radiance - Aqua
CER4.1-4.0P1	Snow and Ice Processor
CER4.1-4.2P2	Imager Clear Sky Map Update Processor
CER12.1P1	Regrid Humidity and Temperature Fields Processor (MOA Product)

4.1.4 Target PGE(s)

Table 4-2. Target PGEs after CER4.1-4.1P3

PGEName	Description
CER4.5-6.1P3	Inversion to Instantaneous TOA Fluxes and Empirical Estimates of Surface Radiation Budget Subsystems 4.5 and 4.6 Main Processor
CER4.1-4.2P1	Imager Clear Sky Map Update and Daily QC Processor
CER4.1-4.2P2	Imager Clear Sky Map Update Processor

4.2 Operating Environment

4.2.1 Runtime Parameters

Table 4-3. Runtime Parameters for CER4.1-4.1P3

Parameter	Description	Data Type	Valid Values
YYYY	CERDataDateYear	I(4)	>1996
MM	CERDataDateMonth	I(2)	01 .. 12
DD	CERDataDateDay	I(2)	01 .. 31
HH	CERHrOfDay	I(2)	00 .. 23
VRG	MODIS Radiance and Geolocation Version	I(1)	3 .. 4
VA	MODIS MOD04 Aerosol Version	I(1)	3 .. 4

4.2.2 Environment Script Requirements

One environment script, named 'CER4.1-4.env', is required and contains the following parameters:

CC1 - Configuration Code for IES, see CM Database
CC4_0P1 - Configuration Code for Snow and Ice Map, see CM Database
CC4_1P3 - Configuration Code for CER4.1-4.1P2, see CM Database
CC4_2 - Configuration Code for Clear Sky Map, see CM Database and Production Request
CC12 - Configuration Code for MOA, see CM Database
DATA4_1 - Data SCCR# for Clouds, see CM Database
IMAG - Imager Short Name (MODIS)
INST - CERES Instrument Short Name (FM3, FM4)
PRODUCTION - Set to "YES" when run on a production computer
PS1 - Production Strategy for IES, see Production Request
PS4_0 - Production Strategy for Snow and Ice Map, see Production Request
PS4_1 - Production Strategy for CER4.1-4.1P2, see Production Request
PS4_2 - Production Strategy for Clear Sky Map, see Production Request
PS12 - Production Strategy for MOA, see Production Request
SAT - Satellite Short Name (Aqua)
SS1 - Sampling Strategy for IES, see Production Request
SS4_0 - Sampling Strategy for Snow and Ice Map, see Production Request
SS4_1 - Sampling Strategy for CER4.1-4.1P2, see Production Request
SS4_2 - Sampling Strategy for Clear Sky Map, see Production Request
SS4_4 - Sampling Strategy for CER4.1-4.1P2, see Production Request
SS12 - Sampling Strategy for MOA, see Production Request
SW4_1 - Software SSCR # for Clouds, see CM Database

NOTE: In sequential processing, CC4_2, PS4_2, and SS4_2 would be the same as CC4_1P3, PS4_1, and SS4_1 respectively. On the first data day following a configuration code change, CC4_2 would have the configuration code used on the previous day. The other variables would not change.

During nonsequential processing, CC4_2, PS4_2, and SS4_2 will contain the values for the best Clear Sky Map available. This information may be supplied through the Production Request or obtained from the responsible person in Table 1-1. These would be different from CC4_1P3, PS4_1, and SS4_1.

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

Also see Appendix D of this document for a detailed description of the Subsystem specific environment.

4.2.3 Execution Frequency

Hourly (1/hr/sat) - This PGE is to be processed once per data-hour, for a maximum total of 744 hours per month per satellite.

4.2.4 Memory/Disk Space/Time Requirements

Table 4-4. Memory/Disk Space/Time Requirements for CER4.1-4.1P3

PGE Number	PGE Name	Platform	Total Run Time (HR:MN:SEC)	Memory (MB)	Disk Storage (MB)
CER4.1-4.1P3	Cloud Property Retrieval and Convolution	Aqua	3:00:00	465	425
		Subset Aqua	0:20:00	454	90

4.2.5 Restrictions Imposed in Processing Order

Please process each given day in sequential order. For individual hours within a given day order is unimportant. That is, process all hours from January 1, 1998 before processing January 2, 1998. This allows for updating the Clear Reflectance History (CRH) (CER4.1-4.2P3) for a given day which is input into the next day's PGEs.

4.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

4.3.1 Input Dataset Name (1): ECIA

4.3.1.1 MODIS Radiance Data

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

$CERESHOME/clouds/data/input/MODIS/YYYYDDD/
MYD02SS1.SYYYYDDD.HHMM.CC_M.yyyydddhhmmss.hdf

1. Mandatory/Optional: **One radiance and geolocation granule pair is mandatory. Other granules are optional.**
2. Time Related Dependency:

YYYY	**four digit data year**
DDD	**three digit data Julian day**
HH	**two digit data start hour**
MM	**two digit data start minute**
CC_M	**MODIS version number**
yyyy	**four digit processing year**
ddd	**three digit processing Julian day**
hh	**two digit processing hour**
mm	**two digit processing minute**
ss	**two digit processing second**

3. Waiting Period: **None. Process when all input data are available.**

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

INGEST Source: Goddard DAAC -or-
PGE Source: None

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **66 per 5 minute granule**

f. Special Requirements: Lots of disk space. Processing normally requires sixteen granules. The two five minute granule immediately proceeding the hour (50 and 55), twelve granules within the hour, and two five minute granules immediately following the hour (00 and 05). The granules before or after the data hour can cross into different data day, month, and year.

4.3.1.2 MODIS Geolocation Data

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

$CERESHOME/clouds/data/input/MODIS/YYYYDDD/
MYD03.AYYYYDDD.HHMM.CC_M.yyyydddhhmmss.hdf

1. Mandatory/Optional: **One radiance and geolocation granule pair (same time) is mandatory. Other granules are optional.**
2. Time Related Dependency:

YYYY	**four digit data year**
DDD	**three digit data Julian day**
HH	**two digit data start hour**
MM	**two digit data start minute**
CC_M	**MODIS version number**
yyyy	**four digit processing year**
ddd	**three digit processing Julian day**
hh	**two digit processing hour**
mm	**two digit processing minute**
ss	**two digit processing second**

3. Waiting Period: **None. Process when all input data are available.**

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

INGEST Source: Goddard DAAC -or-
PGE Source: None

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **61 per 5 minute granule**

f. Special Requirements: Lots of disk space. Processing normally requires sixteen granules. The two five minute granule immediately proceeding the hour (50 and 55), twelve granules within the hour, and two five minute granules immediately following the hour (00 and 05). The granules before or after the data hour can cross into different data day, month, and year.

4.3.1.3 MODIS Aerosol Data

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

$CERESHOME/clouds/data/input/MODIS/YYYYDDD
MYD04_L2.AYYYYDDD.HHMM.CC_M.yyyydddhhmmss.hdf

1. Mandatory/Optional: **This file is optional.**

2. Time Related Dependency:

YYYY	**four digit data year**
DDD	**three digit data Julian day**
HH	**two digit data start hour**
MM	**two digit data start minute**
CC_M	**MODIS version number**
yyyy	**four digit processing year**
ddd	**three digit processing Julian day**
hh	**two digit processing hour**
mm	**two digit processing minute**
ss	**two digit processing second**

3. Waiting Period: **None. Process when all input data are available.**

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

INGEST Source: Goddard DAAC -or-
PGE Source: None

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **12 per 5 minute granule**

f. Special Requirements: Lots of disk space. Aerosol data only exists for daylight hours. There is no fixed rules for how many granules should be present. However, any granule that matches the time of the sixteen granules of radiance and geolocation data should be used.

4.3.2 Input Dataset Name (#2): MOA

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

$CERESHOME/sarb/data/out_comp/data/regridmoa/
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDHH,
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDhh1,
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDhh2,
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDhh3, and
CER_MOA_$SS12_$PS12_$CC12.YYYYMMDDhh4

where hhn = where n represents other files within a 24 hour period (see item f)

1. Mandatory/Optional: **This file is mandatory.**

2. Time Related Dependency:

The DataDate must bracket the Runtime Parameters: YYYY,MM,DD,HH

3. Waiting Period: **None. Process when all input data are available.**

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

Source PGE: CER12.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **43.8**

f. Special Requirements: MOA data are produced as six hour files named according to their start hour. To process an hour the files for a 24 hour period are needed. If the hour is between 0 and 18, all four files for that data day are used with the two files bracketing the data hour (before and after) then the remainder in increasing time. If the hour is after 18, then hour 18 from that data day and hour 00 from the next data day followed by hours 06 and 12 from that data day in order.

4.3.3 Input Dataset Name (#3): ESNOW

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

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/ CER_ESNOW_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **None. Process when all input data are available.**

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

Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **2.333**

4.3.4 Input Dataset Name (#4): EICE

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

$CERESHOME/clouds/data/out_comp/data/CER_ESAI/ CER_EICE_$SS4_0_$PS4_0_$CC4_0P1.YYYYMMDD

1. Mandatory/Optional: **This file is mandatory.**

2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **None. Process when all input data are available.**

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

   Source PGE: CER4.1-4.0P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution:

   Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **2.333**

4.3.5 Input Dataset Name (#5): ECS-OA0063m

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

   $CERESHOME/clouds/data/out_comp/data/CER_ECS
   CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
   CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**

2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

   Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

   $CERESHOME/clouds/data/ancillary/static/CER_ECS/
   CER_ECS-SOA0063m_$SS4_2_StartUp_015000.XXXXMM
   CER_ECS-SOA0063m_$SS4_2_StartUp_015000.XXXXMM.met

   Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

   Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

f. Special Requirements: In sequential processing (when the previous day has been run using the same configuration code, production strategy and sampling strategy, CC4_2, PS4_2, and SS4_2 would be the same as CC4_1P3, PS4_1, and SS4_1 respectively. **On the first data day following a configuration code change during the same production**

and sampling strategy, CC4_2 would have the configuration code used on the previous data day. The other variables would not change. **During nonsequential processing and the first data day of sequential processing, CC4_2, PS4_2, and SS4_2 will contain the values for the best Clear Sky Map available. This information may be supplied through the Production Request or obtained from the responsible person in Table 1-1.** These would be different from CC4_1P3, PS4_1, and SS4_1.

4.3.6 Input Dataset Name (#6): ECS-OA0160m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0160m_015000.XXXXMM
CER_ECS-SOA0160m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

4.3.7 Input Dataset Name (#7): ECS-OA1663m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**

2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

   Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

   $CERESHOME/clouds/data/ancillary/static/CER_ECS/
   CER_ECS-SOA1663m_015000.XXXXMM
   CER_ECS-SOA1663m_015000.XXXXMM.met

   Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

   Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

4.3.8 Input Dataset Name (#8): ECS-OA0213m

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

   $CERESHOME/clouds/data/out_comp/data/CER_ECS
   CER_ECS-OA0213m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
   CER_ECS-OA0213m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**

2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

   Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

   $CERESHOME/clouds/data/ancillary/static/CER_ECS
   CER_ECS-SOA0213m_$SS4_2_015000.XXXXMM
   CER_ECS-SOA0213m_$SS4_2_015000.XXXXMM.met

   Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

   Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

4.3.9 Input Dataset Name (#9): ECS-OA0063s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0063s_015000.XXXXMM
CER_ECS-SOA0063s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

4.3.10 Input Dataset Name (#10): ECS-OA0160s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0160s_015000.XXXXMM
CER_ECS-SOA0160s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

4.3.11 Input Dataset Name (#11): ECS-OA1663s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA1663s_015000.XXXXMM
CER_ECS-SOA1663s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

4.3.12 Input Dataset Name (#12): ECS-OA0213s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0213s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0213s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0213s_015000.XXXXMM
CER_ECS-SOA0213s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

4.3.13 Input Dataset Name (#13): ECS-BT1080m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS/
CER_ECS-BT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-BT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SBT1080m_015000.XXXXMM
CER_ECS-SBT1080m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.3**

4.3.14 Input Dataset Name (#14): ECS-BT1080s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-BT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-BT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SBT1080s_015000.XXXXMM
CER_ECS-SBT1080s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.3**

4.3.15 Input Dataset Name (#15): IES

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

For Aqua:
$CERESHOME/instrument/data/int_prod/
CER_IES_$SAT-FM3_$PS1_$CC1.YYYYMMDDHH
CER_IES_$SAT-FM3_$PS1_$CC1.YYYYMMDDHH.met
CER_IES_$SAT-FM4_$PS1_$CC1.YYYYMMDDHH
CER_IES_$SAT-FM4_$PS1_$CC1.YYYYMMDDHH.met

1. Mandatory/Optional: **This (these) file(s) is (are) optional. See Section 3.4.3.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY, MM, DD, HH

3. Waiting Period: **Five days after DataDate.**

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

Source PGE: CER1.1P5 (Aqua)

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

d. File Disposition after successful execution: **Remove**.

e. Typical file size (mb): **34.700**

4.4 Operating Procedures

The PGE CER4.1-4.1P3 production script, **Run.CER4.1-4.1P3**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. This PCF can be created by first sourcing the cloud retrieval-specific environment script, **CER4.1-4.env** then executing the PCF generator **CER4.1-4.1P3.PCFGen**.

4.4.1 How to Generate the PCF File

The environment script requires two optional command-line arguments: 1-digit satellite (X) and character string prefix to production strategy (N). The default satellite is TRMM, 1-NOAA09, 2-TRMM, 3-Terra, and 6-Aqua. The prefix is usually Subset that generates special processing where only data in CERES validation regions is used. The PCF generator, **CER_4.1-4.1P3.PCFGen**, requires six command-line arguments: 4-digit year (YYYY), 2-digit month (MM), 2-digit day (DD), and 2-digit hour-of-day (HH), 1-digit MODIS radiance and geolocation version number (VRG), and 1-digit MODIS aerosol version number (VA).

At the command-line (>) type:

> source $CERESHOME/clouds/bin/CER4.1-4.env X N
> $CERESHOME/clouds/bin/CER4.1-4.1P3.PCFGen YYYY MM DD HH VRG VA

The following files will be generated in **$CERESHOME/clouds/rcf/**:

CER4.1-4.1P3_PCFin_$SS4_4_$PS4_1_$CC4_1P3.YYYYMMDDHH and
CER4.1-4.1P3_PCF_$SS4_4_$PS4_1_$CC4_1P3.YYYYMMDDHH

4.4.2 How to Execute the Main Processor

Execute the production script by typing the script name, **Run.CER4.1-4.1P3**, followed by the PCF file name including directory.

At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>$CERESHOME/clouds/bin/Run.CER4.1-4.1P3 $CERESHOME/clouds/rcf/
CER4.1-4.1P3_PCF_$SS4_4_$PS4_1_$CC4_1P3.YYYYMMDDHH

4.4.3 Special Case Considerations

There is a need to process imager data even when CERES data (IES) is not available. The production request will indicate that CERES instrument be set to NONE. The SSFI, FQC, and FQCI files will not be produced for these cases. The exit code will be 202, because convolution would not have processed successfully.

There are two CERES instruments on the Terra spacecraft, but only one imager. To efficiently process the data, two IES are input to convolution producing two SSFI files. This type of operation is indicated by a instrument environmental variable that includes both CERES instrument names separated by a "+". Each SSFI file name will only contain data from one instrument.

There is an option while creating the PCF to only include up to four 5-minute MODIS granules in the PCF. This was designed to assist in over ARM processing so that MODIS files that are not needed can remain in the directory. The new format of how to generate the PCF is:
At the command-line (>) type:

> source $CERESHOME/clouds/bin/CER4.1-4.env X N
> $CERESHOME/clouds/bin/CER4.1-4.1P3.PCFGen YYYY MM DD HH MM1 MM2 MM3 MM4

Where MM1, MM2, MM3, and MM4 are minute values of the MODIS granules. All are optional.

The following files will be generated in **$CERESHOME/clouds/rcf/**:

CER4.1-4.1P3_PCFin_$SS4_4_$PS4_1_$CC4_1P3.YYYYMMDDHH and
CER4.1-4.1P3_PCF_$SS4_4_$PS4_1_$CC4_1P3.YYYYMMDDHH

Other special case considerations will be handled on a case-by-case basis, where special instructions will accompany each special request.

4.4.4 Special Reprocessing Instructions

All output files are opened with Status = NEW in Subsystem 4.1 through 4.4 software. The output from previous runs must be removed before reprocessing. A cleanup script has been provided as a convenience. It is to be run prior to reprocessing.

At the command-line (>) type:

```
>cd $CERESHOME/clouds/bin
>$CERESHOME/clouds/bin/Run.CER4.1-4.Cleanup $CERESHOME/clouds/rcf/
        CER4.1-4.1P3_PCF_$SS4_4_$PS4_1_$CC4_1P3.YYYYMMDD
```

The cleanup script uses the PCFile from the PCFile Generator to identify files to be removed.

4.5 Execution Evaluation

4.5.1 Exit Codes

The processor CER4.1-4.1P3 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 4-5. 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 4-5. Exit Codes for CER4.1-4.1P3 (1 of 2)

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
99	Failure	Check Imager input files for compression or corruption.
137	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B).

Table 4-5. Exit Codes for CER4.1-4.1P3 (2 of 2)

Exit Code	Definition	Action
200	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B). Check to ensure IES was staged and imager file was produced. This includes the case when no matching imager data was available for CERES footprints.
201	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B). IES was not staged for convolution.
202	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B). Usually indicates a foreseeable input error.
203	Failure	Check the Log Files and operations email and take the appropriate action (see Appendix B).

4.5.2 Screen Messages

Screen Messages are not normally encountered when running the production script Run.CER4.1-4.1P3. All messages of significance are reported to the appropriate log file. The scripts utilized in the production environment will indicate general success or failure of a specific run, but that is all.

4.5.3 Log and Status Files Results

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

4.5.3.1 Report Log File: CER4.1-4.1P3_LogReport_$SS4_4_$PS4_1_$CC4_1P3.YYYYMMDDHH

The log report file contains informational messages for the PGE. They indicate progression through critical steps of the code or use of contingency code that will handle data problems. They point to algorithms that were executing when program problems occur. 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: CER4.1-4.1P3_LogStatus_$SS4_4_$PS4_1_$CC4_1P3.YYYYMMDDHH

The Status Log File contains all messages created by the Toolkit and fatal processing messages. 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.

4.5.3.3 User Log File: CER4.1-4.1P3_LogUser_$SS4_4_$PS4_1_$CC4_1P3.YYYYMMDDHH

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.

4.5.3.4 ShmMem File: CER4.1-4.1P3_ShmMem

The ShmMem File exists to satisfy the Toolkit requirements and is not actively used by CER4.1-4.1P3.

4.5.4 Solutions to Possible Problems

The most likely problems encountered are missing input or ancillary data files, or existing output files. These should be identified in the Status Log File. These errors could also be linked to missing .met files or other problems related to a temporary file needed to process metadata. As mentioned in Section 4.4.4, all output files are opened with Status = NEW in Subsystem 4.1 software. Prior to any reprocessing, please run the Cleanup script.

4.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is to be processed once per data-hour, for a maximum total of 744 hours per month per satellite. For satellites with multiple instruments, expect multiple outputs for the following datasets: CER_FQC, CER_FQCI, and CER_SSFI.

Table 4-6. Expected Output File Listing for CER4.1-4.1P3 (1 of 2)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_CRHU-WL0063_$SS4_1_$PS4_1_$CC4_1P3. YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/data/ CRH_Update)	o	.50	1/hr	CER4.1-4.2P2	Archive
CER_CRHU-WL0213_$SS4_1_$PS4_1_$CC4_1P3. YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/data/ CRH_Update)	o	.50	1/hr	CER4.1-4.2P2	Archive
CER_ECV_$SS4_1_$PS4_1_$CC4_1P3.YYYYMM DDHH (.met) @(CERESHOME/clouds/data/out_comp/data/CloudVis)	o	155.92	1/hr	N/A	Archive, rm
CER_ECVS_$SS4_1_$PS4_1_$CC4_1P3.YYYYMM DDHHR(1..56) (.met) @(CERESHOME/clouds/data/out_comp/data/Subset)	o	13.3	0-56/hr	N/A	Archive, rm

Table 4-6. Expected Output File Listing for CER4.1-4.1P3 (2 of 2)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_EQCHG_$SS4_1_$PS4_1_$CC4_1P3.YYYY MMDDHH (.met) (was CER_EQCB) @(CERESHOME/clouds/data/out_comp/QA_Reports)	m	~17	1/hr	CER4.1-4.2P1	Archive
CER_EQCHB_$SS4_1_$PS4_1_$CC4_1P3.YYYY MMDDHH (.met) (was CER_EQCV) @(CERESHOME/clouds/data/out_comp/QA_Reports)	m	20.03	1/hr	CER4.1-4.2P1	Archive
CER_FQC_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P3.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/QA_Reports)	o	.03	1/hr/inst	N/A	/QA, Archive, rm
CER_FQCI_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P3.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/QA_Reports)	o	.10	1/hr/inst	CER4.5-6.1P1	No Archive
CER_SSFI_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P3.YYYYMMDDHH (.met) @(CERESHOME/clouds/data/out_comp/data/SSF_Int)	o	202.65	1/hr/inst	CER4.5-6.1P3	No Archive
CER_SSFAI_$SAT-$INST-$IMAG_$PS4_1_$CC4_ 1P3.YYYYMMDDHH(.met) @(CERESHOME/clouds/data/out_comp/data/SSF_Int)	0	24.7	1/hr/inst	CER4.5-6.1P3	No Archive
CER4.1-4.1P3_PCFin_$SS4_4_$PS4_1_$CC4_ 1P3.YYYYMMDDHH@($CERESHOME/clouds/rcf)	m	0.05	1/hr	N/A	Archive
CER4.1-4.1P3_PCF_$SS4_4_$PS4_1_$CC4_ 1P3.YYYYMMDDHH@($CERESHOME/clouds/rcf)	m	0.02	1/hr	N/A	Archive, rm
CER4.1-4.1P3_LogReport_$SS4_4_$PS4_1_$CC4_ 1P3.YYYYMMDDHH@($CERESHOME/clouds/data/ runlogs)	m	0.7	1/hr	N/A	Archive, rm
CER4.1-4.1P3_LogStatus_$SS4_4_$PS4_1_$CC4_ 1P3.YYYYMMDDHH@($CERESHOME/clouds/data/ runlogs)	m	0.005	1/hr	N/A	Archive, rm
CER4.1-4.1P3_LogUser_$SS4_4_$PS4_1_$CC4_ 1P3.YYYYMMDDHH@($CERESHOME/clouds/data/ runlogs)	m	0.002	1/hr	N/A	Archive, rm

a. See Section 4.2.2 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.
VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4 digit year
MM - 2 digit month {valid values: 01 .. 12}
DD - 2 digit day {valid values: 01 .. 31
HH - 2 digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
inst - Instrument (PFM, FM1, FM2, ...)

4.7 Expected Temporary Files/Directories.

There is one named temporary file created with this PGE. The toolkit also creates several temporary files for CloudVis (pc[n...n]).

Table 4-7. Temporary Files Listing for CER4.1-4.1P3

Directory	File Name
/CERES/clouds/data/int_prod/Cookie	CER_EIPD_$SS4_1_$PS4_1_$CC4_1.YYYYMMDDHH (.met)
/CERES/clouds/data/scr	pcnnnnnnnnnnnnnnnnnnnnnnnnnnnn
/CERES/clouds/data/runlogs	CER4.1-4.1P3_ShmMem

5.0 PGEName: CER4.1-4.2P1

CER4.1-4.2P1 - Imager Clear Sky Map Update and Daily QC Processor

5.1 PGE Details

5.1.1 Responsible Persons

Responsible persons can be obtained from the primary contact listed in Table 1-1.

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)

Table 5-1. Parent PGEs for CER4.1-4.2P1

PGEName	Description
CER4.1-4.1P1	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for TRMM
CER4.1-4.1P2	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for Terra
CER4.1-4.1P3	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for Aqua

5.1.4 Target PGE(s)

Table 5-2. Target PGEs after CER4.1-4.2P1

PGEName	Description
CER4.1-4.1P1	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for TRMM
CER4.1-4.1P2	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for Terra
CER4.1-4.1P3	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for Aqua

5.2 Operating Environment

5.2.1 Runtime Parameters

Table 5-3. Runtime Parameters for CER4.1-4.2P1

Parameter	Description	Data Type	Valid Values
YYYY	CERDataDateYear	I(4)	>1996
MM	CERDataDateMonth	I(2)	01 .. 12
DD	CERDataDateDay	I(2)	01 .. 31

5.2.2 Environment Script Requirements

One environment script, named 'CER4.1-4.env', is required and contains the following parameters:

CC4_2P1 - Configuration Code for CER4.1-4.2P1, see CM Database
CC4_2 - Configuration Code for Clear Sky Map, see CM Database and Production Request
DATA4_1 - Data SCCR# for Clouds, see CM Database
IMAG - Imager Short Name (VIRS, MODIS)
INST - CERES Instrument Short Name as defined for the hourly PGE (PFM, SIM, FM1, FM2, FM1+FM2, FM3, FM4, FM3+FM4)

PS4_1 - Production Strategy for CER4.1-4.2P1, see Production Request
PS4_2 - Production Strategy for Clear Sky Map, see Production Request
SAT - Satellite Short Name (TRMM, Terra)
SS4_1 - Sampling Strategy for CER4.1-4.2P1, see Production Request
SS4_2 - Sampling Strategy for Clear Sky Map, see Production Request
SW4_1 - Software SSCR # for Clouds, see CM Database

NOTE: In sequential processing, CC4_2, PS4_2, and SS4_2 would be the same as CC4_2P1, PS4_1, and SS4_1 respectively. On the first data day following a configuration code change, CC4_2 would have the configuration code used on the previous day. The other variables would not change.

During nonsequential processing, CC4_2, PS4_2, and SS4_2 will contain the values for the best Clear Sky Map available to use as an input. This information may be supplied through the Production Request or obtained from the responsible person in Table 1-1. These would be different from CC4_2P1, PS4_1, and SS4_1.

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

Also see Appendix D of this document for a detailed description of the Subsystem specific environment.

5.2.3 Execution Frequency

Daily (1/day/sat) - This PGE is to be processed once per data-day per satellite, a maximum total of 31 days per satellite month, when input is available.

5.2.4 Memory/Disk Space/Time Requirements

Table 5-4. Memory/Disk Space/Time Requirements for CER4.1-4.2P1

PGE Number	PGE Name	Total Run Time (HR:MN:SEC)	Memory (MB)	Disk Storage (MB)
CER4.1-4.2P1	Imager Clear Sky Update and Daily QC Processor	0:02:50	186	248

5.2.5 Restrictions Imposed in Processing Order

None. Process when Input Data are available (see Section 5.3).

5.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

5.3.1 Input Dataset Name (#1): ECS-OA0063m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0063m_$SS4_2_Startup_015000.XXXXMM
CER_ECS-SOA0063m_$SS4_2_Startup_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

5.3.2 Input Dataset Name (#2): ECS-OA0160m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0160m_015000.XXXXMM
CER_ECS-SOA0160m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

5.3.3 Input Dataset Name (#3): ECS-OA1663m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA1663m_015000.XXXXMM
CER_ECS-SOA1663m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

5.3.4 Input Dataset Name (#4): ECS-OA0063s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0063s_015000.XXXXMM
CER_ECS-SOA0063s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

5.3.5 Input Dataset Name (#5): ECS-OA0160s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0160s_015000.XXXXMM
CER_ECS-SOA0160s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

5.3.6 Input Dataset Name (#6): ECS-OA1663s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA1663s_015000.XXXXMM
CER_ECS-SOA1663s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

5.3.7 Input Dataset Name (#7): ECS-BT1080m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-BT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-BT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SBT1080m_015000.XXXXMM
CER_ECS-SBT1080m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.32**

5.3.8 Input Dataset Name (#8): ECS-BT1080s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-BT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-BT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SBT1080s_015000.XXXXMM
CER_ECS-SBT1080s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.32**

5.3.9 Input Dataset Name (#9): CRHU

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

$CERESHOME/clouds/data/out_comp/data/CRH_Update/
CER_CRHU_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD(00-23)
CER_CRHU_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD(00-23).met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the day must be processed through CER4.1-4.1P1 if the imager data are available.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P1, or decision made not to process missing hours.**

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

PGE4.1-4.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **/QA**

e. Typical file size (mb): **0.05**

f. Special Requirements: The CER_CRHU file is needed for TRMM processing. For Terra and Aqua processing the Clear Sky History portion is done in CER4.1-4.2P2, and these files or CER_CRHU-WL0063 are not used. The script was not modified to remove these files from the PCF to maintain TRMM production.

5.3.10 Input Dataset Name (#10): EQCHG (was CER_EQCB)

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

$CERESHOME/clouds/data/out_comp/QA_Reports/
CER_EQCHG_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD(00-23)

1. Mandatory/Optional: **This file is optional.**

2. Time Related Dependency: **Twenty-four hours of the day must be processed through CER4.1-4.1P1 or PGE4.1-4.1P2 if the imager data are available.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P1 or PGE4.1-4.1P2, or decision made not to process missing hours.**

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

PGE4.1-4.1P1 or PGE4.1-4.1P2

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (mb): **~5**

5.3.11 Input Dataset Name (#11): EQCHB (was CER_EQCV)

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

$CERESHOME/clouds/data/out_comp/QA_Reports/
CER_EQCHB_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD(00-23)

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the day must be processed through CER4.1-4.1P1 or PGE4.1-4.1P2 if the imager data are available.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P1 or PGE4.1-4.1P2, or decision made not to process missing hours.**

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

PGE4.1-4.1P1 or PGE4.1-4.1P2

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (mb): 18.76

5.3.12 Input Dataset Name (#12): PCFin

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

$CERESHOME/clouds/rcf/
CER4.1-4.1P1_PCFin_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD(00-23)
or
CER4.1-4.1P2_PCFin_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD(00-23)
or
CER4.1-4.1P3_PCFin_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD(00-23)

This is determined by the hourly processing leading to running this PGE.

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the day must be processed through CER4.1-4.1P1, CER4.1-4.1P2, or CER4.1-4.1P3 if the imager data are available.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P1, CER4.1-4.1P2, CER4.1-4.1P3, or decision made not to process missing hours.**

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

PGE4.1-4.1P1, PGE4.1-4.1P2, or PGE4.1-4.1P3

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (mb): **0.019**

5.4 Operating Procedures

The PGE CER4.1-4.2P1 production script, **Run.CER4.1-4.2P1**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. This PCF can be created by first sourcing the cloud retrieval-specific environment script, **CER4.1-4.env** then executing the PCF generator **CER4.1-4.2P1.PCFGen**.

5.4.1 How to Generate the PCF File

The environment script requires two optional command-line arguments: 1-digit satellite (X) and character string prefix to production strategy (N). The default satellite is TRMM, 1-NOAA09, 2-TRMM, 3-Terra, and 6-Aqua. The prefix is usually Subset that generates special processing where only data in CERES validation regions is used. The PCF generator, **CER_4.1-4.2P1.PCFGen**, requires three command-line arguments: 4-digit year (YYYY), 2-digit month (MM), and 2-digit day (DD)

At the command-line (>) type:

> source $CERESHOME/clouds/bin/CER4.1-4.env X N
> $CERESHOME/clouds/bin/CER4.1-4.2P1.PCFGen YYYY MM DD

The following files will be generated in **$CERESHOME/clouds/rcf/**:

CER4.1-4.2P1_PCFin_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD
CER4.1-4.2P1_PCF_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD

5.4.2 How to Execute the Main Processor

Execute the production script by typing the script name, **Run.CER4.1-4.2P1**, followed by the PCF file name including directory.

At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>$CERESHOME/clouds/bin/Run.CER4.1-4.2P1 $CERESHOME/clouds/rcf/
CER4.1-4.2P1_PCF_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD

5.4.3 Special Case Considerations

Special case considerations will be handled on a case-by-case basis, where special instructions will accompany each special request. When processing two days before Clear Sky Update, only the Daily QC files will be produced.

5.4.4 Special Reprocessing Instructions

All output files are opened with Status = NEW in Subsystem 4.1 through 4.4 software. The output from previous runs must be removed before reprocessing. A cleanup script has been provided as a convenience. It is to be run prior to reprocessing.

At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>$CERESHOME/clouds/bin/Run.CER4.1-4.Cleanup $CERESHOME/clouds/rcf/
CER4.1-4.2P1_PCF_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD

The cleanup script uses the PCFile from the PCFile Generator to identify files to be removed.

5.5 Execution Evaluation

5.5.1 Exit Codes

The processor CER4.1-4.2P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 5-5. 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 5-5. Exit Codes for CER4.1-4.2P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
Other	Failure	Call responsible persons

5.5.2 Screen Messages

When running the production script, Run.CER4.1-4.2P1, 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.

5.5.3 Log and Status Files Results

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

5.5.3.1 Report Log File: CER4.1-4.2P1_LogReport_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD

The log report file contains informational messages for the PGE. They indicate progression through critical steps of the code or use of contingency code that will handle data problems. They point to algorithms that were executing when program problems occur. 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: CER4.1-4.2P1_LogStatus_$SS4_1_$PS4_1_$CC4_2P1.YYYYMMDD

The Status Log File contains all messages created by the Toolkit and fatal processing messages. 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.

5.5.3.3 User Log File: CER4.1-4.2P1_LogUser_$SS4_1_$PS4_1_$CC4_2P1.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 User Log File and Status Log File.

5.5.3.4 ShmMem File: CER4.1-4.2P1_ShmMem

The ShmMem File exists to satisfy the Toolkit requirements and is not actively used by CER4.1-4.2P1.

5.5.4 Solutions to Possible Problems

The most likely problems encountered are missing input or ancillary data files, or existing output files. These should be identified in the Status Log File. These errors could also be linked to missing .met files or other problems related to a temporary file needed to process metadata. As mentioned in Section 5.4.4, all output files are opened with Status = NEW in Subsystem 4.1 software. Prior to any reprocessing, please run the Cleanup script.

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

a. Subsystem Termination

   There are no foreseeable Subsystem terminating conditions at this time. If one day fails, continue processing the next day.

b. Target PGE Termination

   There are no foreseeable Subsystem terminating conditions at this time. If the day fails, continue processing.

5.6 Expected Output Datasets

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process 31 times, maximum, in a 31 day month per satellite.

Table 5-6. Expected Output File Listing for CER4.1-4.2P1 (1 of 2)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_ECS-OA0063m_$SS4_1_$PS4_1_$CC4_ 2P1.yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	1/day	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0160m_$SS4_1_$PS4_1_$CC4_ 2P1.yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	1/day	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA1663m_$SS4_1_$PS4_1_$CC4_ 2P1.yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	1/day	CER4.1-4.1P1	/QA, Archive
CER_ECS-BT1080m_$SS4_1_$PS4_1_$CC4_ 2P1.yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	23.32	1/day	CER4.1-4.1P1	/QA, Archive

Table 5-6. Expected Output File Listing for CER4.1-4.2P1 (2 of 2)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_ECS-OA0063s_$SS4_1_$PS4_1_$CC4_ 2P1.yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	1/day	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0160s_$SS4_1_$PS4_1_$CC4_ 2P1.yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	1/day	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA1663s_$SS4_1_$PS4_1_$CC4_ 2P1.yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	1/day	CER4.1-4.1P1	/QA, Archive
CER_ECS-BT1080s_$SS4_1_$PS4_1_$CC4_ 2P1.yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	23.32	1/day	CER4.1-4.1P1	/QA, Archive
CER_EQCDG_$SS4_1_$PS4_1_$CC4_2P1. YYYYMMD(.met) (was CER_EQCD) @($CERESHOME/clouds/data/out_comp/QA_Reports)	m	63.9	1/day	CER4.1-4.3P1	/QA, Archive
CER_EQCDB_$SS4_1_$PS4_1_$CC4_2P1. YYYYMMDD (.met) (was CER_EQCDV) @($CERESHOME/clouds/data/out_comp/QA_Reports)	m	18.76	1/day	CER4.1-4.3P1	/QA, Archive
CER_EQCDS_$SS4_1_$PS4_1_$CC4_2P1.YYYYMM DD (.met) (was CER_EQCS) @($CERESHOME/clouds/data/out_comp/QA_Reports)	o	0.10	1/day	N/A	/QA, Archive, rm
CER4.1-4.2P1_PCF_$SS4_1_$PS4_1_$CC4_2P1. YYYYMMDD@($CERESHOME/clouds/rcf)	m	0.04	1/day	N/A	Archive, rm
CER4.1-4.2P1_PCFin_$SS4_1_$PS4_1_$CC4_2P1. YYYYMMDD@($CERESHOME/clouds/rcf)	m	0.006	1/day	N/A	Archive, rm
CER4.1-4.2P1_LogReport_$SS4_1_$PS4_1_$CC4_ 2P1.YYYYMMDD@($CERESHOME/clouds/data/ runlogs)	m	0.01	1/day	N/A	Archive, rm
CER4.1-4.2P1_LogStatus_$SS4_1_$PS4_1_$CC4_ 2P1.YYYYMMDD@($CERESHOME/clouds/data/ runlogs)	m	0.002	1/day	N/A	Archive, rm
CER4.1-4.2P1_LogUser_$SS4_1_$PS4_1_$CC4_ 2P1.YYYYMMDD@($CERESHOME/clouds/data/ runlogs)	m	0.001	1/day	N/A	Archive, rm

a. See Section 5.2.2 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. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4 digit year
MM - 2 digit month {valid values: 01 .. 12}
DD - 2 digit day {valid values: 01 .. 31
HH - 2 digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
NXD - The next Data Day

The CER_ECS series of files will not be produced during Terra processing.

5.7 Expected Temporary Files/Directories.

The toolkit creates a temporary file.

Table 5-7. Temporary Files Listing for CER4.1-4.2P1

Directory	File Name
/CERES/clouds/data/runlogs	CER4.1-4.2P1_ShmMem

6.0 PGEName: CER4.1-4.2P2

CER4.1-4.2P2 - Imager Clear Sky Map Update Processor

6.1 PGE Details

6.1.1 Responsible Persons

Responsible persons can be obtained from the primary contact listed in Table 1-1.

6.1.2 E-mail Distribution List

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

6.1.3 Parent PGE(s)

Table 6-1. Parent PGEs for CER4.1-4.2P2

PGEName	Description
CER4.1-4.1P1	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for TRMM
CER4.1-4.1P2	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for Terra
CER4.1-4.1P3	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for Aqua

6.1.4 Target PGE(s)

Table 6-2. Target PGEs after CER4.1-4.2P2

PGEName	Description
CER4.1-4.1P1	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for TRMM
CER4.1-4.1P2	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for Terra
CER4.1-4.1P3	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor for Aqua

6.2 Operating Environment

6.2.1 Runtime Parameters

Table 6-3. Runtime Parameters for CER4.1-4.2P2

Parameter	Description	Data Type	Valid Values
YYYY	CERDataDateYear	I(4)	>1996
MM	CERDataDateMonth	I(2)	01 .. 12
DD	CERDataDateDay	I(2)	01 .. 31
PYYY	Prior CERDataDateYear (Optional	I(4)	>1996
PM	Prior CERDataDateMonth (Optional)	I(2)	01 .. 12
PD	Prior CERDataDateDay (Optional)	I(2)	01 .. 31

6.2.2 Environment Script Requirements

One environment script, named 'CER4.1-4.env', is required and contains the following parameters:

CC4_2P2 - Configuration Code for CER4.1-4.2P2, see CM Database
CC4_2 - Configuration Code for Clear Sky Map, see CM Database and Production Request
DATA4_1 - Data SCCR# for Clouds, see CM Database
IMAG - Imager Short Name (MODIS)
PS4_1 - Production Strategy for CER4.1-4.2P2, see Production Request
PS4_2 - Production Strategy for Clear Sky Map, see Production Request
SAT - Satellite Short Name (Terra)
SS4_1 - Sampling Strategy for CER4.1-4.2P2, see Production Request
SS4_2 - Sampling Strategy for Clear Sky Map, see Production Request
SW4_1 - Software SSCR # for Clouds, see CM Database

NOTE: In sequential processing, CC4_2, PS4_2, and SS4_2 would be the same as CC4_2P2, PS4_1, and SS4_1 respectively. On the first data day following a configuration code change, CC4_2 would have the configuration code used on the previous day. The other variables would not change.

During nonsequential processing, CC4_2, PS4_2, and SS4_2 will contain the values for the best Clear Sky Map available to use as an input. This information may be supplied through the Production Request or obtained from the responsible person in Table 1-1. These would be different from CC4_2P2, PS4_1, and SS4_1.

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

Also see Appendix D of this document for a detailed description of the Subsystem specific environment.

6.2.3 Execution Frequency

Daily (1/2days/sat) - This PGE is to be processed on even days plus the 31st of the month per satellite, a maximum total of 16 times per satellite month, when input is available.

6.2.4 Memory/Disk Space/Time Requirements

Table 6-4. Memory/Disk Space/Time Requirements for CER4.1-4.2P2

PGE Number	PGE Name	Total Run Time (HR:MN:SEC)	Memory (MB)	Disk Storage (MB)
CER4.1-4.2P2	Imager Clear Sky Update Processor	0:02:50	186	248

6.2.5 Restrictions Imposed in Processing Order

None. Process when Input Data are available (see Section 6.3).

6.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

6.3.1 Input Dataset Name (#1): ECS-OA0063m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0063m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

For Terra processing
$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0063m_015000.XXXXMM
CER_ECS-SOA0063m_015000.XXXXMM.met

When processing Aqua the alternate file is
$CERESHOME/clouds/data/ancillary/static/CER_ECS/
CER_ECS-SOA0063m_$SS4_2_015000.XXXXMM
CER_ECS-SOA0063m_$SS4_2_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

6.3.2 Input Dataset Name (#2): ECS-OA0160m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**

2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

   Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

   $CERESHOME/clouds/data/ancillary/static/CER_ECS
   CER_ECS-SOA0160m_015000.XXXXMM
   CER_ECS-SOA0160m_015000.XXXXMM.met

   Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

   Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

6.3.3 Input Dataset Name (#3): ECS-OA1663m

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

   $CERESHOME/clouds/data/out_comp/data/CER_ECS
   CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
   CER_ECS-OA1663m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**

2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

   Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

   $CERESHOME/clouds/data/ancillary/static/CER_ECS
   CER_ECS-SOA1663m_015000.XXXXMM
   CER_ECS-SOA1663m_015000.XXXXMM.met

   Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

   Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

6.3.4 Input Dataset Name (#4): ECS-OA0213m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0213m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0213m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0213m_$SS4_2_015000.XXXXMM
CER_ECS-SOA0213m_$SS4_2_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **18.6**

6.3.5 Input Dataset Name (#5): ECS-OA0063s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0063s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0063s_015000.XXXXMM
CER_ECS-SOA0063s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

6.3.6 Input Dataset Name (#6): ECS-OA0160s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0160s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0160s_015000.XXXXMM
CER_ECS-SOA0160s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

6.3.7 Input Dataset Name (#7): ECS-OA1663s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA1663s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA1663s_015000.XXXXMM
CER_ECS-SOA1663s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

6.3.8 Input Dataset Name (#8): ECS-OA0213s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-OA0213s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-OA0213s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SOA0213s_015000.XXXXMM
CER_ECS-SOA0213s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **4.66**

6.3.9 Input Dataset Name (#9): ECS-BT1080m

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-BT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-BT1080m_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SBT1080m_015000.XXXXMM
CER_ECS-SBT1080m_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.32**

6.3.10 Input Dataset Name (#10): ECS-BT1080s

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

$CERESHOME/clouds/data/out_comp/data/CER_ECS
CER_ECS-BT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD
CER_ECS-BT1080s_$SS4_2_$PS4_2_$CC4_2.YYYYMMDD.met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD

3. Waiting Period: **TBD**

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

Source PGE: CER4.1-4.2P2

c. Alternate Data Set, if one exists (maximum waiting period):

$CERESHOME/clouds/data/ancillary/static/CER_ECS
CER_ECS-SBT1080s_015000.XXXXMM
CER_ECS-SBT1080s_015000.XXXXMM.met

Immediate if no near-term plans to process the previous day.

d. File Disposition after successful execution:

Do not remove, will be needed for other PGE(s).

e. Typical file size (mb): **23.32**

6.3.11 Input Dataset Name (#11): CRHU

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

$CERESHOME/clouds/data/out_comp/data/CRH_Update/
CER_CRHU_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD(00-23)
CER_CRHU_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD(00-23).met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the day must be processed through CER4.1-4.1P1 if the imager data are available.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P1 or decision made not to process missing hours.**

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

PGE4.1-4.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **/QA**

e. Typical file size (mb): **0.05**

6.3.12 Input Dataset Name (#12): CRHU

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

$CERESHOME/clouds/data/out_comp/data/CRH_Update/
CER_CRHU_$SS4_1_$PS4_1_$CC4_2P2.PYYYPMPD(00-23)
CER_CRHU_$SS4_1_$PS4_1_$CC4_2P2.PYYYPMPD(00-23).met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the previous day must be processed through CER4.1-4.1P1 if the imager data are available and two days of processing are being done simultaneously.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P1 or decision made not to process missing hours.**

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

PGE4.1-4.1P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **/QA**

e. Typical file size (mb): **0.05**

6.3.13 Input Dataset Name (#13): CRHU-WL0063

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

$CERESHOME/clouds/data/out_comp/data/CRH_Update/
CER_CRHU-WL0063_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD(00-23)
CER_CRHU-WL0063_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD(00-23).met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the day must be processed through CER4.1-4.1P2 or CER4.1-4.1P3 if the imager data are available.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P2 or CER4.1-4.1P3 or decision made not to process missing hours.**

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

CER4.1-4.1P2 or PGE4.1-4.1P3

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **/QA**

e. Typical file size (mb): **0.05**

6.3.14 Input Dataset Name (#14): CRHU-WL0063

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

$CERESHOME/clouds/data/out_comp/data/CRH_Update/
CER_CRHU-WL0063_$SS4_1_$PS4_1_$CC4_2P2.PYYYPMPD(00-23)
CER_CRHU-WL0063_$SS4_1_$PS4_1_$CC4_2P2.PYYYPMPD(00-23).met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the previous day must be processed through CER4.1-4.1P2 or CER4.1-4.1P3 if the imager data are available and two days of processing are being done simultaneously.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P2 or CER4.1-4.1P3 or decision made not to process missing hours.**

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

CER4.1-4.1P2 or PGE4.1-4.1P3

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **/QA**

e. Typical file size (mb): **0.05**

6.3.15 Input Dataset Name (#15): CRHU-WL0160

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

$CERESHOME/clouds/data/out_comp/data/CRH_Update/
CER_CRHU-WL0160_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD(00-23)
CER_CRHU-WL0160_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD(00-23).met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the day must be processed through CER4.1-4.1P2 if the imager data are available.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P2 or decision made not to process missing hours.**

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

CER4.1-4.1P2

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **/QA**

e. Typical file size (mb): **0.05**

6.3.16 Input Dataset Name (#16): CRHU-WL0160

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

$CERESHOME/clouds/data/out_comp/data/CRH_Update/
CER_CRHU-WL0160_$SS4_1_$PS4_1_$CC4_2P2.PYYYPMPD(00-23)
CER_CRHU-WL0160_$SS4_1_$PS4_1_$CC4_2P2.PYYYPMPD(00-23).met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the previous day must be processed through CER4.1-4.1P2 if the imager data are available and two days of processing are being done simultaneously.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P2 or decision made not to process missing hours.**

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

CER4.1-4.1P2

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **/QA**

e. Typical file size (mb): **0.05**

6.3.17 Input Dataset Name (#17): CRHU-WL0213

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

$CERESHOME/clouds/data/out_comp/data/CRH_Update/
CER_CRHU-WL0213_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD(00-23)
CER_CRHU-WL0213_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD(00-23).met

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **Twenty-four hours of the day must be processed through CER4.1-4.1P3 if the imager data are available.**
3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P3 or decision made not to process missing hours.**

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

PGE4.1-4.1P3

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **/QA**

e. Typical file size (mb): **0.05**

6.3.18 Input Dataset Name (#18): CRHU-WL0213

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

   $CERESHOME/clouds/data/out_comp/data/CRH_Update/
   CER_CRHU-WL0213_$SS4_1_$PS4_1_$CC4_2P2.PYYYPMPD(00-23)
   CER_CRHU-WL0213_$SS4_1_$PS4_1_$CC4_2P2.PYYYPMPD(00-23).met

   1. Mandatory/Optional: **This file is optional.**
   2. Time Related Dependency: **Twenty-four hours of the previous day must be processed through CER4.1-4.1P3 if the imager data are available and two days of processing are being done simultaneously.**
   3. Waiting Period: **Should hold until entire day has been processed through CER4.1-4.1P3 or decision made not to process missing hours.**

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

   PGE4.1-4.1P3

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **/QA**

e. Typical file size (mb): **0.05**

6.4 Operating Procedures

The PGE CER4.1-4.2P2 production script, **Run.CER4.1-4.2P2**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. This PCF can be created by first sourcing the cloud retrieval-specific environment script, **CER4.1-4.env** then executing the PCF generator **CER4.1-4.2P2.PCFGen**.

6.4.1 How to Generate the PCF File

The environment script requires two optional command-line arguments: 1-digit satellite (X) and character string prefix to production strategy (N). The default satellite is TRMM, 1-NOAA09, 2-TRMM, 3-Terra, and 6-Aqua. The prefix is usually Subset that generates special processing where only data in CERES validation regions is used. The PCF generator, **CER_4.1-4.2P2.PCFGen**, requires three command-line arguments: 4-digit year (YYYY), 2-digit month (MM), and 2-digit day (DD)

At the command-line (>) type:

> source $CERESHOME/clouds/bin/CER4.1-4.env X N
> $CERESHOME/clouds/bin/CER4.1-4.2P2.PCFGen YYYY MM DD

The following files will be generated in **$CERESHOME/clouds/rcf/**:

CER4.1-4.2P2_PCFin_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD
CER4.1-4.2P2_PCF_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD

6.4.2 How to Execute the Main Processor

Execute the production script by typing the script name, **Run.CER4.1-4.2P2**, followed by the PCF file name including directory.

At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>$CERESHOME/clouds/bin/Run.CER4.1-4.2P2 $CERESHOME/clouds/rcf/
CER4.1-4.2P2_PCF_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD

6.4.3 Special Case Considerations

When processing requires running two days simultaneously, the optional runtime parameter for the prior day can be used. This will use both days of clear sky update files(CRHU) to build the new maps. It should not be run across data month boundaries in this manner. Format for the PCF file generator is:

>$CERESHOME/clouds/bin/CER4.1-4.2P2.PCFGen YYYY MM DD PYYY PM PD

6.4.4 Special Reprocessing Instructions

All output files are opened with Status = NEW in Subsystem 4.1 through 4.4 software. The output from previous runs must be removed before reprocessing. A cleanup script has been provided as a convenience. It is to be run prior to reprocessing.

At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>$CERESHOME/clouds/bin/Run.CER4.1-4.Cleanup $CERESHOME/clouds/rcf/
CER4.1-4.2P2_PCF_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD

The cleanup script uses the PCFile from the PCFile Generator to identify files to be removed.

6.5 Execution Evaluation

6.5.1 Exit Codes

The processor CER4.1-4.2P2 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 6-5. 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 6-5. Exit Codes for CER4.1-4.2P2

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
Other	Failure	Call responsible persons

6.5.2 Screen Messages

When running the production script, Run.CER4.1-4.2P2, 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.

6.5.3 Log and Status Files Results

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

6.5.3.1 Report Log File: CER4.1-4.2P2_LogReport_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD

The log report file contains informational messages for the PGE. They indicate progression through critical steps of the code or use of contingency code that will handle data problems. They point to algorithms that were executing when program problems occur. A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

6.5.3.2 Status Log File: CER4.1-4.2P2_LogStatus_$SS4_1_$PS4_1_$CC4_2P2.YYYYMMDD

The Status Log File contains all messages created by the Toolkit and fatal processing messages. 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.

6.5.3.3 User Log File: CER4.1-4.2P2_LogUser_$SS4_1_$PS4_1_$CC4_2P2.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 User Log File and Status Log File.

6.5.3.4 ShmMem File: CER4.1-4.2P2_ShmMem

The ShmMem File exists to satisfy the Toolkit requirements and is not actively used by CER4.1-4.2P2.

6.5.4 Solutions to Possible Problems

The most likely problems encountered are missing input or ancillary data files, or existing output files. These should be identified in the Status Log File. These errors could also be linked to missing .met files or other problems related to a temporary file needed to process metadata. As mentioned in Section 6.4.4, all output files are opened with Status = NEW in Subsystem 4.1 software. Prior to any reprocessing, please run the Cleanup script.

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

a. Subsystem Termination

   There are no foreseeable Subsystem terminating conditions at this time. If one day fails, continue processing the next day.

b. Target PGE Termination

   There are no foreseeable Subsystem terminating conditions at this time. If the day fails, continue processing.

6.6 Expected Output Datasets

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process 31 times, maximum, in a 31 day month per satellite.

Table 6-6. Expected Output File Listing for CER4.1-4.2P2 (1 of 4)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_ECS-OA0063m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	m	18.66	Once every 2 days	CER4.1-4.1P1, CER7.2.1P1	/QA, Archive

Table 6-6. Expected Output File Listing for CER4.1-4.2P2 (2 of 4)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_ECS-OA0160m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0213m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	Once every 2 days	CER4.1-4.1P3	/QA, Archive
CER_ECS-OA1663m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-BT1080m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	23.32	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0063s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0160s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0213s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	Once every 2 days	CER4.1-4.1P3	/QA, Archive
CER_ECS-OA1663s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-BT1080s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	23.32	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0063m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0160m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive

Table 6-6. Expected Output File Listing for CER4.1-4.2P2 (3 of 4)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER_ECS-OA0213m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	Once every 2 days	CER4.1-4.1P3	/QA, Archive
CER_ECS-OA1663m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	18.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-BT1080m_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	23.32	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0063s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0160s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-OA0213s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	Once every 2 days	CER4.1-4.1P3	/QA, Archive
CER_ECS-OA1663s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	4.66	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER_ECS-BT1080s_$SS4_1_$PS4_1_$CC4_2P2. yyyymmNNXD (.met) @($CERESHOME/clouds/data/out_comp/data/ CER_ECS)	o	23.32	Once every 2 days	CER4.1-4.1P1	/QA, Archive
CER4.1-4.2P2_PCF_$SS4_1_$PS4_1_$CC4_2P2. YYYYMMDD@($CERESHOME/clouds/rcf)	m	0.04	Once every 2 days	N/A	Archive, rm
CER4.1-4.2P2_PCFin_$SS4_1_$PS4_1_$CC4_2P2. YYYYMMDD@($CERESHOME/clouds/rcf)	m	0.006	Once every 2 days	N/A	Archive, rm
CER4.1-4.2P2_LogReport_$SS4_1_$PS4_1_$CC4_ 2P2.YYYYMMDD@($CERESHOME/clouds/data/ runlogs)	m	0.01	Once every 2 days	N/A	Archive, rm
CER4.1-4.2P2_LogStatus_$SS4_1_$PS4_1_$CC4_ 2P2.YYYYMMDD@($CERESHOME/clouds/data/ runlogs)	m	0.002	Once every 2 days	N/A	Archive, rm

Table 6-6. Expected Output File Listing for CER4.1-4.2P2 (4 of 4)

File Name[a]/Directory	m/o	File Size (mb)	Freq/ PGE	Target PGE	Destination[b]
CER4.1-4.2P2_LogUser_$SS4_1_$PS4_1_$CC4_ 2P2.YYYYMMDD@($CERESHOME/clouds/data/ runlogs)	m	0.001	Once every 2 days	N/A	Archive, rm

a. See Section 6.2.2 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. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4 digit year
MM - 2 digit month {valid values: 01 .. 12}
DD - 2 digit day {valid values: 01 .. 31
HH - 2 digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
NXD - The next Data Day
NNXD - The Next Next Data Day

6.7 Expected Temporary Files/Directories.

The toolkit creates a temporary file.

Table 6-7. Temporary Files Listing for CER4.1-4.2P2

Directory	File Name
/CERES/clouds/data/runlogs	CER4.1-4.2P2_ShmMem

7.0 PGEName: CER4.1-4.3P1

CER4.1-4.3P1 - Monthly QC Generator

7.1 PGE Details

7.1.1 Responsible Persons

Responsible persons can be obtained from the primary contact listed in Table 1-1.

7.1.2 E-mail Distribution List

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

7.1.3 Parent PGE(s)

Table 7-1. Parent PGEs for CER4.1-4.3P1

PGEName	Description
CER4.1-4.2P1	Imager Clear Sky Map Update Processor

7.1.4 Target PGE(s)

Table 7-2. Target PGEs after CER4.1-4.3P1

PGEName	Description
None	N/A

7.2 Operating Environment

7.2.1 Runtime Parameters

Table 7-3. Runtime Parameters for CER4.1-4.3P1

Parameter	Description	Data Type	Valid Values
YYYY	CERDataDateYear	I(4)	>1996
MM	CERDataDateMonth	I(2)	01 .. 12

7.2.2 Environment Script Requirements

One environment script, named 'CER4.1-4.env', is required and contains the following parameters:

CC4_3P1 - Configuration Code for CER4.1-4.3P1, see CM Database
DATA4_1 - Data SCCR# for Clouds, see CM Database
IMAG - Imager Short Name (VIRS, MODIS)
PS4_1 - Production Strategy for CER4.1-4.2P1, see Production Request
SAT - Satellite Short Name (TRMM, Terra)
SS4_1 - Sampling Strategy for CER4.1-4.2P1, see Production Request
SW4_1 - Software SSCR # for Clouds, see CM Database

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

Also see Appendix D of this document for a detailed description of the Subsystem specific environment.

7.2.3 Execution Frequency

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

7.2.4 Memory/Disk Space/Time Requirements

Table 7-4. Memory/Disk Space/Time Requirements for CER4.1-4.3P1

PGE Number	PGE Name	Total Run Time (HR:MN:SEC)	Memory (MB)	Disk Storage (MB)
CER4.1-4.3P1	Monthly QC Processor	0:05:00	186	335

7.2.5 Restrictions Imposed in Processing Order

None. Process when Input Data are available (see Section 7.3).

7.3 Processor Dependencies

7.3.1 Input Dataset Name (#1): EQCDG (was CER_EQCD)

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

$CERESHOME/clouds/data/out_comp/QA_Reports/ CER_EQCDG_$SS4_1_$PS4_1_$CC4_2P1.YYYYMM(01-31)

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **All days of the month must be processed through CER4.1-4.2P1 if the imager data are available.**
3. Waiting Period: **Hold until entire month has been processed through CER4.1-4.2P1 or decision made not to process missing data.**

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

PGE4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (mb): **~115**

7.3.2 Input Dataset Name (#2): EQCDB (was CER_EQCDV)

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

$CERESHOME/clouds/data/out_comp/QA_Reports/ CER_EQCDB_$SS4_1_$PS4_1_$CC4_2P1.YYYYMM(01-31)

1. Mandatory/Optional: **This file is optional.**
2. Time Related Dependency: **All days of the month must be processed through CER4.1-4.2P1 if the imager data are available.**
3. Waiting Period: **Hold until entire month has been processed through CER4.1-4.2P1 or decision made not to process missing hours.**

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

PGE4.1-4.2P1

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (mb): **18.76**

7.3.3 Input Dataset Name (#2): EQCDGLT(xx)

These files are listed in the PCF file for offline purposes. Please ignore.

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

The PGE CER4.1-4.3P1 production script, **Run.CER4.1-4.3P1**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. This PCF can be created by first sourcing the cloud retrieval-specific environment script, **CER4.1-4.env** then executing the PCF generator **CER4.1-4.3P1.PCFGen**.

7.4.1 How to Generate the PCF File

The environment script requires two optional command-line arguments: 1-digit satellite (X) and character string prefix to production strategy (N). The default satellite is TRMM, 1-NOAA09, 2-TRMM, 3-Terra, and 6-Aqua. The prefix is usually Subset that generates special processing where only data in CERES validation regions is used. The PCF generator, **CER_4.1-4.3P1.PCFGen**, requires two command-line arguments: 4-digit year (YYYY), 2-digit month (MM).

At the command-line (>) type:

> source $CERESHOME/clouds/bin/CER4.1-4.env X N
> $CERESHOME/clouds/bin/CER4.1-4.3P1.PCFGen YYYY MM

The following files will be generated in **$CERESHOME/clouds/rcf/**:

CER4.1-4.3P1_PCFin_$SS4_1_$PS4_1_$CC4_3P1.YYYYMM
CER4.1-4.3P1_PCF_$SS4_1_$PS4_1_$CC4_3P1.YYYYMM

7.4.2 How to Execute the Main Processor

Execute the production script by typing the script name, **Run.CER4.1-4.3P1**, followed by the PCF file name including directory.

At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>**$CERESHOME/clouds/bin/Run.CER4.1-4.3P1 $CERESHOME/clouds/rcf/**
CER4.1-4.3P1_PCF_$SS4_1_$PS4_1_$CC4_3P1.YYYYMM

7.4.3 Special Case Considerations

Special case considerations will be handled on a case-by-case basis, where special instructions will accompany each special request.

7.4.4 Special Reprocessing Instructions

All output files are opened with Status = NEW in Subsystem 4.1 through 4.4 software. The output from previous runs must be removed before reprocessing. A cleanup script has been provided as a convenience. It is to be run prior to reprocessing.

At the command-line (>) type:

```
>cd $CERESHOME/clouds/bin
>$CERESHOME/clouds/bin/Run.CER4.1-4.Cleanup $CERESHOME/clouds/rcf/
        CER4.1-4.3P1_PCF_$SS4_1_$PS4_1_$CC4_3P1.YYYYMM
```

The cleanup script uses the PCFile from the PCFile Generator to identify files to be removed.

7.5 Execution Evaluation

7.5.1 Exit Codes

The processor CER4.1-4.3P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 7-5. 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 7-5. Exit Codes for CER4.1-4.3P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
Other	Failure	Call responsible persons

7.5.2 Screen Messages

When running the production script, Run.CER4.1-4.3P1, 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.

7.5.3 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/clouds/data/runlogs**.

7.5.3.1 Report Log File: CER4.1-4.3P1_LogReport_$SS4_1_$PS4_1_$CC4_3P1.YYYYMM

The log report file contains informational messages for the PGE. They indicate progression through critical steps of the code or use of contingency code that will handle data problems. They point to algorithms that were executing when program problems occur. A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

7.5.3.2 Status Log File: CER4.1-4.3P1_LogStatus_$SS4_1_$PS4_1_$CC4_3P1.YYYYMM

The Status Log File contains all messages created by the Toolkit and fatal processing messages. 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.

7.5.3.3 User Log File: CER4.1-4.3P1_LogUser_$SS4_1_$PS4_1_$CC4_3P1.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 User Log File and Status Log File.

7.5.3.4 ShmMem File: CER4.1-4.3P1_ShmMem

The ShmMem File exists to satisfy the Toolkit requirements and is not actively used by CER4.1-4.3P1.

7.5.4 Solutions to Possible Problems

The most likely problems encountered are missing input or ancillary data files, or existing output files. These should be identified in the Status Log File. These errors could also be linked to missing .met files or other problems related to a temporary file needed to process metadata. As mentioned in Section 7.4.4, all output files are opened with Status = NEW in Subsystem 4.1 software. Prior to any reprocessing, please run the Cleanup script.

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

a. Subsystem Termination

   There are no foreseeable Subsystem terminating conditions at this time.

b. Target PGE Termination

There are no target PGEs to this PGE.

7.6 Expected Output Datasets

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process once per month per satellite.

Table 7-6. Expected Output File Listing for CER4.1-4.3P1

File Name[a]/Directory	m/o	File Size (mb)	Freq/PGE	Target PGE	Destination[b]
CER_EQCMG_$SS4_1_$PS4_1_$CC4_3P1. YYYYMM(.met) @($CERESHOME/clouds/data/out_comp/QA_Reports)	m	315.7	1/mon/sat	N/A	/QA, Archive, rm
CER_EQCMB_$SS4_1_$PS4_1_$CC4_3P1. YYYYMM (.met) @($CERESHOME/clouds/data/out_comp/QA_Reports)	m	18.76	1/mon/sat	N/A	/QA, Archive, rm
CER4.1-4.3P1_PCF_$SS4_1_$PS4_1_$CC4_3P1. YYYYMM @($CERESHOME/clouds/rcf)	m	0.03	1/mon/sat	N/A	Archive, rm
CER4.1-4.3P1_PCFin_$SS4_1_$PS4_1_$CC4_3P1. YYYYMM @($CERESHOME/clouds/rcf)	m	0.004	1/mon/sat	N/A	Archive, rm
CER4.1-4.3P1_LogReport_$SS4_1_$PS4_1_$CC4_3P1. YYYYMM @($CERESHOME/clouds/data/runlogs)	m	0.002	1/mon/sat	N/A	Archive, rm
CER4.1-4.3P1_LogStatus_$SS4_1_$PS4_1_$CC4_3P1. YYYYMM @($CERESHOME/clouds/data/runlogs)	m	0.003	1/mon/sat	N/A	Archive, rm
CER4.1-4.3P1_LogUser_$SS4_1_$PS4_1_$CC4_3P1. YYYYMM @($CERESHOME/clouds/data/runlogs)	m	0.002	1/mon/sat	N/A	Archive, rm

a. See Section 7.2.2 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. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4 digit year
MM - 2 digit month {valid values: 01 .. 12}
DD - 2 digit day {valid values: 01 .. 31
HH - 2 digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
NXD - The next Data Day

7.7 Expected Temporary Files/Directories.

There are no temporary files with this PGE.

8.0 PGEName: CER4.1-4.4P1

CER4.1-4.4P1 - Subset Imager Data

8.1 PGE Details

8.1.1 Responsible Persons

Responsible persons can be obtained from the primary contact listed in Table 1-1.

8.1.2 E-mail Distribution List

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

8.1.3 Parent PGE(s)

N/A

8.1.4 Target PGE(s)

Table 8-1. Target PGEs after CER4.1-4.4P1

PGEName	Description
CER4.1-4.1P1	Imager Clear-Sky Determination and Cloud Detection, Cloud Pressure Retrieval, Cloud Optical property Retrieval, and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function Subsystem 4.1 through 4.4 Main Processor

8.2 Operating Environment

8.2.1 Runtime Parameters

Table 8-2. Runtime Parameters for CER4.1-4.4P1

Parameter	Description	Data Type	Valid Values
YYYY	CERDataDateYear	I(4)	>1996
MM	CERDataDateMonth	I(2)	01 .. 12

8.2.2 Environment Script Requirements

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

Also see Appendix D of this document for a detailed description of the Subsystem specific environment.

8.2.3 Execution Frequency

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

8.2.4 Memory/Disk Space/Time Requirements

Table 8-3. Memory/Disk Space/Time Requirements for CER4.1-4.4P1

PGE Number	PGE Name	Total Run Time (HR:MN:SEC)	Memory (MB)	Disk Storage (MB)
CER4.1-4.4P1	Subset Imager Data	0:05:20	97	15

8.2.5 Restrictions Imposed in Processing Order

None. Process when Input Data are available (see Section 8.3).

8.3 Processor Dependencies

8.3.1 Input Dataset Name (#1): ECID

8.3.1.1 VIRS Data

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

$CERESHOME/clouds/data/input/VIRS/
1B01.YYMMDD.OOOO.CC_V.HDF, and maybe
1B01.YYMMDD.OOOP.CC_V.HDF

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

   The DataDate must match the Runtime Parameters: YYYY,MM,DD
   OOOO represents the orbit number of the first VIRS file, OOOP represents the next orbit of VIRS data, CC_V is the VIRS version number.

3. Waiting Period: **None. Process when all input data are available.**

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

INGEST Source: Goddard DAAC

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **91.9**

8.3.1.2 MODIS Radiance Data

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

$CERESHOME/clouds/data/input/MODIS/
MOD02SS1.AYYYYDDD.HHMM.CC_M.yyyydddhhmmss.hdf

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

YYYY	**four digit data year**
DDD	**three digit data Julian day**
HH	**two digit data start hour**
MM	**two digit data start minute**
CC_M	**MODIS version number**
yyyy	**four digit processing year**
ddd	**three digit processing Julian day**
hh	**two digit processing hour**
mm	**two digit processing minute**
ss	**two digit processing second**

3. Waiting Period: **None. Process when all input data are available.**

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

INGEST Source: Goddard DAAC

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **291 per 5 minute granule**

f. Special Requirements: Lots of disk space

8.3.1.3 MODIS Geolocation Data

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

$CERESHOME/clouds/data/input/MODIS/
MOD03.AYYYYDDD.HHMM.CC_M.yyyydddhhmmss.hdf

1. Mandatory/Optional: **This file is mandatory.**
2. Time Related Dependency:

YYYY	**four digit data year**
DDD	**three digit data Julian day**
HH	**two digit data start hour**
MM	**two digit data start minute**
CC_M	**MODIS version number**
yyyy	**four digit processing year**
ddd	**three digit processing Julian day**
hh	**two digit processing hour**
mm	**two digit processing minute**
ss	**two digit processing second**

3. Waiting Period: **None. Process when all input data are available.**

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

INGEST Source: Goddard DAAC

c. Alternate Data Set, if one exists (maximum waiting period): **N/A**

d. File Disposition after successful execution: **Remove**

e. Typical file size (Mb): **61 per 5 minute granule**

f. Special Requirements: Lots of disk space

8.4 Operating Procedures

The PGE CER4.1-4.4P1 production script, **Run.CER4.1-4.4P1** takes up to 4 command-line parameters.

Parameter 1 = YYYY (four digit year)
Parameter 2 = MM (two digit month)
Parameter 3 = <Data Pathname> (full path name to where data is located) Usually $CERESHOME/clouds/data/input/<$IMAG>.
Parameter 4 = DD (two digit day). Restart capability. Can re-start processing at a given day. Optional, if not present, processing starts at day 01.

8.4.1 How to Execute the Main Processor

Execute the production script by typing the script name, **Run.CER4.1-4.4P1**, followed by the desired parameters.

At the command-line (>) type:

>**cd $CERESHOME/clouds/bin**
>$CERESHOME/clouds/bin/Run.CER4.1-4.4P1 YYYY MM <pathname> <start day>

8.4.2 Special Case Considerations

Special case considerations will be handled on a case-by-case basis, where special instructions will accompany each special request.

8.4.3 Special Reprocessing Instructions

Prior to re-processing, the output from previous runs needs to be deleted from the archive. Currently there is no vehicle to capture version information in the filenames for the Subsetted imager data.

8.5 Execution Evaluation

8.5.1 Exit Codes

The processor CER4.1-4.4P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 8-4. 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 (see Table 1-1) for assistance.

Table 8-4. Exit Codes for CER4.1-4.4P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
Other	Failure	Call responsible persons

8.5.2 Screen Messages

When running the production script, Run.CER4.1-4.4P1, 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. It may also indicate that there is no imager data staged.

8.5.3 Log and Status Files Results

At this time, there are no log files produced by this PGE.

8.5.4 Solutions to Possible Problems

At this time there are no possible errors for which solutions can be guessed.

8.5.5 Conditions for PGE and/or Target PGE(s) Terminal Failure

a. PGE Termination

   Since PGE processes a month of Imager data at a time, a restart capability was added to account for situations that cause problems. If a particular granule of Imager data causes problems, remove the granule from disk and restart the processing on the data day of failure and notify Subsystem analysts of problem.

b. Target PGE Termination

   If the PGE fails, a subset Imager data set will not be produced for that granule. If none is produced for the granule, target PGEs cannot be processed using that granule.

8.6 Expected Output Datasets

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process once per month per satellite. At this time, this PGE cannot produce the Subset Imager data for MODIS.

Table 8-5. Expected Output File Listing for CER4.1-4.4P1

File Name[a]/Directory	m/o	File Size (mb)	Freq/PGE	Target PGE	Destination[b]
1B01.YYMMDD.X..X.VER.HDF.Subset @($CERESHOME/clouds/data/input/VIRS)	m	15	1/granule, approx 500/ month/sat	CER4.1-4.1P1	Archive, rm EOD

a. See Section 8.2.2 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.
VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4 digit year
YY - 2 digit year
MM - 2 digit month {valid values: 01 .. 12}
DD - 2 digit day {valid values: 01 .. 31
HH - 2 digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
NXD - The next Data Day
X..X - VIRS orbit number, varying number of digits
VER - VIRS processing Version number.

8.7 Expected Temporary Files/Directories.

There are no temporary files with this PGE.

References

1. Reference "Proposal for Semi-Automated Sampling Strategy, Production Strategy, and Configuration Code Implementation" internal paper for detail description of the CERES environment parameters. URL: http://asd-www.larc.nasa.gov/ceres/intern_doc/
2. Reference "DMT to DAAC Production Request." URL: http://asd-www.larc.nasa.gov/ceres/dmt2daac/

Appendix A
Acronyms and Abbreviations

ASDC	Atmospheric Sciences Data Center
AVHRR	Advanced Very High Resolution Radiometer
CERES	Clouds and the Earth's Radiant Energy System
CM	Configuration Management
CRH	Clear Radiance History
DAAC	Distributed Active Archive Center
DAO	Data Assimilation Office
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
HDF	Hierarchical Data Format
IES	Instrument Earth Scans
LaRC	Langley Research Center
LaTIS	Langley TRMM Information System
LW	Longwave
MB	megabytes
met	metadata file
μm	microns
MOA	Meteorological, Ozone, and Aerosol
MODIS	Moderate-Resolution Imaging Spectroradiometer
N/A	Not Applicable
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
NSIDC	Source for Snow and Ice Data Set
PCF	Processing Control File
PGE	Program Generation Executive
PSF	Point Spread Function
PRE_SSF	Preliminary Single Satellite CERES Footprint TOA and Surface Fluxes
QC	Quality Control
SAIC	Science Applications International Corporation
SMF	Status Message File
SSF	Single Scanner Footprint TOA and Surface Fluxes, Clouds

SURFMAP	SURFace MAP
Terra	alias for EOS-AM1
TRMM	Tropical Rainfall Measuring Mission
VIRS	Visible and Infrared System

Appendix B
Error Messages for Subsystems 4.1-4.4

Appendix B contains a comprehensive list of messages that can be generated during the execution of PGEs CER4.1-4.0P1, CER4.1-4.1P1, CER4.1-4.1P2, CER4.1-4.1P3, CER4.1-4.2P1, CER4.1-4.2P2,CER4.1-4.3P1, and CER4.1-4.4P1. 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 and/or the LogStatus File of the processing instance.

Table B-1 contains a list of the PGE CER4.1-4.0P1 diagnostic messages. Each table entry includes the mnemonic associated with the error, error message, module producing the error, and action number that refers to list below table.

Table B-2 contains a list of the PGE CER4.1-4.1P1, CER4.1-4.1P2, and CER4.1-4.1P3 diagnostic messages. Each table entry includes the mnemonic associated with the error, error message, module producing the error, and action number that refers to list below table.

Table B-3 contains a list of the PGE CER4.1-4.2P1 and PGE CER4.1-4.2P2 diagnostic messages. Each table entry includes the mnemonic associated with the error, error message, module producing the error, and action number that refers to list below table.

Table B-4 contains a list of the PGE CER4.1-4.3P1 diagnostic messages. Each table entry includes the mnemonic associated with the error, error message, module producing the error, and action number that refers to list below table.

Table B-5 contains a list of the PGE CER4.1-4.4P1 diagnostic messages. Each table entry includes the mnemonic associated with the error, error message, module producing the error, and action number that refers to list below table.

Operator Instructions:

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

1. Look at the last few records in 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 person in Table 1-1.
5. If the appropriate ACTION failed, then call the responsible person in Table 1-1.
6. In all cases, log all steps that were taken after the PGE failure, and send a copy to the responsible person listed in Table 1-1.

.

Table B-1. Toolkit (SMF) Utility Message Table for CER4.1-4.0P1

Message/Error Type		Module Name	Action Key
SURFIO_E_FAILED_GET_FNAME	Error ... Unable to get NSIDC HDF file name.	read_NSIDC_hdf	1
SURFIO_E_FAILED_INDEX_READ	Error ... Unable to Read Polar index arrays.	read_NSIDC_hdf	2
SURFIO_E_FAILED_NSIDC_READ	Error ... Unable to Read NSIDC Snow File.	read_NSIDC_hdf	3

Action Keys for Table B-1: (Note if an ACTION does not work, call the Responsible Person in Table 1-1.)

1. Problem Reading PCF File
   Ensure that PCF file for this run was properly created.
   If evidence of corruption, recreate PCF file and start job again.
   If still not successful, call the Responsible Person in Table 1-1.

2. Problem reading surfmapIO index file
   Check file for existence from logical ID 200 of PCF.
   If evidence of corruption, reload file.
   If still not successful, call the Responsible Person in Table 1-1.

3. Problem reading NSIDC HDF file
   Check file for correct date in the specified directory from 1.3.1.
   If evidence of corruption, reload NISE_SSMIF13_YYYMMDD.HDFEOS.
   If still not successful, call the Responsible Person in Table 1-1.

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (1 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for BiDirectModel(:,:)	ReadBiDirModel()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for DirectModel(:,:)	ReadDirModel()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for ElevationChunk(:,:)	ReadElevationChunk()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for ElevationChunk1(:,:)	GetElevationChunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for IceChunk(:,:)	ReadIceChunk()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for IceChunk1(:,:)	GetIceChunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for TerrainChunk(:,:)	ReadTerrainChunk()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for TerrainChunk1(:,:)	GetTerrainChunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for SceneIDChunk(:,:)	ReadSceneIDChunk()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for SceneIDChunk1(:,:)	GetSceneIDChunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for SnowChunk(:,:)	ReadSnowChunk()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for SnowChunk1(:,:)	GetSnowChunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for EmitWindowChunk(:,:)	ReadEmitWindowChunk()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for EmitWindowChunk1(:,:)	GetEmitWindowChunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for Emit0375Chunk(:,:)	ReadEmit0375Chunk()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for Emit0375Chunk1(:,:)	GetEmit0375Chunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for Emit1190Chunk(:,:)	ReadEmit1190Chunk()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for Emit1190Chunk1(:,:)	GetEmit1190Chunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for WaterContentChunk(:,:)	ReadWaterContentChunk()	1

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (2 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for WaterContentChunk1(:,:)	GetWaterContentChunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for GlobalChunk(:,:)	ReadGlobalChunk()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for GlobalChunk1(:,:)	GetGlobalChunk1()	1
CERES_E_ALLOCATEANCCHUNK_UNABLE	ERROR...unable to allocate memory for ErbeBiDM(:,:,:,:)	ReadBiDirModel()	1
CERES_E_ALLOCATEVINTTILE_UNABLEe	ERROR...unable to allocate memory for VINT: PixelSAT(:,:,:)	ExecuteVINT()	1
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. Map chunk not found.	ChunkRegion()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Failure in chi calculation	bderb5	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. ElevationMap chunk not found.	ReadElevationChunk()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadElevationChunk1()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadIceChunk1()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. TerrainMap chunk not found.	ReadTerrainChunk()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadTerrainChunk1()	2

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (3 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. SceneIDMap chunk not found.	ReadSceneIDChunk()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadSceneIDChunk1()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. SnowMap chunk not found.	ReadSnowChunk()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadSnowChunk1()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. EmitWindowMap chunk not found.	ReadEmitWindowChunk()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadEmitWindowChunk1()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. Emit0375Map chunk not found.	ReadEmit0375Chunk()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadEmit0375Chunk1()	2

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (4 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. Emit1190Map chunk not found.	ReadEmit1190Chunk()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadEmit1190Chunk1()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. WaterContentMap chunk not found.	ReadWaterContentChunk()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadWaterContentChunk1()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Input lat1, lon1, lat2, lon2, do not fall into any one of (1)PolarRegion (2)NoCrossingRegion (3)DatelineCrossing (4)GreenwichCrossing. GlobalMap chunk not found.	ReadGlobalChunk()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...This subroutine should be called only when GreenwichCrossing occurs. But for some reason, this subroutine is called when no GreenwichCrossing occurs!	ReadGlobalChunk1()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Failure in chi calculation: chi < 0.0	GetErbeBiDirModel()	2
CERES_E_CHUNKBOUNDARY_ERROR	ERROR...Failure in chi calculation	bderb5()	2
CERES_E_GETFILENAME_ERROR	ERROR...in getting file name: Number of errors of finding input/output files from PCfile= ", IVar1	InitPCFile()	3
CERES_E_GETNUMOFFILE_UNKNOWN	ERROR ...in GetNumofFile check logic ID Wrong # of input files!!	InitCID_AVHRR	3
CERES_E_GetRunTimeParam_Error	ERROR ..Number of errors of finding run-time parameters =	PC1P1	4
CERES_E_GetRunTimeParam_Error	ERROR ..Number of errors of finding run-time parameters =	PC2P1	4

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (5 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_INQUIREFILE_ERROR	ERROR...file not exist: Number of non-exist input files =	InitPCFile()	4
CERES_E_INVALID_UTCB_INPUTS	ERROR...Cannot convert given input to UTC_B Invalid inputs for UTC_B generation %s	Build_UTC	5
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: Elevationmap, fail to open the map	OpenElevationMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: CloudVis, fail to open the file	InitCloudVisType()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: CloudVis, fail to open the file for read subset	Subset_ReformatCloudVis()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: tempSubsetCloudVis, fail to open the file	Subset_ReformatCloudVis()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: SceneIDMap, fail to open the map	OpenSceneIDMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: WaterContentMap, fail to open the map	OpenWaterContentMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: WaterContentMap_CRH, fail to open the map	OpenWaterContentMap_CRHupdate()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: SnowMap, fail to open the map	OpenSnowMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: IceMap, fail to open the map	OpenIceMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: EmitWindowMap, fail to open the map	OpenEmitWindowMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: Emit0375Map, fail to open the map	OpenEmit0375Map()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: Emit1190Map, fail to open the map	OpenEmit1190Map()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: WaterFlagMap, fail to open the map	OpenWaterFlagMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: MOASceneMap, fail to open the map	OpenMOASceneMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: GlobalMap, fail to open the map	OpenGlobalMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: TerrainMap, fail to open the map	OpenTerrainMap()	6

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (6 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: Region-Limits, fail to open the file	OpenRegionLimits()	6
CERES_E_OPENFILE_UNABLE	SceneIDMap_CRH, fail to open the map	OpenSceneIDMap_CRH()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: CRHOverheadBTemp, fail to open the file	OpenCRHOverheadBTemp()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: CRHOverheadAlbedo, fail to open the file	OpenCRHOverheadAlbedo()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: CRHOverheadAlbedoSTD, fail to open the file	OpenCRHOverheadAlbe-doSTD()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: CRHOverheadBTempSTD, fail to open the file	OpenCRHOverheadBTemp-STD()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: VINTray-bref, fail to open the file	OpenVINTraybref()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: bdnnref, fail to open the file	Openbdnnref()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: VINT-modelsnew, fail to open the file	OpenVINTmodelsnew()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: VINTmodelsnew37, fail to open the file	OpenVINTmodelsnew37()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: VINTer-bedir, fail to open the file	OpenVINTerbedir()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: VINTchannel2, fail to open the file	OpenVINTchannel2()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: VINTchannel3, fail to open the file	OpenVINTchannel3()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: VINTchannel4, fail to open the file	OpenVINTchannel4()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: VINTchannel5, fail to open the file	OpenVINTchannel5()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: StoweLut0063, fail to open the file	OpenStoweLut0063	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: StoweLut0160, fail to open the file	OpenStoweLut0160	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: BiDirModelMap, fail to open the map	OpenBiDirModelMap()	6

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (7 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: DirModelMap, fail to open the map	OpenDirModelMap()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: DirModel, fail to open the map	OpenDirModel()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: ErbeBiDirModel, fail to open the map	OpenErbeBiDirModel()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: CookieOutput, fail to open the file	OpenCookieOutput()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: VintOutput, fail to open the file	OpenVintOutput()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: CloudVisTemp, fail to open the file	OpenCloudVisTemp()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: SubsetCloudVisTemp, fail to open the file	OpenSubsetCloudVisTemp()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: NadirCRHUpdate, fail to open the file	OpenNadirCRHUpdate()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: CRHUpdateCERESInput, fail to open the file	OpenCRHUpdateCERESUpdate()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: GeoOffline, fail to open the file	OpenGeoOffline()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: AOTOffline, fail to open the file	OpenAOTOffline()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: BinnedQCReport not found	WriteBinnedQC()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: QCReport not found	WriteQC()	6
CERES_E_OPENFILE_UNABLE	ERROR...in opening file: %s no found	InitCID_AVHRR ()	6
CERES_E_OPENFILE_UNABLE,	ERROR...in opening file: RadianceQCReport not found	WriteRadianceQC()	6
CERES_E_OPENFILE_UNABLE,	ERROR...in opening file: fileNames[i]	InitCID_VIRS	6
CERES_E_OPENFILE_UNABLE,	ERROR...in opening file: Logical ID %d",inID	ReformatCloudVisFile	6
CERES_E_READFILE_ERROR	ERROR...error in reading RegionLimits header. Process shutdown	InitSubset()	7
CERES_E_READFILE_ERROR	ERROR...error in reading subset CloudVis header. Process shutdown	Subset_ReformatCloudVis()	7

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (8 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_READFILE_ERROR	ERROR...FileName(1:FileNameLen)//" reading: error occurs	GetMap_1ByteInt()	7
CERES_E_READFILE_ERROR	ERROR...FileName(1:FileNameLen)//" file ended before lower bound of chunk reached!	GetMap_1ByteInt()	7
CERES_E_READFILE_ERROR	ERROR...FileName(1:FileNameLen)//"file ended before lower bound of chunk reached!	GetMap_2ByteInt()	7
CERES_E_READFILE_ERROR	ERROR...FileName(1:FileNameLen)//"reading: error occurs!	GetMap_4ByteInt()	7
CERES_E_READFILE_ERROR	ERROR...FileName(1:FileNameLen)//"file ended before lower bound of chunk reached!	GetMap_4ByteInt()	7
CERES_E_READFILE_ERROR	ERROR...FileName(1:FileNameLen)//" reading: error occurs!	GetMap_4ByteReal()	7
CERES_E_READFILE_ERROR	ERROR...FileName(1:FileNameLen)//" file ended before lower bound of chunk reached!	GetMap_4ByteReal()	7
CERES_E_READFILE_ERROR	ERROR...FileName(1:FileNameLen)//" reading: error occurs!	GetMap_8ByteReal()	7
CERES_E_READFILE_ERROR	ERROR...FileName(1:FileNameLen)//" file ended before lower bound of chunk reached!	GetMap_8ByteReal()	7
CERES_E_READFILE_ERROR	ERROR...%d VIRS time records	InitCID_VIRS	7
CERES_E_READFILE_ERROR	ERROR...Error reading # bytes in CloudVis file	ReformatCloudVisFile	7
CERES_E_READFILE_ERROR	ERROR...reading CloudVis header	ReformatCloudVisFile	7
CERES_E_READFILE_NOTOPEN	ERROR... FileName(1:FileNameLen)//" file is not opened before reading!	GetMap_1ByteInt()	2
CERES_E_READFILE_NOTOPEN	ERROR... FileName(1:FileNameLen)//" file is not opened before reading!	GetMap_2ByteInt()	2
CERES_E_READFILE_NOTOPEN	ERROR... FileName(1:FileNameLen)//" file is not opened before reading!	GetMap_4ByteInt()	2
CERES_E_READFILE_NOTOPEN	ERROR... FileName(1:FileNameLen)//" file is not opened before reading!	GetMap_4ByteReal()	2
CERES_E_READFILE_NOTOPEN	ERROR... FileName(1:FileNameLen)//" file is not opened before reading!	GetMap_8ByteReal()	2

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (9 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for regionIndex (%i5)	InitQC ()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for qcData (%i4)	InitQC ()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CloudChunk(1: %i3, 1:%i3)	RetrieveChunk()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory unable to allocate memory for latROI(1: %i3)	InitSubset()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for lonROI(1: %i3)	InitSubset()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for indexROI(1: %i3)	InitSubset()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for hitROI(1: %i3)	InitSubset()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CloudVisData(1: %i3)	InitCloduVis()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CookieDough(1: %i3)	InitCookieChunk()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for MOA Index Storage	InitMOA()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for MOA Data Storage	InitMOA()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CorrKPixelsPerTile_X(:)	ICSBTempInterface ()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CorrKPixelsPerTile_Y(:)	ICSBTempInterface ( )	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for MOA Data Storage	InitMOA()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CorrKPixelsPerTile_X(:)	SkinTempInterface ()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CorrKPixelsPerTile_Y(:)	SkinTempInterface ()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for GeoOffline(1: %i5)	InitGeoOffline()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for AOTOffline(1: %i5)	InitAOTOffline()	1

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (10 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for qcData (%i4)	InitQC ()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for arrayDOY	InitCID_VIRS ()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for arrayYear	InitCID_VIRS ()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for VIRS scan line	ReadCIDVIRSScanLine ()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory %d VIRS records	InitCID_VIRS()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CloudVis header	ReformatCloudVisFile	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CloudVis data	ReformatCloudVisFile	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CloudVis buffer	ReformatCloudVisFile	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for PixelsPerTile_X(:)	InitCorrKChunk()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for PixelsPerTile_Y(:)	InitCorrKChunk()	1
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CorrK_Data(:)	InitCorrKChunk()	1
CERES_E_WRITEFILE_ERROR	ERROR...error in writing CloudVis header. Process shutdown	Subset_ReformatCloudVis()	8
CERES_E_WRITEFILE_ERROR	ERROR...error in writing CloudVis header. Process shutdown	Subset_ReformatCloudVis()	8
CERES_E_WRITEFILE_ERROR	ERROR...error in writing CloudVis header on shutdown. Process shutdown	ShutdownCloduVis()	8
CERES_E_WRITEFILE_ERROR	ERROR...error in writing CloudVis header. Process shutdown	InitCloduVis()	8
CERES_E_WRITEFILE_ERROR	ERROR...Error in write CookieDough header	OutputCookieHeader()	8
CERES_E_WRITEFILE_ERROR	ERROR...Error in write CookieDough at the scanline number = %i5	WriteCookieChunk()	8
CERES_E_WRITEFILE_ERROR	ERROR...Error in write GeoOfffline Header	OutputGeoOfflineHeader()	8
CERES_E_WRITEFILE_ERROR	ERROR...Error in write GeoOffline at the scanline number = %i5	OutputGeoOffline()	8

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (11 of 14)

Message/Error Type		Module Name	Action Key
CERES_E_WRITEFILE_ERROR	ERROR...Error in write AOTOffline Header	OutputAOTOfflineHeader()	8
CERES_E_WRITEFILE_ERROR	ERROR...Error in write AOTOffline at the scanline number = %i5	OutputAOTOffline()	8
CERES_E_WRITEFILE_ERROR	ERROR...Error in writing VintData at the tile number = %i3	WriteVintInputCERESData()	8
CERES_E_WRITEFILE_ERROR	ERROR...writing # bytes	ReformatCloudVisFile	8
CERES_E_WRITEFILE_ERROR	ERROR...writing CloudVis header	ReformatCloudVisFile	8
CERES_E_WRITEFILE_ERROR	ERROR...writing CloudVis reformatted data	ReformatCloudVisFile	8
FOOTPRINT_E_CLOSEFILE_UNABLE	ERROR...in closing file: Problem in closing SSF Intermediate output file.	Fin_SSF_Int	9
FOOTPRINT_E_DATATIME_DIFFERENT	ERROR...in date or time between data files: IES HDF file is for the wrong data day.	Read_HDF_IES_Header	10
FOOTPRINT_E_DATATIME_DIFFERENT	ERROR...in date or time between data files: IES HDF file is for the wrong data hour	Read_HDF_IES_Header	10
FOOTPRINT_E_DATATIME_DIFFERENT	ERROR...in date or time between data files: IES HDF file is for the wrong data month.	Read_HDF_IES_Header	10
FOOTPRINT_E_DATATIME_DIFFERENT	ERROR...in date or time between data files: IES HDF file is for the wrong data year.	Read_HDF_IES_Header	10
FOOTPRINT_E_DATATIME_DIFFERENT	ERROR...in date or time between data files: Imager data file was for the wrong day.	Check_Imager_File	10
FOOTPRINT_E_DATATIME_DIFFERENT	ERROR...in date or time between data files: Imager data file was for the wrong hour.	Check_Imager_File	10
FOOTPRINT_E_DATATIME_DIFFERENT	ERROR...in date or time between data files: Imager data file was for the wrong month.	Check_Imager_File	10
FOOTPRINT_E_DATATIME_DIFFERENT	ERROR...in date or time between data files: Imager data file was for the wrong year.	Check_Imager_File	10
FOOTPRINT_E_GETFILNM_UNKNOWN	ERROR...in getting file name: Check LogReport for %i file(s) not found	PCParam	3
FOOTPRINT_E_GETPARAM_ERROR	ERROR...in getting run-time parameter: Check LogReport for %i paramter(s) not found	PCParam	3

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (12 of 14)

Message/Error Type		Module Name	Action Key
FOOTPRINT_E_GETPARAM_ERROR	ERROR...in getting run-time parameter: Check LogReport for %i paramter(s) and %i file(s) not found	PCParam	3
FOOTPRINT_E_INQUIREFL_NOEXIST	ERROR...file does not exist: Source_FileName(1:190)	Initialize_Granule_Data.f90	4
FOOTPRINT_E_INQUIREFL_NOEXIST	ERROR...file does not exist: Imager_FileName(1:190)	Initialize_Granule_Data.f90	4
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: Intermediate SSF already exists.	Init_SSF_Int	11
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: status = Output_FileName(1:175)	Init_SSF_Int	6
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: QC_FileName(1:175) already exists.	Initialize_Granule_Data	6
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: QCBin_FileName(1:175) already exists.	Initialize_Granule_Data	6
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: Param_FileName(1:190)	Initialize_Granule_Data	6
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: PSF file	Initialize_Granule_Data	6
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: Imager file.	Check_Imager_File	6
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: QC_FileName	Init_QC_Stats	6
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: IES HDF file.	Read_HDF_IES_Header	6
FOOTPRINT_E_OPENFILE_UNABLE	ERROR...in opening file: Binary QC file.	Write_Binary_QC	6
FOOTPRINT_E_PLATFORM_DIFFERENT	ERROR...in platform between data files: Imager data file was for the wrong platform.	Check_Imager_File	12
FOOTPRINT_E_PLATFORM_DIFFERENT	ERROR...in platform between data files: IES HDF file is for the wrong satellite.	Read_HDF_IES_Header	12
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: Imager file header.	Check_Imager_File	7
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: Imager scan line.	Check_Imager_File	7
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: Imager data file quality assurance flag was FAIL or bad	Check_Imager_File	7

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (13 of 14)

Message/Error Type		Module Name	Action Key
FOOTPRINT_E_READ_ERROR	ERROR...There are no scan lines in imager file.	Check_Imager_File	13
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: Param file	Initialize_PGE_Data	7
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: Normal PSF data	Initialize_Granule_Data	7
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: Nadir PSF data	Initialize_Granule_Data	7
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: PSF array size.	Initialize_Granule_Data	7
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: PSF file	Initialize_Granule_Data	7
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: HDF Flag is specified incorrectly.	Initialize_Granule_Data	7
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: IES HDF file	Read_HDF_IES_Header	7
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: IES data file quality assurance flag was FAIL.	Read_HDF_IES_Header	14
FOOTPRINT_E_READ_ERROR	ERROR...in reading from file: IES data file quality assurance flag was bad.	Read_HDF_IES_Header	7
FOOTPRINT_E_TIME_ERROR	ERROR...in converting time: Julian to ASCII	JulDay_to_ASCII	5
FOOTPRINT_E_TIME_ERROR	ERROR...in converting time: Julian to ASCII in HDF IES.	Read_HDF_IES_Header	5
FOOTPRINT_E_WRITE_ERROR	ERROR...in writing to file: Binary QC file.	Write_Binary_QC	8
MOAIO_E_FAILED_COLAT_INVALID	occurred at Latitude :	LatLong_Reg()	2
MOAIO_E_FAILED_GRIDIDX_INVALID	occurred with Grid_Index :%i3 grid(1) for DAO 2x2.5, grid(2) for DAO 1x1, grid(3) for NCEP -All others are Unavailable"	LatLong_Reg()	2
MOAIO_E_FAILED_GRIDIDX_INVALID	occurred with Grid_Index :%i3 grid(1) for DAO 2x2.5, grid(2) for DAO 1x1, grid(3) for NCEP -All others are Unavailable	Region_LatLon()	2
MOAIO_E_FAILED_LONG_INVALID	occurred at Longitude :	LatLong_Reg()	2
MOAIO_E_FAILED_REGNUM_INVALID	occurred with Region Number :%i8 -Max Region Number for Grid(%i1) is %i5	LatLong_Reg()	2

Table B-2. TK (SMF) Utility Message Table for CER4.1-4.1P1, CER4.1-4.1P2 and CER4.1-4.1P3 (14 of 14)

Message/Error Type		Module Name	Action Key
MOAIO_E_FAILED_REGNUM_INVALID	occurred with Region Number :%i8 -Max Region Number for Grid(%i1) is %i5	Region_LatLon()	2
PGSCSC_E_LOOK_PT_ALTIT_RANGE	look point altitude unreasonably low or high	PGSCSCZenithAzimuth_Below()	2
PGSCSC_E_INVALID_VECTAG	invalid tag for vector whose zenith and azimuth are sought	PGSCSCZenithAzimuth_Below(	2
PGSCSC_E_ZERO_INPUT_VECTOR	input vector with zero length when direction is required	PGSCSCZenithAzimuth_Below(	2
SURFIO_E_FAILED_TABLE_CLOSE	Error ... Unable to Close Table File.	Read_Tables()	9
SURFIO_E_FAILED_TABLE_OPEN	Error ... Unable to Open tabular data file.	Read_Tables(	6
SURFIO_E_FAILED_TABLE_READ	Error ... Unable to Read tabular data file. occurred with spectral integration weights	Read_Tables()	7
SURFIO_E_FAILED_TABLE_READ	Error ... Unable to Read tabular data file. occurred with spectral albedos	Read_Tables()	7
SURFIO_E_FAILED_TABLE_READ	Error ... Unable to Read tabular data file. occurred with emissivi-ties and broadband albedos	Read_Tables()	7
SURFIO_E_FAILED_TABLE_READ	Error ... Unable to Read tabular data file. occurred with dummy characters	Read4	7
SURFIO_E_FAIL_TABNUM_INVALID	Error ... InValid Table Number.	Read_Tables()	2

Action Keys for Table B-2: (Note if an ACTION does not work, call the Responsible Person in Table 1-1.)

1. Problem allocating memory
   Monitor system memory usage.
   Restart job when it is reduced.
   If still not successful, call the Responsible Person in Table 1-1.

2. Problem Internal to Software
   Call the Responsible Person in Table 1-1.

3. Problem Reading PCF
   Ensure that PCF file for this run was properly created.
   Check the appropriate LogReport file for the number of bad parameters or files.

If evidence of corruption, recreate PCF file and start job again.
If still not successful, call the Responsible Person in Table 1-1.

4. Missing Files that are Specified in PCF
   Check the appropriate LogReport file for the name of missing files or Section 2.3.
   (If reported by Logical ID check file type in the PCF from a successful case.)
   Load files that are missing.
   If still not successful, call the Responsible Person in Table 1-1.

5. Problem Converting Date
   Check ephemeris file for correct date.
   Check runtime date to be valid.
   If evidence of corruption or missing, reload ephemeris file.
   If still not successful, call the Responsible Person in Table 1-1.

6. Problem Opening Specified File
   Check file for correct name in the specified directory from Section 2.3.
   If evidence of corruption or missing, reload file.
   If still not successful, call the Responsible Person in Table 1-1.

7. Problem Reading Specified File
   If evidence of corruption or missing, reload file.
   If still not successful, call the Responsible Person in Table 1-1.

8. Problem Writing Specified File
   If disk is full, remove files and restart.
   Check for corrupted file.
   If still not successful, call the Responsible Person in Table 1-1.

9. Problem Closing Specified File
   Check for file existence. Proceed as normal.
   Call the Responsible Person in Table 1-1.

10. Problem with Different Input Data Dates
    Check the PCF dates to agree with request.
    Check input file metadata load file that instance agrees with data date.
    Call the Responsible Person in Table 1-1.

11. Problem with Existing Output File
    Check the run date requested with PCF.
    Delete existing SSFI file.
    Call the Responsible Person in Table 1-1.

12. Problem with Different Input Platforms
    Check the PCF dates to agree with request.
    Check input file metadata load file that satellite agrees with sampling strategy.
    Call the Responsible Person in Table 1-1.

13. There was no imager scan lines in file.
    If subset processing was occurring, no action required do not start inversion.
    Check for known problems with imager that would have prevented data from being sent.
    Call the Responsible Person in Table 1-1.

14. The input file has been marked failed, .met not staged, or file corrupted.
    The job cannot be processed, proceed to next data hour.

Table B-3. TK (SMF) Utility Message Table for CER4.1-4.2P1 and CER4.1-4.2P2

Message/Error Type		Module Name	Action Key
CERES_E_GetFileName_Error	ERROR...in getting file name: Updated NadirCRH for version: %3, not found from PCfile	CheckUpdatedNadir-CRHExist()	1
CERES_E_GetRunTimeParam_Error	ERROR...in getting run-time parameter:	InitPC	2
CERES_E_OpenFile_unable	ERROR...in opening file: Save-NadirCRHOutput, fail to open the file	OpenSaveNadirCRHOutput	3
CERES_E_OpenFile_unable	ERROR...in opening file: Save-CRHAlbedoOutput, fail to open the file	OpenSaveCRHAlbedoOut-put	3
CERES_E_OpenFile_unable	ERROR...in opening file: Updated CRH for the version: %3, failed to open IVar1 = CRHVersion	OpenUpdatedNadirCRH()	3
CERES_E_OpenFile_unable	ERROR...in opening file: CRHOverheadAlbedo, fail to open the file	OpenCRHOverheadAl-bedo()	3
CERES_E_OpenFile_unable	ERROR...in opening file: CRHOverheadAlbedoSTD, fail to open the file	OpenCRHOverheadAlbe-doSTD()	3
CERES_E_OpenFile_unable	ERROR...in opening file: CRHOverheadBTemp, fail to open the file	OpenCRHOver-headBTemp()	3
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CRHSave	OverheadCRHUpdateTest	4
CERES_E_UNABLE_ALLOCATEMEMORY	ERROR...Unable to allocate memory for CRH or CRHID	OverheadCRHUpdateTest	4

Action Keys for Table B-3: (Note if an ACTION does not work, call the Responsible Person in Table 1-1.)

1. Problem Reading PCF File
   Ensure that PCF file for this run was properly created.
   If evidence of corruption, recreate PCF file and start job again.
   If still not successful, call the Responsible Person in Table 1-1.

2. Problem Reading PCF File
   Ensure that PCF file for this run was properly created.
   Check the appropriate LogReport file for the number of bad parameters or files.
   If evidence of corruption, recreate PCF file and start job again.
   If still not successful, call the Responsible Person in Table 1-1.

3. Problem reading specified file
   Check file for correct date in the specified directory from 3.3.1
   If evidence of corruption or missing, reload file.
   If still not successful, call the Responsible Person in Table 1-1.

4. Problem allocating memory
   Monitor system memory usage.
   Restart job when it is reduced.
   If still not successful, call the Responsible Person in Table 1-1.

Table B-4. TK (SMF) Utility Message Table for CER4.1-4.3P1

Message/Error Type		Module Name	Action Key
None	None	None	1

Action Keys for Table B-3: (Note if an ACTION does not work, call the Responsible Person in Table 1-1.)

1. Call the Responsible Person in Table 1-1.

Table B-5. TK (SMF) Utility Message Table for CER4.1-4.4P1

Message/Error Type		Module Name	Action Key
None	None	None	1

Action Keys for Table B-3: (Note if an ACTION does not work, call the Responsible Person in Table 1-1.)

1. Call the Responsible Person in Table 1-1.

Appendix C
Sample ASCII (PCFin) File Listings for Subsystems 4.1-4.4

C.1 Sample ASCII (PCFin) File Listing for CER4.1-4.0P1

```
Generic PGE entries

Platform                    =  Terra
Instrument                  =  FM1+FM2
Imager                      =  MODIS
CERDataDate                 =  20010501
CERDataYear                 =  2001
CERDataMonth                =  05
CERDataDay                  =  01
CERHRofDay                  =  00
CERHRofMonth                =  00
PCFILE                      =  /ENG/CERES/clouds/rcf/CER4.1-4.0P1_PCF_CERES_NSIDC-NESDIS_000000.20010501
PGEName                     =  CER4.1-4.0P1
CC_Code                     =  000000
Software_SCCR               =  00262
Ancillary_Data_SCCR         =  00262
Sampling_Strategy_Input     =  CERES
Sampling_Strategy_Output    =  CERES
Production_Strategy_Input   =  NSIDCNESDIS
Production_Strategy_Output  =  NSIDCNESDIS
Input_Directory             =  /ENG/CERES/clouds/data/input
Supp__Directory             =  /ENG/CERES/clouds/data/runlogs
Ancil_Directory             =  /ENG/CERES/clouds/data/ancillary/static
Inter_Directory             =  /ENG/CERES/clouds/data/int_prod
Arch__Directory             =  /ENG/CERES/clouds/data/out_comp/data
Temp__Directory             =  /ENG/CERES/clouds/data/scr
LogFile_Directory           =  /ENG/CERES/clouds/data/runlogs
LogStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.0P1_LogStatus_CERES_NSIDC-NESDIS_000000.20010501
LogRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.0P1_LogReport_CERES_NSIDC-NESDIS_000000.20010501
LogUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.0P1_LogUser_CERES_NSIDC-NESDIS_000000.20010501
TmpStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.0P1_TmpStatus_CERES_NSIDC-NESDIS_000000.20010501
TmpRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.0P1_TmpReport_CERES_NSIDC-NESDIS_000000.20010501
TmpUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.0P1_TmpUser_CERES_NSIDC-NESDIS_000000.20010501
MailFile                    =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.0P1_Mailfile_CERES_NSIDC-NESDIS_000000.20010501
ShmMem                      =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.0P1_ShmMem
MCFWriteScratch             =  /ENG/CERES/clouds/data/scr/CER4.1-4.0P1_MCFWrite.CERES_NSIDC-NESDIS_000000.20010501
MCFGetScratch               =  /ENG/CERES/clouds/data/scr/CER4.1-4.0P1_MCFScratch.CERES_NSIDC-NESDIS_000000.20010501
MCFTemplate                 =  /ENG/CERES/lib/rcf/MCF.template
TK10301                     =  /usr/local/TOOLKIT/database/sgi64/TD/leapsec.dat
TK10401                     =  /usr/local/TOOLKIT/database/sgi64/CSC/utcpole.dat
TK10402                     =  /usr/local/TOOLKIT/database/sgi64/CSC/earthfigure.dat
TK10601                     =  /usr/local/TOOLKIT/database/sgi64/CBP/de200.eos
TK10801                     =  /usr/local/TOOLKIT/database/common/EPH/sc_tags.dat
TK11001                     =  /usr/local/TOOLKIT/database/common/CUC/udunits.dat

PGE Specific entries

NSIDCData_I                 =  /ENG/CERES/clouds/data/input/SnowIce/NSIDC/NISE_SSMIF13_20010501.HDFEOS
NESDISNHData_I              =  /ENG/CERES/clouds/data/input/SnowIce/NESDIS/noaa_snow_f14.north.2001050102.2001050121
NESDISSHData_I              =  /ENG/CERES/clouds/data/input/SnowIce/NESDIS/noaa_snow_f14.south.2001050102.2001050121
NSIDCIndex_I                =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_EIEASE_CERES_00003.epoch
NESDISIndex_I               =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_ENESDISIndex_CERES_00003.epoch
ESURF_IGBPScID_I            =  /ENG/CERES/clouds/data/ancillary/static/CER_EANC/CER_EIGBP_CERES_011000.epoch
ESURF_Ice_M                 =  /ENG/CERES/clouds/data/ancillary/static/Meta/CEICE_AC.MCF
ESURF_Snow_M                =  /ENG/CERES/clouds/data/ancillary/static/Meta/CESNOWAC.MCF
ESURF_Ice_O                 =  /ENG/CERES/clouds/data/out_comp/data/CER_ESAI/CER_EICE_CERES_NSIDC-NESDIS_000000.20010501
ESURF_Snow_O                =  /ENG/CERES/clouds/data/out_comp/data/CER_ESAI/CER_ESNOW_CERES_NSIDC-NESDIS_000000.20010501
```

C.2 Sample ASCII (PCFin) File Listing for CER4.1-4.1P1

```
Generic PGE entries

Platform                    =  TRMM
Instrument                  =  PFM
Imager                      =  VIRS
CERDataDate                 =  19980105
CERDataYear                 =  1998
CERDataMonth                =  01
CERDataDay                  =  05
CERHRofDay                  =  16
CERHRofMonth                =  00
PCFILE                      =  /ENG/CERES/clouds/rcf/CER4.1-4.1P1_PCF_TRMM-PFM-VIRS_SSIT_000000.1998010516
PGEName                     =  CER4.1-4.1P1
CC_Code                     =  000000
Software_SCCR               =  00262
Ancillary_Data_SCCR         =  00262
Sampling_Strategy_Input     =  TRMM-PFM-VIRS
Sampling_Strategy_Output    =  TRMM-PFM-VIRS
Production_Strategy_Input   =  SSIT
Production_Strategy_Output  =  SSIT
Input_Directory             =  /ENG/CERES/clouds/data/input
Supp__Directory             =  /ENG/CERES/clouds/data/runlogs
Ancil_Directory             =  /ENG/CERES/clouds/data/ancillary/static
Inter_Directory             =  /ENG/CERES/clouds/data/int_prod
Arch__Directory             =  /ENG/CERES/clouds/data/out_comp/data
Temp__Directory             =  /ENG/CERES/clouds/data/scr
LogFile_Directory           =  /ENG/CERES/clouds/data/runlogs
LogStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.1P1_LogStatus_TRMM-PFM-VIRS_SSIT_000000.1998010516
LogRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.1P1_LogReport_TRMM-PFM-VIRS_SSIT_000000.1998010516
LogUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.1P1_LogUser_TRMM-PFM-VIRS_SSIT_000000.1998010516
TmpStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.1P1_TmpStatus_TRMM-PFM-VIRS_SSIT_000000.1998010516
TmpRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.1P1_TmpReport_TRMM-PFM-VIRS_SSIT_000000.1998010516
TmpUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.1P1_TmpUser_TRMM-PFM-VIRS_SSIT_000000.1998010516
MailFile                    =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.1P1_Mailfile_TRMM-PFM-VIRS_SSIT_000000.1998010516
ShmMem                      =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.1P1_ShmMem
MCFWriteScratch             =  /ENG/CERES/clouds/data/scr/CER4.1-4.1P1_MCFWrite.TRMM-PFM-VIRS_SSIT_000000.1998010516
MCFGetScratch               =  /ENG/CERES/clouds/data/scr/CER4.1-4.1P1_MCFScratch.TRMM-PFM-VIRS_SSIT_000000.1998010516
MCFTemplate                 =  /ENG/CERES/lib/rcf/MCF.template
TK10301                     =  /usr/local/scf_toolkit5.2.6.L2_f90/TOOLKIT/database/sgi64/TD/leapsec.dat
TK10401                     =  /usr/local/scf_toolkit5.2.6.L2_f90/TOOLKIT/database/sgi64/CSC/utcpole.dat
TK10402                     =  /usr/local/scf_toolkit5.2.6.L2_f90/TOOLKIT/database/sgi64/CSC/earthfigure.dat
TK10601                     =  /usr/local/scf_toolkit5.2.6.L2_f90/TOOLKIT/database/sgi64/CBP/de200.eos
TK10801                     =  /usr/local/scf_toolkit5.2.6.L2_f90/TOOLKIT/database/common/EPH/sc_tags.dat
TK11001                     =  /usr/local/scf_toolkit5.2.6.L2_f90/TOOLKIT/database/common/CUC/udunits.dat

PGE Specific entries

SubsetStrategy              =  n
ThinningValue               =  1
MultipleInstrument          =  n
Imager_File_Curr            =  /ENG/CERES/clouds/data/input/VIRS/1B01.980105.612.5.HDF
Ephemeris_Prev              =  /ENG/CERES/instrument/data/ancillary/dynamic/TRMM_ED9D_OR_1998-01-04T00-00-00Z_V01.nat
Ephemeris_Curr              =  /ENG/CERES/instrument/data/ancillary/dynamic/TRMM_ED9D_OR_1998-01-05T00-00-00Z_V01.nat
Ephemeris_Next              =  /ENG/CERES/instrument/data/ancillary/dynamic/TRMM_ED9D_OR_1998-01-06T00-00-00Z_V01.nat
Attitude_Prev               =  /ENG/CERES/instrument/data/ancillary/dynamic/TRMM_G500_LZ_1998-01-04T00-00-00Z_V01.DAT1.nat
Attitude_Curr               =  /ENG/CERES/instrument/data/ancillary/dynamic/TRMM_G500_LZ_1998-01-05T00-00-00Z_V01.DAT1.nat
Attitude_Next               =  /ENG/CERES/instrument/data/ancillary/dynamic/TRMM_G500_LZ_1998-01-06T00-00-00Z_V01.DAT1.nat
ECS_OA0063m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063m_015000.XXXX01
ECS_OA0063s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063s_015000.XXXX01
ECS_OA0160m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160m_015000.XXXX01
ECS_OA0160s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160s_015000.XXXX01
ECS_OA1663m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663m_015000.XXXX01
ECS_OA1663s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663s_015000.XXXX01
ECS_BT1080m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080m_015000.XXXX01
ECS_BT1080s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080s_015000.XXXX01
ESURF_EM0375_I              =  /ENG/CERES/clouds/data/ancillary/static/CER_EM/CER_EM0375_CERES_015000.XXXX01
ESURF_EM1080_I              =  /ENG/CERES/clouds/data/ancillary/static/CER_EM/CER_EM1080_CERES_015000.XXXX01
ESURF_EM1190_I              =  /ENG/CERES/clouds/data/ancillary/static/CER_EM/CER_EM1190_CERES_015000.XXXX01
ESURF_Snow_I                =  /ENG/CERES/clouds/data/out_comp/data/CER_ESAI/CER_ESNOW_CERES_NSIDC_000000.19980105
ESURF_Ice_I                 =  /ENG/CERES/clouds/data/out_comp/data/CER_ESAI/CER_EICE_CERES_NSIDC_000000.19980105
1EMOA_I                     =  /ENG/CERES/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS2_010012.1998010516
2EMOA_I                     =  /ENG/CERES/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS2_010012.1998010512
3EMOA_I                     =  /ENG/CERES/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS2_010012.1998010518
EMOA_CorrectionM_I          =  /ENG/CERES/clouds/data/ancillary/static/CER_EDI/CER_EDiCorrm_ECMWF_015000.XXXX01
EMOA_WaterCover_I           =  /ENG/CERES/clouds/data/ancillary/static/CER_EANC/CER_EMOAW_ECMWF_015000.epoch
1FIES_I                     =  /ENG/CERES/instrument/data/int_prod/CER_IES_TRMM-PFM_Edition1_011004.1998010516
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EPARAM_I                    =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_EPARAM_VIRS.epoch
EICF_I                      =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_EICF_TRMM-VIRS_014000.epoch
EAI_CORRK01_I               =  /ENG/CERES/clouds/data/ancillary/static/Vint/virs.corrk.coefs.5.intervals
EAI_CORRK02_I               =  /ENG/CERES/clouds/data/ancillary/static/Vint/SkinTderiv.ch4.allvz.dy.dat
EAI_CORRK03_I               =  /ENG/CERES/clouds/data/ancillary/static/Vint/LNPWderiv.ch4.allvz.dy.dat
EAI_MASK01_I                =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_ESCF_ChiThrTable_015000.epoch
EAI_MASK02_I                =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_ESCF_CERESThres_015000.epoch
EAI_WELCH01_I               =  /ENG/CERES/clouds/data/ancillary/static/Welch/CER_EAI_WELCH01_015000.epoch
EAI_STOWE01_I               =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_ESCF_Stowe-0063_015000.epoch
EAI_STOWE02_I               =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_ESCF_Stowe-0160_015000.epoch
EAI_VINT01_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/raybref.dat
EAI_VINT02_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/modelsnew.dat
EAI_VINT03_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/modelsnew.3.7.dat
EAI_VINT04_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/CER_EDM_VIRS.epoch
EAI_VINT05_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/channel2.coefs
EAI_VINT06_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/channel3.coefs
EAI_VINT07_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/channel4.coefs
EAI_VINT08_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/channel5.coefs
EAI_VINT09_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/bdnnref.dat
EAI_VINT10_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/ratios1_6.dat
EAI_VINT11_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/dxalbmean.dat
EAI_VINT12_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/ERBEBDMreformatted.dat
EAI_VINT13_I                =  /ENG/CERES/clouds/data/ancillary/static/Vint/table-invcld
EAI_CO2SLICING01_I          =  /ENG/CERES/clouds/data/ancillary/static/CO2/modisbnd.am1
EAI_CO2SLICING02_I          =  /ENG/CERES/clouds/data/ancillary/static/CO2/modisdry.am1
EAI_CO2SLICING03_I          =  /ENG/CERES/clouds/data/ancillary/static/CO2/modisozo.am1
EAI_CO2SLICING04_I          =  /ENG/CERES/clouds/data/ancillary/static/CO2/modiswco.am1
EAI_CO2SLICING05_I          =  /ENG/CERES/clouds/data/ancillary/static/CO2/modiswtl.am1
EAI_CO2SLICING06_I          =  /ENG/CERES/clouds/data/ancillary/static/CO2/modiswts.am1
EDM_0063_ALT1_I             =  /ENG/CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM0063_NOAA9-AVHRR_015000.epoch
EDM_0063_ALT2_I             =  /ENG/CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM0063_TRMM-VIRS_015000.epoch
EDM_0160_I                  =  /ENG/CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM0160_TRMM-VIRS_015000.epoch
EDM_1663_I                  =  /ENG/CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM1663_TRMM-VIRS_015000.epoch
EBDM_0063_I                 =  /ENG/CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0063_015000.epoch
EBDM_0160_I                 =  /ENG/CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0160_015000.epoch
EREFSIM_I                   =  /ENG/CERES/clouds/data/ancillary/static/BDM/CER_EAI_REFSIM006301600375_015000.epoch
ECV_SUBSET_I                =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_ESCF_SubsetRegions_015000.epoch
FPARAM_I                    =  /ENG/CERES/clouds/data/ancillary/static/footprint/CER_FPARAM_CERES_016000.epoch
FDebug_I                    =  /ENG/CERES/clouds/data/ancillary/static/footprint/CER_FDBIn_TRMM-PFM-VIRS_SSIT_000000.epoch
FREFL_I                     =  /ENG/CERES/clouds/data/ancillary/static/CER_FANC/CER_FREFL_CERES_000005.epoch
FAI_STOWE01_I               =  /ENG/CERES/clouds/data/ancillary/static/footprint/CER_FAOT063_CERES_015000.epoch
FAI_STOWE02_I               =  /ENG/CERES/clouds/data/ancillary/static/footprint/CER_FAOT160_CERES_015000.epoch
1FPSF_I                     =  /ENG/CERES/clouds/data/ancillary/static/footprint/CER_FPSF_TRMM-PFM-VIRS_014000.epoch
ESURF_Elevation_I           =  /ENG/CERES/clouds/data/ancillary/static/CER_EANC/CER_ELEV_CERES_00003.epoch
ESURF_PercH2O_I             =  /ENG/CERES/clouds/data/ancillary/static/CER_EANC/CER_EH2O_CERES_00003.epoch
ESURF_IGBPScID_I            =  /ENG/CERES/clouds/data/ancillary/static/CER_EANC/CER_EIGBP_CERES_011000.epoch
ESURF_Terrain_I             =  /ENG/CERES/clouds/data/ancillary/static/CER_EANC/CER_ETERR_CERES_00003.epoch
ECS_OA0063m_M               =  /ENG/CERES/clouds/data/ancillary/static/Meta/CECRH_AC.MCF
ECS_CRHU_M                  =  /ENG/CERES/clouds/data/ancillary/static/Meta/CECRHUAC.MCF
ECV_M                       =  /ENG/CERES/clouds/data/ancillary/static/Meta/CECV__AC.MCF
ECVS_M                      =  /ENG/CERES/clouds/data/ancillary/static/Meta/CECVS_AC.MCF
EIPD_M                      =  /ENG/CERES/clouds/data/ancillary/static/Meta/CEIPD_AC.MCF
EQCHG_M                     =  /ENG/CERES/clouds/data/ancillary/static/Meta/CEQCB_AC.MCF
EQCHB_M                     =  /ENG/CERES/clouds/data/ancillary/static/Meta/CEQCV_AC.MCF
FSSFI_M                     =  /ENG/CERES/clouds/data/ancillary/static/Meta/CFSSFIAB.MCF
FQC_M                       =  /ENG/CERES/clouds/data/ancillary/static/Meta/CFQC__AB.MCF
FQCI_M                      =  /ENG/CERES/clouds/data/ancillary/static/Meta/CFQCI_AB.MCF
ECV_O                       =  /ENG/CERES/clouds/data/out_comp/data/CloudVis/CER_ECV_TRMM-VIRS_SSIT_000000.1998010516
ECVS_O                      =  /ENG/CERES/clouds/data/out_comp/data/Subset/CER_ECVS_TRMM-VIRS_SSIT_000000.1998010516R
ECS_CRHU_O                  =  /ENG/CERES/clouds/data/out_comp/data/CRH_Update/CER_CRHU_TRMM-VIRS_SSIT_000000.1998010516
EQCHG_O                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCHG_TRMM-VIRS_SSIT_000000.1998010516
EQCHB_O                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCHB_TRMM-VIRS_SSIT_000000.1998010516
EOFFV_O                     =  /ENG/CERES/clouds/data/int_prod/Offline/CER_Vint_TRMM-VIRS_SSIT_000000.1998010516
EOFFC_O                     =  /ENG/CERES/clouds/data/int_prod/Offline/CER_ECRH_TRMM-VIRS_SSIT_000000.1998010516
EOFFG_O                     =  /ENG/CERES/clouds/data/int_prod/Offline/CER_EGEO_TRMM-VIRS_SSIT_000000.1998010516
EOFFA_O                     =  /ENG/CERES/clouds/data/int_prod/Offline/CER_EAOT_TRMM-VIRS_SSIT_000000.1998010516
1FSSFI_O                    =  /ENG/CERES/clouds/data/out_comp/data/SSF_Int/CER_SSFI_TRMM-PFM-VIRS_SSIT_000000.1998010516
1FQC_O                      =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_FQC_TRMM-PFM-VIRS_SSIT_000000.1998010516
1FQCI_O                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_FQCI_TRMM-PFM-VIRS_SSIT_000000.1998010516
FDebug_O                    =  /ENG/CERES/clouds/data/scr/CER_FDBOut_TRMM-PFM-VIRS_SSIT_000000.1998010516
FVIS_O                      =  /ENG/CERES/clouds/data/out_comp/data/Vis_File/VISFILE_1998010516
EIPD_O                      =  /ENG/CERES/clouds/data/int_prod/Cookie/CER_EIPD_TRMM-VIRS_SSIT_000000.1998010516
```

C.3 Sample ASCII (PCFin) File Listing for CER4.1-4.1P2

```
Generic PGE entries

Platform                    =  Terra
Instrument                  =  FM1+FM2
Imager                      =  MODIS
CERDataDate                 =  20020101
CERDataYear                 =  2002
CERDataMonth                =  01
CERDataDay                  =  01
CERHRofDay                  =  01
CERHRofMonth                =  00
PCFILE                      =  /CERES/clouds/rcf/CER4.1-4.1P2_PCF_Terra-FM1+FM2-MODIS_Beta_027033.2002010101
PGEName                     =  CER4.1-4.1P2
CC_Code                     =  027033
Software_SCCR               =  501
Ancillary_Data_SCCR         =  501
Sampling_Strategy_Input     =  Terra-FM1+FM2-MODIS
Sampling_Strategy_Output    =  Terra-FM1+FM2-MODIS
Production_Strategy_Input   =  Beta
Production_Strategy_Output  =  Beta
Input_Directory             =  /CERES/clouds/data/input
Supp__Directory             =  /CERES/clouds/data/runlogs
Ancil_Directory             =  /CERES/CERES/clouds/data/ancillary/static
Inter_Directory             =  /CERES/clouds/data/int_prod
Arch__Directory             =  /CERES/clouds/data/out_comp/data
Temp__Directory             =  /CERES/clouds/data/scr
LogFile_Directory           =  /CERES/clouds/data/runlogs
LogStat                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P2_LogStatus_Terra-FM1+FM2-MODIS_Beta_027033.2002010101
LogRept                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P2_LogReport_Terra-FM1+FM2-MODIS_Beta_027033.2002010101
LogUser                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P2_LogUser_Terra-FM1+FM2-MODIS_Beta_027033.2002010101
TmpStat                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P2_TmpStatus_Terra-FM1+FM2-MODIS_Beta_027033.2002010101
TmpRept                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P2_TmpReport_Terra-FM1+FM2-MODIS_Beta_027033.2002010101
TmpUser                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P2_TmpUser_Terra-FM1+FM2-MODIS_Beta_027033.2002010101
MailFile                    =  /CERES/clouds/data/runlogs/CER4.1-4.1P2_Mailfile_Terra-FM1+FM2-MODIS_Beta_027033.2002010101
ShmMem                      =  /CERES/clouds/data/runlogs/CER4.1-4.1P2_ShmMem
MCFWriteScratch             =  /CERES/clouds/data/scr/CER4.1-4.1P2_MCFWrite.Terra-FM1+FM2-MODIS_Beta_027033.2002010101
MCFGetScratch               =  /CERES/clouds/data/scr/CER4.1-4.1P2_MCFScratch.Terra-FM1+FM2-MODIS_Beta_027033.2002010101
MCFTemplate                 =  /CERES/lib/rcf/MCF.template
TK10301                     =  /usr/local/TOOLKIT/database/sgi64/TD/leapsec.dat
TK10401                     =  /usr/local/TOOLKIT/database/sgi64/CSC/utcpole.dat
TK10402                     =  /usr/local/TOOLKIT/database/sgi64/CSC/earthfigure.dat
TK10601                     =  /usr/local/TOOLKIT/database/sgi64/CBP/de200.eos
TK10801                     =  /usr/local/TOOLKIT/database/common/EPH/sc_tags.dat
TK11001                     =  /usr/local/TOOLKIT/database/common/CUC/udunits.dat

PGE Specific entries

SubsetStrategy              =  n
ThinningValue               =  2
MultipleInstrument          =  y
Imager_File_P50             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0050.004.2003108183308.hdf
Imager_File_P55             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0055.004.2003108183308.hdf
Imager_File_T00             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0100.004.2003108183328.hdf
Imager_File_T05             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0105.004.2003108183348.hdf
Imager_File_T10             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0110.004.2003108183439.hdf
Imager_File_T15             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0115.004.2003108183439.hdf
Imager_File_T20             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0120.004.2003108183449.hdf
Imager_File_T25             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0125.004.2003108183509.hdf
Imager_File_T30             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0130.004.2003108183509.hdf
Imager_File_T35             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0135.004.2003108183509.hdf
Imager_File_T40             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0140.004.2003108183519.hdf
Imager_File_T45             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0145.004.2003108183539.hdf
Imager_File_T50             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0150.004.2003108190132.hdf
Imager_File_T55             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0155.004.2003108190542.hdf
Imager_File_N00             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0200.004.2003108192835.hdf
Imager_File_N05             =  /CERES/clouds/data/input/MODIS/2002001/MOD02SS1.S2002001.0205.004.2003108193006.hdf
GeoLoc_File_P50             =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0050.004.2003108180233.hdf
GeoLoc_File_P55             =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0055.004.2003108175817.hdf
GeoLoc_File_T00             =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0100.004.2003108180037.hdf
GeoLoc_File_T05             =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0105.004.2003108180230.hdf
GeoLoc_File_T10             =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0110.004.2003108175556.hdf
GeoLoc_File_T15             =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0115.004.2003108175738.hdf
GeoLoc_File_T20             =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0120.004.2003108175925.hdf
GeoLoc_File_T25             =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0125.004.2003108175556.hdf
GeoLoc_File_T30             =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0130.004.2003108175738.hdf
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GeoLoc_File_T35          =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0135.004.2003108175918.hdf
GeoLoc_File_T40          =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0140.004.2003108175629.hdf
GeoLoc_File_T45          =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0145.004.2003108175825.hdf
GeoLoc_File_T50          =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0150.004.2003108180017.hdf
GeoLoc_File_T55          =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0155.004.2003108184252.hdf
GeoLoc_File_N00          =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0200.004.2003108184504.hdf
GeoLoc_File_N05          =  /CERES/clouds/data/input/MODIS/2002001/MOD03.A2002001.0205.004.2003108184714.hdf
AerLoc_File_P50          =  /CERES/clouds/data/input/MODIS/2002001/MOD04_L2.A2002001.0050.004.2003182105653.hdf
AerLoc_File_P55          =  /CERES/clouds/data/input/MODIS/2002001/MOD04_L2.A2002001.0055.004.2003182110831.hdf
AerLoc_File_T00          =  /CERES/clouds/data/input/MODIS/2002001/MOD04_L2.A2002001.0100.004.2003182110449.hdf
AerLoc_File_T05          =  dummy
AerLoc_File_T10          =  dummy
AerLoc_File_T15          =  dummy
AerLoc_File_T20          =  dummy
AerLoc_File_T25          =  dummy
AerLoc_File_T30          =  dummy
AerLoc_File_T35          =  dummy
AerLoc_File_T40          =  dummy
AerLoc_File_T45          =  dummy
AerLoc_File_T50          =  dummy
AerLoc_File_T55          =  dummy
AerLoc_File_N00          =  /CERES/clouds/data/input/MODIS/2002001/MOD04_L2.A2002001.0200.004.2003182110657.hdf
AerLoc_File_N05          =  /CERES/clouds/data/input/MODIS/2002001/MOD04_L2.A2002001.0205.004.2003182100645.hdf
Ephemeris_Prev           =  /dev/null
Ephemeris_Curr           =  /dev/null
Ephemeris_Next           =  /dev/null
Attitude_Prev            =  /dev/null
Attitude_Curr            =  /dev/null
Attitude_Next            =  /dev/null
ECS_OA0063m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063m_Terra-MODIS_StartUp_015000.XXXX01
ECS_OA0063s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063s_015000.XXXX01
ECS_OA0213m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0213m_Terra-MODIS_StartUp_015000.XXXX01
ECS_OA0213s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0213s_015000.XXXX01
ECS_OA0160m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160m_Terra-MODIS_StartUp_015000.XXXX01
ECS_OA0160s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160s_015000.XXXX01
ECS_OA1663m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663m_015000.XXXX01
ECS_OA1663s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663s_015000.XXXX01
ECS_BT1080m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080m_015000.XXXX01
ECS_BT1080s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080s_015000.XXXX01
ESURF_EM0375_I           =  /CERES/clouds/data/ancillary/static/CER_EM/CER_EM0375_CERES_015000.XXXX01
ESURF_EM1080_I           =  /CERES/clouds/data/ancillary/static/CER_EM/CER_EM1080_CERES_015000.XXXX01
ESURF_EM1190_I           =  /CERES/clouds/data/ancillary/static/CER_EM/CER_EM1190_CERES_015000.XXXX01
ESURF_EM0855_I           =  /CERES/clouds/data/ancillary/static/CER_EM/CER_EM0855_CERES_015000.XXXX01
ESURF_Snow_I             =  /CERES/clouds/data/out_comp/data/CER_ESAI/CER_ESNOW_CERES_NSIDC-NESDIS_020018.20020101
ESURF_Ice_I              =  /CERES/clouds/data/out_comp/data/CER_ESAI/CER_EICE_CERES_NSIDC-NESDIS_020018.20020101
1EMOA_I                  =  /CERES/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002010101
2EMOA_I                  =  /CERES/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002010100
3EMOA_I                  =  /CERES/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002010106
4EMOA_I                  =  /CERES/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002010112
5EMOA_I                  =  /CERES/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_DAO-GEOS4_016023.2002010118
EMOA_CorrectionM_I       =  /CERES/clouds/data/ancillary/static/CER_EDI/CER_EDiCorrm_DAO_015000.XXXX01
EMOA_WaterCover_I        =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_EMOAW_DAO_015000.epoch
1FIES_I                  =  /CERES/instrument/data/int_prod/CER_IES_Terra-FM1_Edition2_026025.2002010101
2FIES_I                  =  /CERES/instrument/data/int_prod/CER_IES_Terra-FM2_Edition2_026025.2002010101
EPARAM_I                 =  /CERES/clouds/data/ancillary/static/Tables/CER_EPARAM_Terra-MODIS.epoch
EICF_I                   =  /CERES/clouds/data/ancillary/static/Tables/CER_EICF_Terra-MODIS_014000.epoch
EAI_CORRK01_I            =  /CERES/clouds/data/ancillary/static/Vint/CER_ECOEFS_MODIS_CORRK.epoch
EAI_CORRK02_I            =  /CERES/clouds/data/ancillary/static/Vint/SkinTderiv.ch4.allvz.dy.dat
EAI_CORRK03_I            =  /CERES/clouds/data/ancillary/static/Vint/LNPWderiv.ch4.allvz.dy.dat
EAI_MASK01_I             =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_ChiThrTable_015000.epoch
EAI_MASK02_I             =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_CERESThres_015000.epoch
EAI_WELCH01_I            =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_WELCHMASK_Terra-MODIS_015000.epoch
EAI_WELCH02_I            =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_WELCHTERR_015000.epoch
EAI_STOWE01_I            =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_Stowe-0063_015000.epoch
EAI_STOWE02_I            =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_Stowe-0160_015000.epoch
EAI_VINT01_I             =  /CERES/clouds/data/ancillary/static/Vint/raybref.dat
EAI_VINT02_I             =  /CERES/clouds/data/ancillary/static/Vint/modelsnew.dat
EAI_VINT03_I             =  /CERES/clouds/data/ancillary/static/Vint/CER_EMODEL_MODIS_0375.epoch
EAI_VINT04_I             =  /CERES/clouds/data/ancillary/static/Vint/CER_EDM_MODIS.epoch
EAI_VINT05_I             =  /CERES/clouds/data/ancillary/static/Vint/channel2.coefs
EAI_VINT06_I             =  /CERES/clouds/data/ancillary/static/Vint/channel3.coefs
EAI_VINT07_I             =  /CERES/clouds/data/ancillary/static/Vint/channel4.coefs
EAI_VINT08_I             =  /CERES/clouds/data/ancillary/static/Vint/channel5.coefs
EAI_VINT09_I             =  /CERES/clouds/data/ancillary/static/Vint/bdnnref.dat
EAI_VINT10_I             =  /CERES/clouds/data/ancillary/static/Vint/ratios1_6.dat
EAI_VINT11_I             =  /CERES/clouds/data/ancillary/static/Vint/dxalbmean.dat
EAI_VINT12_I             =  /CERES/clouds/data/ancillary/static/Vint/ERBEBDMreformatted.dat
EAI_VINT13_I             =  /CERES/clouds/data/ancillary/static/Vint/table-invcld
EAI_VINT14_I             =  /CERES/clouds/data/ancillary/static/Vint/CER_EMODEL_MODIS_0160.epoch
EAI_VINT15_I             =  /CERES/clouds/data/ancillary/static/Vint/all_dif_coefs
EAI_CO2SLICING01_I       =  /CERES/clouds/data/ancillary/static/CO2/modisbnd.am1
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EAI_CO2SLICING02_I          =  /CERES/clouds/data/ancillary/static/CO2/modisdry.am1
EAI_CO2SLICING03_I          =  /CERES/clouds/data/ancillary/static/CO2/modisozo.am1
EAI_CO2SLICING04_I          =  /CERES/clouds/data/ancillary/static/CO2/modiswco.am1
EAI_CO2SLICING05_I          =  /CERES/clouds/data/ancillary/static/CO2/modiswtl.am1
EAI_CO2SLICING06_I          =  /CERES/clouds/data/ancillary/static/CO2/modiswts.am1
EDM_0063_ALT1_I             =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM0063_NOAA9-AVHRR_015000.epoch
EDM_0063_ALT2_I             =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM0063_Terra-MODIS_015000.epoch
EDM_0160_I                  =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM0160_Terra-MODIS_015000.epoch
EDM_1663_I                  =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM1663_Terra-MODIS_015000.epoch
EBDM_0063_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0063_015000.epoch
EBDM_0083_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0083_015000.epoch
EBDM_0160_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0160_015000.epoch
EBDM_0213_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0213_015000.epoch
ESIM0063_I                  =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0063_015000.epoch
ESIM0160S_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0160S_015000.epoch
ESIM0160W_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0160W_015000.epoch
ESIM0375S_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0375S_015000.epoch
ESIM0375W_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0375W_015000.epoch
ESIM0213S_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0213S_015000.epoch
ESIM0213W_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0213W_015000.epoch
ECV_SUBSET_I                =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_SubsetRegions_015000.epoch
FPARAM_I                    =  /CERES/clouds/data/ancillary/static/footprint/CER_FPARAM_CERES_017000.epoch
FDebug_I                    =  /CERES/clouds/data/ancillary/static/footprint/CER_FDBIn_Terra-FM1+FM2-MODIS_Beta_027033.epoch
FREFL_I                     =  /CERES/clouds/data/ancillary/static/CER_FANC/CER_FREFL_CERES_000005.epoch
FAI_STOWE01_I               =  /CERES/clouds/data/ancillary/static/footprint/CER_FAOT063_CERES_016000.epoch
FAI_STOWE02_I               =  /CERES/clouds/data/ancillary/static/footprint/CER_FAOT160_CERES_016000.epoch
1FPSF_I                     =  /CERES/clouds/data/ancillary/static/footprint/CER_FPSF4_Terra-FM1-MODIS_014000.epoch
2FPSF_I                     =  /CERES/clouds/data/ancillary/static/footprint/CER_FPSF4_Terra-FM2-MODIS_014000.epoch
ESURF_Elevation_I           =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_ELEV_CERES_00003.epoch
ESURF_PercH2O_I             =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_EH2O_CERES_00003.epoch
ESURF_IGBPScID_I            =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_EIGBP_CERES_011000.epoch
ESURF_Terrain_I             =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_ETERR_CERES_00003.epoch
ECS_OA0063m_M               =  /CERES/clouds/data/ancillary/static/Meta/CECRH_AC.MCF
ECS_OA0213m_M               =  /CERES/clouds/data/ancillary/static/Meta/CECRH_AC.MCF
ECS_CRHU_WL0063_M           =  /CERES/clouds/data/ancillary/static/Meta/CECRHUAC.MCF
ECS_CRHU_WL0213_M           =  /CERES/clouds/data/ancillary/static/Meta/CECRHUAC.MCF
ECV_M                       =  /CERES/clouds/data/ancillary/static/Meta/CECV__AC.MCF
ECVS_M                      =  /CERES/clouds/data/ancillary/static/Meta/CECVS_AC.MCF
EIPD_M                      =  /CERES/clouds/data/ancillary/static/Meta/CEIPD_AC.MCF
EQCHG_M                     =  /CERES/clouds/data/ancillary/static/Meta/CEQCB_AC.MCF
EQCHB_M                     =  /CERES/clouds/data/ancillary/static/Meta/CEQCV_AC.MCF
FSSFI_M                     =  /CERES/clouds/data/ancillary/static/Meta/CFSSFIAB.MCF
FQC_M                       =  /CERES/clouds/data/ancillary/static/Meta/CFQC__AB.MCF
FQCI_M                      =  /CERES/clouds/data/ancillary/static/Meta/CFQCI_AB.MCF
FSSFAI_M                    =  /CERES/clouds/data/ancillary/static/Meta/CFSSFAAB.MCF
ECV_O                       =  /CERES/clouds/data/out_comp/data/CloudVis/CER_ECV_Terra-MODIS_Beta_027033.2002010101
ECVS_O                      =  /CERES/clouds/data/out_comp/data/Subset/CER_ECVS_Terra-MODIS_Beta_027033.2002010101R
ECS_CRHU_WL0063_O           =  /CERES/clouds/data/out_comp/data/CRH_Update/CER_CRHU-WL0063_Terra-MODIS_Beta_027033.2002010101
ECS_CRHU_WL0213_O           =  /CERES/clouds/data/out_comp/data/CRH_Update/CER_CRHU-WL0160_Terra-MODIS_Beta_027033.2002010101
EQCHG_O                     =  /CERES/clouds/data/out_comp/QA_Reports/CER_EQCHG_Terra-MODIS_Beta_027033.2002010101
EQCHB_O                     =  /CERES/clouds/data/out_comp/QA_Reports/CER_EQCHB_Terra-MODIS_Beta_027033.2002010101
EOFFV_O                     =  /CERES/clouds/data/int_prod/Offline/CER_Vint_Terra-MODIS_Beta_027033.2002010101
EOFFC_O                     =  /CERES/clouds/data/int_prod/Offline/CER_ECRH_Terra-MODIS_Beta_027033.2002010101
EOFFG_O                     =  /CERES/clouds/data/int_prod/Offline/CER_EGEO_Terra-MODIS_Beta_027033.2002010101
EOFFA_O                     =  /CERES/clouds/data/int_prod/Offline/CER_EAOT_Terra-MODIS_Beta_027033.2002010101
1FSSFI_O                    =  /CERES/clouds/data/out_comp/data/SSF_Int/CER_SSFI_Terra-FM1-MODIS_Beta_027033.2002010101
2FSSFI_O                    =  /CERES/clouds/data/out_comp/data/SSF_Int/CER_SSFI_Terra-FM2-MODIS_Beta_027033.2002010101
1FQC_O                      =  /CERES/clouds/data/out_comp/QA_Reports/CER_FQC_Terra-FM1-MODIS_Beta_027033.2002010101
2FQC_O                      =  /CERES/clouds/data/out_comp/QA_Reports/CER_FQC_Terra-FM2-MODIS_Beta_027033.2002010101
1FQCI_O                     =  /CERES/clouds/data/out_comp/QA_Reports/CER_FQCI_Terra-FM1-MODIS_Beta_027033.2002010101
2FQCI_O                     =  /CERES/clouds/data/out_comp/QA_Reports/CER_FQCI_Terra-FM2-MODIS_Beta_027033.2002010101
1FSSFAI_O                   =  /CERES/clouds/data/out_comp/data/SSF_Int/CER_SSFAI_Terra-FM1-MODIS_Beta_027033.2002010101
2FSSFAI_O                   =  /CERES/clouds/data/out_comp/data/SSF_Int/CER_SSFAI_Terra-FM2-MODIS_Beta_027033.2002010101
FDebug_O                    =  /CERES/clouds/data/scr/CER_FDBOut_Terra-FM1+FM2-MODIS_Beta_027033.2002010101
FVIS_O                      =  /CERES/clouds/data/out_comp/data/Vis_File/VISFILE_2002010101
EIPD_O                      =  /CERES/clouds/data/int_prod/Cookie/CER_EIPD_Terra-MODIS_Beta_027033.2002010101
```

C.4 Sample ASCII (PCFin) File Listing for CER4.1-4.1P3

```
Generic PGE entries

Platform                    =  Aqua
Instrument                  =  FM4
Imager                      =  MODIS
CERDataDate                 =  20030121
CERDataYear                 =  2003
CERDataMonth                =  01
```

```
CERDataDay                  =  21
CERHRofDay                  =  01
CERHRofMonth                =  00
PCFILE                      =  /CERES/clouds/rcf/CER4.1-4.1P3_PCF_Aqua-FM4-MODIS_SSIT_000000.2003012101
PGEName                     =  CER4.1-4.1P3
CC_Code                     =  000000
Software_SCCR               =  00262
Ancillary_Data_SCCR         =  00262
Sampling_Strategy_Input     =  Aqua-FM4-MODIS
Sampling_Strategy_Output    =  Aqua-FM4-MODIS
Production_Strategy_Input   =  SSIT
Production_Strategy_Output  =  SSIT
Input_Directory             =  /CERES/clouds/data/input
Supp__Directory             =  /CERES/clouds/data/runlogs
Ancil_Directory             =  /CERES/clouds/data/ancillary/static
Inter_Directory             =  /CERES/clouds/data/int_prod
Arch__Directory             =  /CERES/clouds/data/out_comp/data
Temp__Directory             =  /CERES/clouds/data/scr
LogFile_Directory           =  /CERES/clouds/data/runlogs
LogStat                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P3_LogStatus_Aqua-FM4-MODIS_SSIT_000000.2003012101
LogRept                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P3_LogReport_Aqua-FM4-MODIS_SSIT_000000.2003012101
LogUser                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P3_LogUser_Aqua-FM4-MODIS_SSIT_000000.2003012101
TmpStat                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P3_TmpStatus_Aqua-FM4-MODIS_SSIT_000000.2003012101
TmpRept                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P3_TmpReport_Aqua-FM4-MODIS_SSIT_000000.2003012101
TmpUser                     =  /CERES/clouds/data/runlogs/CER4.1-4.1P3_TmpUser_Aqua-FM4-MODIS_SSIT_000000.2003012101
MailFile                    =  /CERES/clouds/data/runlogs/CER4.1-4.1P3_Mailfile_Aqua-FM4-MODIS_SSIT_000000.2003012101
ShmMem                      =  /CERES/clouds/data/runlogs/CER4.1-4.1P3_ShmMem
MCFWriteScratch             =  /CERES/clouds/data/scr/CER4.1-4.1P3_MCFWrite.Aqua-FM4-MODIS_SSIT_000000.2003012101
MCFGetScratch               =  /CERES/clouds/data/scr/CER4.1-4.1P3_MCFScratch.Aqua-FM4-MODIS_SSIT_000000.2003012101
MCFTemplate                 =  /CERES/clouds-g/lib/rcf/MCF.template
TK10301                     =  /opt/net/TOOLKIT/database/sgi64/TD/leapsec.dat
TK10401                     =  /opt/net/TOOLKIT/database/sgi64/CSC/utcpole.dat
TK10402                     =  /opt/net/TOOLKIT/database/sgi64/CSC/earthfigure.dat
TK10601                     =  /opt/net/TOOLKIT/database/sgi64/CBP/de200.eos
TK10801                     =  /opt/net/TOOLKIT/database/common/EPH/sc_tags.dat
TK11001                     =  /opt/net/TOOLKIT/database/common/CUC/udunits.dat

PGE Specific entries

SubsetStrategy              =  n
ThinningValue               =  2
MultipleInstrument          =  n
Imager_File_P50             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0050.003.2003022055351.hdf
Imager_File_P55             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0055.003.2003022055632.hdf
Imager_File_T00             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0100.003.2003022055652.hdf
Imager_File_T05             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0105.003.2003022055742.hdf
Imager_File_T10             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0110.003.2003022055822.hdf
Imager_File_T15             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0115.003.2003022055952.hdf
Imager_File_T20             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0120.003.2003022055952.hdf
Imager_File_T25             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0125.003.2003022060523.hdf
Imager_File_T30             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0130.003.2003022060613.hdf
Imager_File_T35             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0135.003.2003022060623.hdf
Imager_File_T40             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0140.003.2003022060633.hdf
Imager_File_T45             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0145.003.2003022060643.hdf
Imager_File_T50             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0150.003.2003022061234.hdf
Imager_File_T55             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0155.003.2003022061254.hdf
Imager_File_N00             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0200.003.2003022061034.hdf
Imager_File_N05             =  /CERES/clouds/data/input/MODIS/2003021/MYD02SS1.S2003021.0205.003.2003022061054.hdf
GeoLoc_File_P50             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0050.003.2003021200222.hdf
GeoLoc_File_P55             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0055.003.2003021195946.hdf
GeoLoc_File_T00             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0100.003.2003021200149.hdf
GeoLoc_File_T05             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0105.003.2003021200348.hdf
GeoLoc_File_T10             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0110.003.2003021200122.hdf
GeoLoc_File_T15             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0115.003.2003021200154.hdf
GeoLoc_File_T20             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0120.003.2003021200235.hdf
GeoLoc_File_T25             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0125.003.2003021200215.hdf
GeoLoc_File_T30             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0130.003.2003021200249.hdf
GeoLoc_File_T35             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0135.003.2003021200326.hdf
GeoLoc_File_T40             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0140.003.2003021200238.hdf
GeoLoc_File_T45             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0145.003.2003021200317.hdf
GeoLoc_File_T50             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0150.003.2003021200349.hdf
GeoLoc_File_T55             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0155.003.2003021200355.hdf
GeoLoc_File_N00             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0200.003.2003021200444.hdf
GeoLoc_File_N05             =  /CERES/clouds/data/input/MODIS/2003021/MYD03.A2003021.0205.003.2003021200612.hdf
AerLoc_File_P50             =  /CERES/clouds/data/input/MODIS/2003021/MYD04_L2.A2003021.0050.003.2003023214217.hdf
AerLoc_File_P55             =  /CERES/clouds/data/input/MODIS/2003021/MYD04_L2.A2003021.0055.003.2003023214227.hdf
AerLoc_File_T00             =  /CERES/clouds/data/input/MODIS/2003021/MYD04_L2.A2003021.0100.003.2003023214237.hdf
AerLoc_File_T05             =  /CERES/clouds/data/input/MODIS/2003021/MYD04_L2.A2003021.0105.003.2003023214209.hdf
AerLoc_File_T10             =  dummy
AerLoc_File_T15             =  dummy
AerLoc_File_T20             =  dummy
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AerLoc_File_T25          =  dummy
AerLoc_File_T30          =  dummy
AerLoc_File_T35          =  dummy
AerLoc_File_T40          =  dummy
AerLoc_File_T45          =  dummy
AerLoc_File_T50          =  dummy
AerLoc_File_T55          =  dummy
AerLoc_File_N00          =  dummy
AerLoc_File_N05          =  /CERES/clouds/data/input/MODIS/2003021/MYD04_L2.A2003021.0205.003.2003023214915.hdf
Ephemeris_Prev           =  /dev/null
Ephemeris_Curr           =  /dev/null
Ephemeris_Next           =  /dev/null
Attitude_Prev            =  /dev/null
Attitude_Curr            =  /dev/null
Attitude_Next            =  /dev/null
ECS_OA0063m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063m_Terra-MODIS_StartUp_015000.XXXX01
ECS_OA0063s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063s_015000.XXXX01
ECS_OA0213m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0213m_Terra-MODIS_StartUp_015000.XXXX01
ECS_OA0213s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0213s_015000.XXXX01
ECS_OA0160m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160m_Terra-MODIS_StartUp_015000.XXXX01
ECS_OA0160s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160s_015000.XXXX01
ECS_OA1663m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663m_015000.XXXX01
ECS_OA1663s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663s_015000.XXXX01
ECS_BT1080m_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080m_015000.XXXX01
ECS_BT1080s_I            =  /CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080s_015000.XXXX01
ESURF_EM0375_I           =  /CERES/clouds/data/ancillary/static/CER_EM/CER_EM0375_CERES_015000.XXXX01
ESURF_EM1080_I           =  /CERES/clouds/data/ancillary/static/CER_EM/CER_EM1080_CERES_015000.XXXX01
ESURF_EM1190_I           =  /CERES/clouds/data/ancillary/static/CER_EM/CER_EM1190_CERES_015000.XXXX01
ESURF_EM0855_I           =  /CERES/clouds/data/ancillary/static/CER_EM/CER_EM0855_CERES_015000.XXXX01
ESURF_Snow_I             =  /CERES/clouds/data/out_comp/data/CER_ESAI/CER_ESNOW_CERES_NSIDC-NESDIS_020019.20030121
ESURF_Ice_I              =  /CERES/clouds/data/out_comp/data/CER_ESAI/CER_EICE_CERES_NSIDC-NESDIS_020019.20030121
1EMOA_I                  =  /CERES/clouds/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS4_016020.2003012101
2EMOA_I                  =  /CERES/clouds/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS4_016020.2003012100
3EMOA_I                  =  /CERES/clouds/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS4_016020.2003012106
4EMOA_I                  =  /CERES/clouds/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS4_016020.2003012112
5EMOA_I                  =  /CERES/clouds/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS4_016020.2003012118
EMOA_CorrectionM_I       =  /CERES/clouds/data/ancillary/static/CER_EDI/CER_EDiCorrm_ECMWF_015000.XXXX01
EMOA_WaterCover_I        =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_EMOAW_ECMWF_015000.epoch
1FIES_I                  =  /CERES/clouds/data/int_prod/CER_IES_Aqua-FM4_Edition1_026025.2003012101
EPARAM_I                 =  /CERES/clouds/data/ancillary/static/Tables/CER_EPARAM_Aqua-MODIS.epoch
EICF_I                   =  /CERES/clouds/data/ancillary/static/Tables/CER_EICF_Aqua-MODIS_014000.epoch
EAI_CORRK01_I            =  /CERES/clouds/data/ancillary/static/Vint/CER_ECOEFS_MODIS_CORRK.epoch
EAI_CORRK02_I            =  /CERES/clouds/data/ancillary/static/Vint/SkinTderiv.ch4.allvz.dy.dat
EAI_CORRK03_I            =  /CERES/clouds/data/ancillary/static/Vint/LNPWderiv.ch4.allvz.dy.dat
EAI_MASK01_I             =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_ChiThrTable_015000.epoch
EAI_MASK02_I             =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_CERESThres_015000.epoch
EAI_WELCH01_I            =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_WELCHMASK_Aqua-MODIS_015000.epoch
EAI_WELCH02_I            =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_WELCHTERR_015000.epoch
EAI_STOWE01_I            =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_Stowe-0063_015000.epoch
EAI_STOWE02_I            =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_Stowe-0160_015000.epoch
EAI_VINT01_I             =  /CERES/clouds/data/ancillary/static/Vint/raybref.dat
EAI_VINT02_I             =  /CERES/clouds/data/ancillary/static/Vint/modelsnew.dat
EAI_VINT03_I             =  /CERES/clouds/data/ancillary/static/Vint/CER_EMODEL_MODIS_0375.epoch
EAI_VINT04_I             =  /CERES/clouds/data/ancillary/static/Vint/CER_EDM_MODIS.epoch
EAI_VINT05_I             =  /CERES/clouds/data/ancillary/static/Vint/channel2.coefs
EAI_VINT06_I             =  /CERES/clouds/data/ancillary/static/Vint/channel3.coefs
EAI_VINT07_I             =  /CERES/clouds/data/ancillary/static/Vint/channel4.coefs
EAI_VINT08_I             =  /CERES/clouds/data/ancillary/static/Vint/channel5.coefs
EAI_VINT09_I             =  /CERES/clouds/data/ancillary/static/Vint/bdnnref.dat
EAI_VINT10_I             =  /CERES/clouds/data/ancillary/static/Vint/ratios1_6.dat
EAI_VINT11_I             =  /CERES/clouds/data/ancillary/static/Vint/dxalbmean.dat
EAI_VINT12_I             =  /CERES/clouds/data/ancillary/static/Vint/ERBEBDMreformatted.dat
EAI_VINT13_I             =  /CERES/clouds/data/ancillary/static/Vint/table-invcld
EAI_VINT14_I             =  /CERES/clouds/data/ancillary/static/Vint/CER_EMODEL_MODIS_0213.epoch
EAI_VINT15_I             =  /CERES/clouds/data/ancillary/static/Vint/all_dif_coefs
EAI_CO2SLICING01_I       =  /CERES/clouds/data/ancillary/static/CO2/modisbnd.am1
EAI_CO2SLICING02_I       =  /CERES/clouds/data/ancillary/static/CO2/modisdry.am1
EAI_CO2SLICING03_I       =  /CERES/clouds/data/ancillary/static/CO2/modisozo.am1
EAI_CO2SLICING04_I       =  /CERES/clouds/data/ancillary/static/CO2/modiswco.am1
EAI_CO2SLICING05_I       =  /CERES/clouds/data/ancillary/static/CO2/modiswtl.am1
EAI_CO2SLICING06_I       =  /CERES/clouds/data/ancillary/static/CO2/modiswts.am1
EDM_0063_ALT1_I          =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM0063_NOAA9-AVHRR_015000.epoch
EDM_0063_ALT2_I          =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM0063_Aqua-MODIS_015000.epoch
EDM_0160_I               =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM0160_Aqua-MODIS_015000.epoch
EDM_1663_I               =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_DM1663_Aqua-MODIS_015000.epoch
EBDM_0063_I              =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0063_015000.epoch
EBDM_0083_I              =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0083_015000.epoch
EBDM_0160_I              =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0160_015000.epoch
EBDM_0213_I              =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_BDM0213_015000.epoch
ESIM0063_I               =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0063_015000.epoch
ESIM0160S_I              =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0160S_015000.epoch
```

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ESIM0160W_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0160W_015000.epoch
ESIM0375S_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0375S_015000.epoch
ESIM0375W_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0375W_015000.epoch
ESIM0213S_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0213S_015000.epoch
ESIM0213W_I                 =  /CERES/clouds/data/ancillary/static/BDM/CER_EAI_TOAREFABLSIMM0213W_015000.epoch
ECV_SUBSET_I                =  /CERES/clouds/data/ancillary/static/Tables/CER_ESCF_SubsetRegions_015000.epoch
FPARAM_I                    =  /CERES/clouds/data/ancillary/static/footprint/CER_FPARAM_CERES_017000.epoch
FDebug_I                    =  /CERES/clouds/data/ancillary/static/footprint/CER_FDBIn_Aqua-FM4-MODIS_SSIT_000000.epoch
FREFL_I                     =  /CERES/clouds/data/ancillary/static/CER_FANC/CER_FREFL_CERES_000005.epoch
FAI_STOWE01_I               =  /CERES/clouds/data/ancillary/static/footprint/CER_FAOT063_CERES_016000.epoch
FAI_STOWE02_I               =  /CERES/clouds/data/ancillary/static/footprint/CER_FAOT213_CERES_016000.epoch
1FPSF_I                     =  /CERES/clouds/data/ancillary/static/footprint/CER_FPSF4_Aqua-FM4-MODIS_014000.epoch
ESURF_Elevation_I           =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_ELEV_CERES_00003.epoch
ESURF_PercH2O_I             =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_EH2O_CERES_00003.epoch
ESURF_IGBPScID_I            =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_EIGBP_CERES_011000.epoch
ESURF_Terrain_I             =  /CERES/clouds/data/ancillary/static/CER_EANC/CER_ETERR_CERES_00003.epoch
ECS_OA0063m_M               =  /CERES/clouds/data/ancillary/static/Meta/CECRH_AC.MCF
ECS_OA0213m_M               =  /CERES/clouds/data/ancillary/static/Meta/CECRH_AC.MCF
ECS_CRHU_WL0063_M           =  /CERES/clouds/data/ancillary/static/Meta/CECRHUAC.MCF
ECS_CRHU_WL0213_M           =  /CERES/clouds/data/ancillary/static/Meta/CECRHUAC.MCF
ECV_M                       =  /CERES/clouds/data/ancillary/static/Meta/CECV__AC.MCF
ECVS_M                      =  /CERES/clouds/data/ancillary/static/Meta/CECVS_AC.MCF
EIPD_M                      =  /CERES/clouds/data/ancillary/static/Meta/CEIPD_AC.MCF
EQCHG_M                     =  /CERES/clouds/data/ancillary/static/Meta/CEQCB_AC.MCF
EQCHB_M                     =  /CERES/clouds/data/ancillary/static/Meta/CEQCV_AC.MCF
FSSFI_M                     =  /CERES/clouds/data/ancillary/static/Meta/CFSSFIAB.MCF
FQC_M                       =  /CERES/clouds/data/ancillary/static/Meta/CFQC__AB.MCF
FQCI_M                      =  /CERES/clouds/data/ancillary/static/Meta/CFQCI_AB.MCF
FSSFAI_M                    =  /CERES/clouds/data/ancillary/static/Meta/CFSSFAAB.MCF
ECV_O                       =  /CERES/clouds/data/out_comp/data/CloudVis/CER_ECV_Aqua-MODIS_SSIT_000000.2003012101
ECVS_O                      =  /CERES/clouds/data/out_comp/data/Subset/CER_ECVS_Aqua-MODIS_SSIT_000000.2003012101R
ECS_CRHU_WL0063_O           =  /CERES/clouds/data/out_comp/data/CRH_Update/CER_CRHU-WL0063_Aqua-MODIS_SSIT_000000.2003012101
ECS_CRHU_WL0213_O           =  /CERES/clouds/data/out_comp/data/CRH_Update/CER_CRHU-WL0213_Aqua-MODIS_SSIT_000000.2003012101
EQCHG_O                     =  /CERES/clouds/data/out_comp/QA_Reports/CER_EQCHG_Aqua-MODIS_SSIT_000000.2003012101
EQCHB_O                     =  /CERES/clouds/data/out_comp/QA_Reports/CER_EQCHB_Aqua-MODIS_SSIT_000000.2003012101
EOFFV_O                     =  /CERES/clouds/data/int_prod/Offline/CER_Vint_Aqua-MODIS_SSIT_000000.2003012101
EOFFC_O                     =  /CERES/clouds/data/int_prod/Offline/CER_ECRH_Aqua-MODIS_SSIT_000000.2003012101
EOFFG_O                     =  /CERES/clouds/data/int_prod/Offline/CER_EGEO_Aqua-MODIS_SSIT_000000.2003012101
EOFFA_O                     =  /CERES/clouds/data/int_prod/Offline/CER_EAOT_Aqua-MODIS_SSIT_000000.2003012101
1FSSFI_O                    =  /CERES/clouds/data/out_comp/data/SSF_Int/CER_SSFI_Aqua-FM4-MODIS_SSIT_000000.2003012101
1FQC_O                      =  /CERES/clouds/data/out_comp/QA_Reports/CER_FQC_Aqua-FM4-MODIS_SSIT_000000.2003012101
1FQCI_O                     =  /CERES/clouds/data/out_comp/QA_Reports/CER_FQCI_Aqua-FM4-MODIS_SSIT_000000.2003012101
1FSSFAI_O                   =  /CERES/clouds/data/out_comp/data/SSF_Int/CER_SSFAI_Aqua-FM4-MODIS_SSIT_000000.2003012101
FDebug_O                    =  /CERES/clouds/data/scr/CER_FDBOut_Aqua-FM4-MODIS_SSIT_000000.2003012101
FVIS_O                      =  /CERES/clouds/data/out_comp/data/Vis_File/VISFILE_2003012101
EIPD_O                      =  /CERES/clouds/data/int_prod/Cookie/CER_EIPD_Aqua-MODIS_SSIT_000000.2003012101Generic
```

C.5 Sample ASCII (PCFin) File Listing for CER4.1-4.2P1

```
Generic PGE entries

Platform                    =  Aqua
Instrument                  =  FM3+FM4
Imager                      =  MODIS
CERDataDate                 =  20010501
CERDataYear                 =  2001
CERDataMonth                =  05
CERDataDay                  =  01
CERHRofDay                  =  00
CERHRofMonth                =  00
PCFILE                      =  /ENG/CERES/clouds/rcf/CER4.1-4.2P1_PCF_Terra-MODIS_SSIT_000000.20010501
PGEName                     =  CER4.1-4.1P3
CC_Code                     =  000000
Software_SCCR               =  00262
Ancillary_Data_SCCR         =  00262
Sampling_Strategy_Input     =  Aqua-MODIS
Sampling_Strategy_Output    =  Aqua-MODIS
Production_Strategy_Input   =  SSIT
Production_Strategy_Output  =  SSIT
Input_Directory             =  /ENG/CERES/clouds/data/input
Supp__Directory             =  /ENG/CERES/clouds/data/runlogs
Ancil_Directory             =  /ENG/CERES/clouds/data/ancillary/static
Inter_Directory             =  /ENG/CERES/clouds/data/int_prod
Arch__Directory             =  /ENG/CERES/clouds/data/out_comp/data
Temp__Directory             =  /ENG/CERES/clouds/data/scr
LogFile_Directory           =  /ENG/CERES/clouds/data/runlogs
LogStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P1_LogStatus_Terra-MODIS_SSIT_000000.20010501
```

```
LogRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P1_LogReport_Terra-MODIS_SSIT_000000.20010501
LogUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P1_LogUser_Terra-MODIS_SSIT_000000.20010501
TmpStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P1_TmpStatus_Terra-MODIS_SSIT_000000.20010501
TmpRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P1_TmpReport_Terra-MODIS_SSIT_000000.20010501
TmpUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P1_TmpUser_Terra-MODIS_SSIT_000000.20010501
MailFile                    =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P1_Mailfile_Terra-MODIS_SSIT_000000.20010501
ShmMem                      =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P1_ShmMem
MCFWriteScratch             =  /ENG/CERES/clouds/data/scr/CER4.1-4.2P1_MCFWrite.Terra-MODIS_SSIT_000000.20010501
MCFGetScratch               =  /ENG/CERES/clouds/data/scr/CER4.1-4.2P1_MCFScratch.Terra-MODIS_SSIT_000000.20010501
MCFTemplate                 =  /ENG/CERES/lib/rcf/MCF.template
TK10301                     =  /usr/local/TOOLKIT/database/sgi64/TD/leapsec.dat
TK10401                     =  /usr/local/TOOLKIT/database/sgi64/CSC/utcpole.dat
TK10402                     =  /usr/local/TOOLKIT/database/sgi64/CSC/earthfigure.dat
TK10601                     =  /usr/local/TOOLKIT/database/sgi64/CBP/de200.eos
TK10801                     =  /usr/local/TOOLKIT/database/common/EPH/sc_tags.dat
TK11001                     =  /usr/local/TOOLKIT/database/common/CUC/udunits.dat

PGE Specific entries

ECS_OA0063m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063m_015000.XXXX05
ECS_OA0063s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063s_015000.XXXX05
ECS_OA0160m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160m_015000.XXXX05
ECS_OA0160s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160s_015000.XXXX05
ECS_OA1663m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663m_015000.XXXX05
ECS_OA1663s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663s_015000.XXXX05
ECS_BT1080m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080m_015000.XXXX05
ECS_BT1080s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080s_015000.XXXX05
ECS_CRHU_I                  =  /ENG/CERES/clouds/data/out_comp/data/CRH_Update/CER_CRHU_Terra-MODIS_SSIT_000000.20010501
EQCHG_I                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCHG_Terra-MODIS_SSIT_000000.20010501
EQCHB_I                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCHB_Terra-MODIS_SSIT_000000.20010501
EPARAM_I                    =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_EPARAM_MODIS.epoch
EQCDS_I                     =  /ENG/CERES/clouds/data/ancillary/static/SCOOL/CER_ESCF_SCOOLRegions_011000.200105
ECS_OA0063m_M               =  /ENG/CERES/clouds/data/ancillary/static/Meta/CECRH_AC.MCF
EQCDG_M                     =  /ENG/CERES/clouds/data/ancillary/static/Meta/CEQCD_AC.MCF
EQCDB_M                     =  /ENG/CERES/clouds/data/ancillary/static/Meta/CEQCDVAC.MCF
EQCDS_M                     =  /ENG/CERES/clouds/data/ancillary/static/Meta/CEQCS_AC.MCF
ECS_OA0063m_O               =  /ENG/CERES/clouds/data/out_comp/data/CER_ECS/CER_ECS-OA0063m_Terra-MODIS_SSIT_000000.20010502
ECS_BT1080m_O               =  /ENG/CERES/clouds/data/out_comp/data/CER_ECS/CER_ECS-BT1080m_Terra-MODIS_SSIT_000000.20010502
EQCDG_O                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCDG_Terra-MODIS_SSIT_000000.20010501
EQCDB_O                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCDB_Terra-MODIS_SSIT_000000.20010501
EQCDS_O                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCDS_Terra-MODIS_SSIT_000000.20010501
```

C.6 Sample ASCII (PCFin) File Listing for CER4.1-4.2P2

```
Generic PGE entries

Platform                    =  Terra
Instrument                  =  FM1+FM2
Imager                      =  MODIS
CERDataDate                 =  20010501
CERDataYear                 =  2001
CERDataMonth                =  05
CERDataDay                  =  01
CERHRofDay                  =  00
CERHRofMonth                =  00
PCFILE                      =  /ENG/CERES/clouds/rcf/CER4.1-4.2P2_PCF_Terra-MODIS_SSIT_000000.20010501
PGEName                     =  CER4.1-4.2P2
CC_Code                     =  000000
Software_SCCR               =  00262
Ancillary_Data_SCCR         =  00262
Sampling_Strategy_Input     =  Terra-MODIS
Sampling_Strategy_Output    =  Terra-MODIS
Production_Strategy_Input   =  SSIT
Production_Strategy_Output  =  SSIT
Input_Directory             =  /ENG/CERES/clouds/data/input
Supp__Directory             =  /ENG/CERES/clouds/data/runlogs
Ancil_Directory             =  /ENG/CERES/clouds/data/ancillary/static
Inter_Directory             =  /ENG/CERES/clouds/data/int_prod
Arch__Directory             =  /ENG/CERES/clouds/data/out_comp/data
Temp__Directory             =  /ENG/CERES/clouds/data/scr
LogFile_Directory           =  /ENG/CERES/clouds/data/runlogs
LogStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P2_LogStatus_Terra-MODIS_SSIT_000000.20010501
LogRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P2_LogReport_Terra-MODIS_SSIT_000000.20010501
LogUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P2_LogUser_Terra-MODIS_SSIT_000000.20010501
TmpStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P2_TmpStatus_Terra-MODIS_SSIT_000000.20010501
TmpRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P2_TmpReport_Terra-MODIS_SSIT_000000.20010501
TmpUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P2_TmpUser_Terra-MODIS_SSIT_000000.20010501
```

```
MailFile                    =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P2_Mailfile_Terra-MODIS_SSIT_000000.20010501
ShmMem                      =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.2P2_ShmMem
MCFWriteScratch             =  /ENG/CERES/clouds/data/scr/CER4.1-4.2P2_MCFWrite.Terra-MODIS_SSIT_000000.20010501
MCFGetScratch               =  /ENG/CERES/clouds/data/scr/CER4.1-4.2P2_MCFScratch.Terra-MODIS_SSIT_000000.20010501
MCFTemplate                 =  /ENG/CERES/lib/rcf/MCF.template
TK10301                     =  /usr/local/TOOLKIT/database/sgi64/TD/leapsec.dat
TK10401                     =  /usr/local/TOOLKIT/database/sgi64/CSC/utcpole.dat
TK10402                     =  /usr/local/TOOLKIT/database/sgi64/CSC/earthfigure.dat
TK10601                     =  /usr/local/TOOLKIT/database/sgi64/CBP/de200.eos
TK10801                     =  /usr/local/TOOLKIT/database/common/EPH/sc_tags.dat
TK11001                     =  /usr/local/TOOLKIT/database/common/CUC/udunits.dat

PGE Specific entries

ECS_CRH_DAILY_BIDAILY_I     =  1
ECS_OA0063m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063m_Terra-MODIS_StartUp_015000.XXXX05
ECS_OA0063s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0063s_015000.XXXX05
ECS_OA0160m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160m_015000.XXXX05
ECS_OA0160s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA0160s_015000.XXXX05
ECS_OA1663m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663m_015000.XXXX05
ECS_OA1663s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SOA1663s_015000.XXXX05
ECS_BT1080m_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080m_015000.XXXX05
ECS_BT1080s_I               =  /ENG/CERES/clouds/data/ancillary/static/CER_ECS/CER_ECS-SBT1080s_015000.XXXX05
ECS_CRHU_I                  =  /ENG/CERES/clouds/data/out_comp/data/CRH_Update/CER_CRHU_Terra-MODIS_SSIT_000000.20010501
EPARAM_I                    =  /ENG/CERES/clouds/data/ancillary/static/Tables/CER_EPARAM_MODIS.epoch
ECS_OA0063m_M               =  /ENG/CERES/clouds/data/ancillary/static/Meta/CECRH_AC.MCF
ECS_OA0063m_O               =  /ENG/CERES/clouds/data/out_comp/data/CER_ECS/CER_ECS-OA0063m_Terra-MODIS_SSIT_000000.20010502
ECS_BT1080m_O               =  /ENG/CERES/clouds/data/out_comp/data/CER_ECS/CER_ECS-BT1080m_Terra-MODIS_SSIT_000000.20010502
```

C.7 Sample ASCII (PCFin) File Listing for CER4.1-4.3P1

```
Generic PGE entries

Platform                    =  Terra
Instrument                  =  FM1+FM2
Imager                      =  MODIS
CERDataDate                 =  20010500
CERDataYear                 =  2001
CERDataMonth                =  05
CERDataDay                  =  00
CERHRofDay                  =  00
CERHRofMonth                =  00
PCFILE                      =  /ENG/CERES/clouds/rcf/CER4.1-4.3P1_PCF_Terra-MODIS_SSIT_000000.200105
PGEName                     =  CER4.1-4.3P1
CC_Code                     =  000000
Software_SCCR               =  00262
Ancillary_Data_SCCR         =  00262
Sampling_Strategy_Input     =  Terra-MODIS
Sampling_Strategy_Output    =  Terra-MODIS
Production_Strategy_Input   =  SSIT
Production_Strategy_Output  =  SSIT
Input_Directory             =  /ENG/CERES/clouds/data/input
Supp__Directory             =  /ENG/CERES/clouds/data/runlogs
Ancil_Directory             =  /ENG/CERES/clouds/data/ancillary/static
Inter_Directory             =  /ENG/CERES/clouds/data/int_prod
Arch__Directory             =  /ENG/CERES/clouds/data/out_comp/data
Temp__Directory             =  /ENG/CERES/clouds/data/scr
LogFile_Directory           =  /ENG/CERES/clouds/data/runlogs
LogStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.3P1_LogStatus_Terra-MODIS_SSIT_000000.200105
LogRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.3P1_LogReport_Terra-MODIS_SSIT_000000.200105
LogUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.3P1_LogUser_Terra-MODIS_SSIT_000000.200105
TmpStat                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.3P1_TmpStatus_Terra-MODIS_SSIT_000000.200105
TmpRept                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.3P1_TmpReport_Terra-MODIS_SSIT_000000.200105
TmpUser                     =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.3P1_TmpUser_Terra-MODIS_SSIT_000000.200105
MailFile                    =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.3P1_Mailfile_Terra-MODIS_SSIT_000000.200105
ShmMem                      =  /ENG/CERES/clouds/data/runlogs/CER4.1-4.3P1_ShmMem
MCFWriteScratch             =  /ENG/CERES/clouds/data/scr/CER4.1-4.3P1_MCFWrite.Terra-MODIS_SSIT_000000.200105
MCFGetScratch               =  /ENG/CERES/clouds/data/scr/CER4.1-4.3P1_MCFScratch.Terra-MODIS_SSIT_000000.200105
MCFTemplate                 =  /ENG/CERES/lib/rcf/MCF.template
TK10301                     =  /usr/local/TOOLKIT/database/sgi64/TD/leapsec.dat
TK10401                     =  /usr/local/TOOLKIT/database/sgi64/CSC/utcpole.dat
TK10402                     =  /usr/local/TOOLKIT/database/sgi64/CSC/earthfigure.dat
TK10601                     =  /usr/local/TOOLKIT/database/sgi64/CBP/de200.eos
TK10801                     =  /usr/local/TOOLKIT/database/common/EPH/sc_tags.dat
TK11001                     =  /usr/local/TOOLKIT/database/common/CUC/udunits.dat
```

```
PGE Specific entries

EQCDG_I                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCDG_Terra-MODIS_SSIT_000000.200105
EQCDB_I                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCDB_Terra-MODIS_SSIT_000000.200105
EQCMG_M                     =  /ENG/CERES/clouds/data/ancillary/static/Meta/CEQCMGAC.MCF
EQCMB_M                     =  /ENG/CERES/clouds/data/ancillary/static/Meta/CEQCMBAC.MCF
EQCMG_O                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCMG_Terra-MODIS_SSIT_000000.200105
EQCMB_O                     =  /ENG/CERES/clouds/data/out_comp/QA_Reports/CER_EQCMB_Terra-MODIS_SSIT_000000.200105
```

Appendix D
Subsystem Environment File

One sample Environment Script is provided. It is located in **$CERESHOME/clouds/bin**, is named '**CER4.1-4.env**' and contains the following environment variables:

SAT	- Platform
INST	- Instrument
IMAG	- Imager

SS1	SS12	SS4_0	SS4_1	SS4_2	SS4_3	SS4_4
PS1	PS12	PS4_0	PS4_1	PS4_2	PS4_3	
CC1	CC12	CC4_0P1	CC4_1P1	CC4_1P2	CC4_1P3	CC4_2P1
CC4_2P2	CC4_3P1					

The SS variables refer to a Subsystem specific Sampling Strategy, the PS variables, its Production Strategy, and the CC variables, its Configuration Code. These variables take on different values depending on the SAT/INST/IMAG combination. For instance, processing of TRMM data requires Edition2 IES's whereas processing Terra data requires Alpha IES's. The values for the variables in the env file are set to values indicated for SSI&T. For Production processing, **the values for these variables must be set according to the values specified in the Production Request**, see Reference 2. The Sampling Strategy variables for SS4 are set according to the values for SAT, INST, and IMAG. The variable INST can, depending upon the satellite and processing request, take on the value of (NONE, FM1+FM2, FM3+FM4, FM1, FM2, FM3, FM4 or PFM). Each value for INST will cause different things to occur:

NONE	Cloud Retrieval Only Processing (no Convolution)
Multi INST (FM1+FM2, FM3+FM4)	Produce individual instrument version of 4.4 products CER_FQC, CER_FQCI, and CER_SSFI
Single INST (FM1,FM2,FM3,FM4,PFM)	Produce only those instrument specific products CER_FQC, CER_FQCI, and CER_SSFI

In order to facilitate processing of multiple satellites in various configurations, several parameters can be added to the command to source the env file. The first optional parameter dictates which Satellite to process and is implemented as follows:

> source $CERESHOME/clouds/bin/CER4.1-4.env <data_type>

where, for processing Clouds data, <data_type> can take on the values (**1, 2, 3, or 6**) where:

1 = NOAA9
2 = TRMM
3 = Terra
6 = Aqua

If no parameter is given, the env script defaults to the TRMM case (2).

If Subset processing by CERES Validation Region is desired, a second, optional parameter is passed when sourcing the env file. (Subset imager data must already be staged and, in the case of VIRS data, renamed appropriately using the Rename script).

> source $CERESHOME/clouds/bin/CER4.1-4.env <data_type> Subset

This will trigger Subset processing by CERES Validation Region in convolution. If processing in Subset mode, the <data_type> parameter **must** be specified.

```
#!/bin/csh -f

setenv  DATA_TYPE       $1

if ( $DATA_TYPE == "" ) then
       setenv  DATA_TYPE 2
endif

setenv PREFIX ""
if ( $2 != "" ) then
       setenv PREFIX $2
endif

if ( $DATA_TYPE == 1 ) then     # CERES NOAA-09 Variables
       setenv  SAT     NOAA9
       setenv  INST    ERBE
       setenv  IMAG    AVHRR

       setenv  PS1     Edition1
       setenv  CC1     011004
       setenv  PS12    ECMWF-GEOS2
endif

if ( $DATA_TYPE == 2 ) then     # CERES TRMM Variables
       setenv  SAT     TRMM
       setenv  INST    PFM
       setenv  IMAG    VIRS

       setenv  PS1     Edition1
       setenv  CC1     000031
       setenv  PS12    ECMWF-GEOS2
endif

if ( $DATA_TYPE == 3 ) then     # CERES Terra Variables
       setenv  SAT     Terra
       setenv  INST    FM1+FM2
       setenv  IMAG    MODIS

      setenv  PS1     Edition1
       setenv  CC1     017012
       setenv  PS12    ECMWF-GEOS3
endif

if ( $DATA_TYPE == 4 ) then     # CERES Terra Variables with MOD06 cloud product
       setenv  SAT     Terra
       setenv  INST    FM1+FM2
       setenv  IMAG    MODIS

       setenv  PS1     Edition1
       setenv  CC1     018013
       setenv  PS12    ECMWF-GEOS3
endif

if ( $DATA_TYPE == 6 ) then     # CERES Aqua MODIS Variables
       setenv  SAT     Aqua
       setenv  INST    FM3+FM4
       setenv  IMAG    MODIS
```

```
      setenv  PS1     Beta1
      setenv  CC1     024021
      setenv  PS12    ECMWF-GEOS3
endif

setenv  SS1           $SAT-$INST

setenv  CURR_CC_0P1     020018
setenv  CURR_CC_1P1     000000
setenv  CURR_CC_1P2     000000
setenv  CURR_CC_1P3     000000
setenv  CURR_CC_2P1     000000
setenv  CURR_CC_2P2     000000
setenv  CURR_CC_3P1     020019

setenv  CURR_DA         00262
setenv  CURR_SW         00262
setenv  DATA4_1         $CURR_DA
setenv  SW4_1           $CURR_SW

setenv  SS12            CERES
setenv  CC12            016020

setenv  SS4_0           CERES
setenv  PS4_0           NSIDC-NESDIS

setenv  SS4_1           $SAT-$IMAG
setenv  CC4_0P1         $CURR_CC_0P1
setenv  CC4_1P1         $CURR_CC_1P1
setenv  CC4_1P2         $CURR_CC_1P2
setenv  CC4_1P3         $CURR_CC_1P3
setenv  CC4_2P1         $CURR_CC_2P1
setenv  CC4_2P2         $CURR_CC_2P2
setenv  CC4_3P1         $CURR_CC_3P1
setenv  PS4_1           $PREFIX\SSIT

# for clear sky map
setenv  SS4_2           $SS4_1
setenv  PS4_2           $PS4_1
setenv  CC4_2           $CC4_1P2
if ( $DATA_TYPE == 2 ) then     # CERES TRMM Variables
   setenv  CC4_2           $CC4_1P1
endif
if ( $DATA_TYPE == 6 ) then     # CERES Aqua Variables
   setenv  CC4_2           $CC4_1P3
endif

setenv  SS4_4           $SAT-$INST-$IMAG
if ( $INST == "NONE" ) setenv  SS4_4           $SAT-$IMAG
```