Effective Date: August 30, 2023
Expiration Date: August 30, 2028

GSFC JPSS CMO
October 10, 2023
Released

474-00448-02-04, Revision M
Joint Polar Satellite System (JPSS) Code 474

Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the OMPS Total Column RDR/SDR

NOAA / NASA

Goddard Space Flight Center Greenbelt, Maryland

Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the OMPS Total Column RDR/SDR

Review/Signature/Approval Page

Prepared By:

LEO Ground Services Systems Engineering

Approved By:

Kellyann F. Jeletic
LEO Ground Services Project SEIT Lead

Nicolaie Todirita
LEO Ground Services Project Manager

Electronic Approval available on-line at: https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm

Preface

This document is under JPSS Ground Segment configuration control. Once this document is approved, JPSS approved changes are handled in accordance with Class I and Class II change control requirements as described in the JPSS Configuration Management Procedures, and changes to this document shall be made by complete revision.

Any questions should be addressed to:

JPSS Configuration Management Office
NASA/GSFC
Code 474
Greenbelt, MD 20771

Change History Log

Revision	Effective Date	Description of Changes (Reference the CCR & CCB/ERB Approve Date)
0200-	Aug 8, 2013	This version incorporates 474-CCR-13-1117 which was approved by JPSS Ground ERB on the effective date shown.
0200A	Jan 23, 2014	This version incorporates 474-CCR-13-1355 which was approved by JPSS Ground ERB on the effective date shown.
0200A1	Oct 23, 2014	This version incorporates 474-CCR-14-2091 which was approved by the JPSS Ground ERB for CO10 on the effective date shown.
0200B	Mar 02, 2015	This version incorporates 474-CCR-14-2168 and 474-CCR-14-2074, 474-CCR-14-2280 and 474-CCR-14-2288 which was approved by the JPSS Ground ERB on the effective date shown.
0200C	Jul 28, 2015	This version incorporates 474-CCR-14-2506 which was approved by the JPSS Ground ERB on the effective date shown.
0200D	Jan 19, 2016	This version incorporates 474-CCR-15-2657 and 474-CCR-15-2731 which was approved by the JPSS Ground ERB on the effective date shown.
0200E	Jun 07, 2016	This version incorporates 474-CCR-16-2939 which was approved by the JPSS Ground ERB on the effective date shown.
0200F	Jan 11, 2017	This version incorporates 474-CCR-16-3179 which was approved by the JPSS Ground ERB on the effective date shown.
0200G	Aug 03, 2017	This version incorporates 474-CCR-17-3459 which was approved by the JPSS Ground ERB on the effective date shown.
H	Sep 26, 2019	This version incorporates 474-CCR-19-4497 which was approved by the JPSS Ground ERB on Sep 03, 2019 and by the JPSS Ground Segment CCB on the effective date shown.
I	Feb 27, 2020	This version incorporates 474-CCR-19-4759 which was approved by the JPSS Ground ERB on Feb 18, 2020 and by the JPSS Ground Segment CCB on the effective date shown.
J	Aug 30, 2020	This version incorporates 474-CCR-20-5117 which was approved by the JPSS Ground ERB on Aug 12, 2020 and by the JPSS Ground Segment CCB on the effective date shown.

Revision	Effective Date	Description of Changes (Reference the CCR & CCB/ERB Approve Date)
K	Aug 26, 2021	This version incorporates 474-CCR-21-5445 which was approved by the JPSS Ground ERB on May 07, 2021 and by the JPSS Ground Segment CCB on the effective date shown.
L	Feb 11, 2022	This version incorporates 474-CCR-21-5766 which was approved by the JPSS Ground ERB on Feb 08, 2022 and by the JPSS Ground Segment CCB on the effective date shown.
M	Aug 30, 2023	This version incorporates 474-CCR-23-6541 which was approved by the JPSS Ground ERB on Aug 21, 2023 and by the JPSS Ground Segment CCB on the effective date shown.

Table of Contents

List of Figures

List of Tables

1 INTRODUCTION

1.1 Scope

The Joint Polar Satellite System (JPSS) Algorithm Specification for OMPS TC RDR/SDR - Volume II: Data Dictionary contains the specifications for the format of the OMPS TC Raw Data Records (RDRs) and Sensor Data Records (SDRs). This specification includes the format of the Hierarchical Data Format Release 5 (HDF5) files, as well as the product definitions. These formats are available to external users of the JPSS. For an overview of the data product formats, see 474-00001-01, JPSS CDFCB-X Vol I. For an overview of the metadata formats for data products, see 474-00448-02-01, JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms.

1.2 Organization

Section	Contents
Section 1	Provides information regarding the scope, and organization of this document.
Section 2	Lists parent documents and related documents that were used as sources of information for this document or that provide additional background information to aid understanding of the interface implementations.
Section 3	Provides an overview of the HDF5 UML for the data product types.
Section 4	Provides a description of the contents of each JPSS RDR.
Section 5	Provides a description of the contents of each JPSS TDR. (if applicable)
Section 6	Provides a description of the contents of each JPSS SDR.
Section 7	Provides a description of relevant Look-Up Tables (LUTs) and Processing Coefficient Tables (PCTs).
Section 8	Provides a description of each Intermediate Product if applicable.
Appendix A	Provides the Data Mnemonic to Interface Mapping for the data products in this volume.
Appendix B	Provides common RDR static header values in this volume.
Appendix C	Provides the mapping of the quality flags by sensor and product that are reportable to the associated data product quality flag Test ID used in the processing environment.
Appendix D	Provides reference to acronyms and glossary of terms found within the JPSS Program Lexicon (470-00041).
Attachment A	Provides the list of applicable xml files for this Data Dictionary.

2 RELATED DOCUMENTATION

The latest JPSS documents can be obtained from URL: https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm. JPSS Project documents have a document number starting with 470, 472 or 474 indicating the governing Configuration Control Board (CCB) (Program, Flight, or Ground) that has the control authority of the document.

2.1 Parent Documents

The following reference document(s) is (are) the Parent Document(s) from which this document has been derived. Any modification to a Parent Document will be reviewed to identify the impact upon this document. In the event of a conflict between a Parent Document and the content of this document, the JPSS Program Configuration Change Board has the final authority for conflict resolution.

Document Number	Title
474-00448-01-04	JPSS Algorithm Specification Volume I: Software Requirements Specification (SRS) for the OMPS Total Column RDR/SDR

2.2 Applicable Documents

The following document(s) is (are) the Applicable Document(s) from which this document has been derived. Any modification to an Applicable Document will be reviewed to identify the impact upon this document. In the event of conflict between an Applicable Document and the content of this document, the JPSS Program Configuration Change Board has the final authority for conflict resolution.

Document Number	Title
None	

3 UML FOR HDF5 PRODUCTS

3.1 RDR HDF5 Details

Figure 3.1-1, Science and Diagnostic RDR Generalized UML Diagram, depicts the HDF5 RDR file organization as a Unified Modeling Language (UML) class diagram for Science and Diagnostic RDRs. This also describes the science calibration RDRs generated by OMPS. Figure 3.1-2, Dwell, Dump, and Telemetry RDR Generalized UML Diagram, depicts the HDF5 RDR file organization as a UML Class Diagram for Dwell, Dump and Telemetry RDRs.

Each HDF5 RDR file contains an HDF5 Root Group, '/', a Data_Products Group, one or more Product Groups (CollectionShortName), and an All_Data Group containing one or more (CollectionShortName)_All groups. The latter group contains the Dataset_Array which holds the common RDR structures of Consultative Committee for Space Data Systems (CCSDS) structured APs. For Science and Diagnostic RDRs a Spacecraft Diary Group is also included in the Data_Products group. The Product Groups and Spacecraft Diary Group both contain datasets - an Aggregation Dataset (CollectionShortName_Aggr) and Granule Datasets (CollectionShortName_Gran_n - where n indicates the nth granule in a temporal aggregation of granules (0 .. n-1)). A granule is a general term used to describe the minimum quanta of data collected per processing period, generally on the order of seconds. For the definition and organization of the metadata attributes contained in the HDF5 files, see 474-00448-02-01, JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms of this data dictionary. Attributes that are specific to a particular RDR are listed with the specific RDR's data format definition. Note: In the UML diagrams, an '*' following the name of an attribute indicates an element with exceptions; see JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms, for the details of the exception.

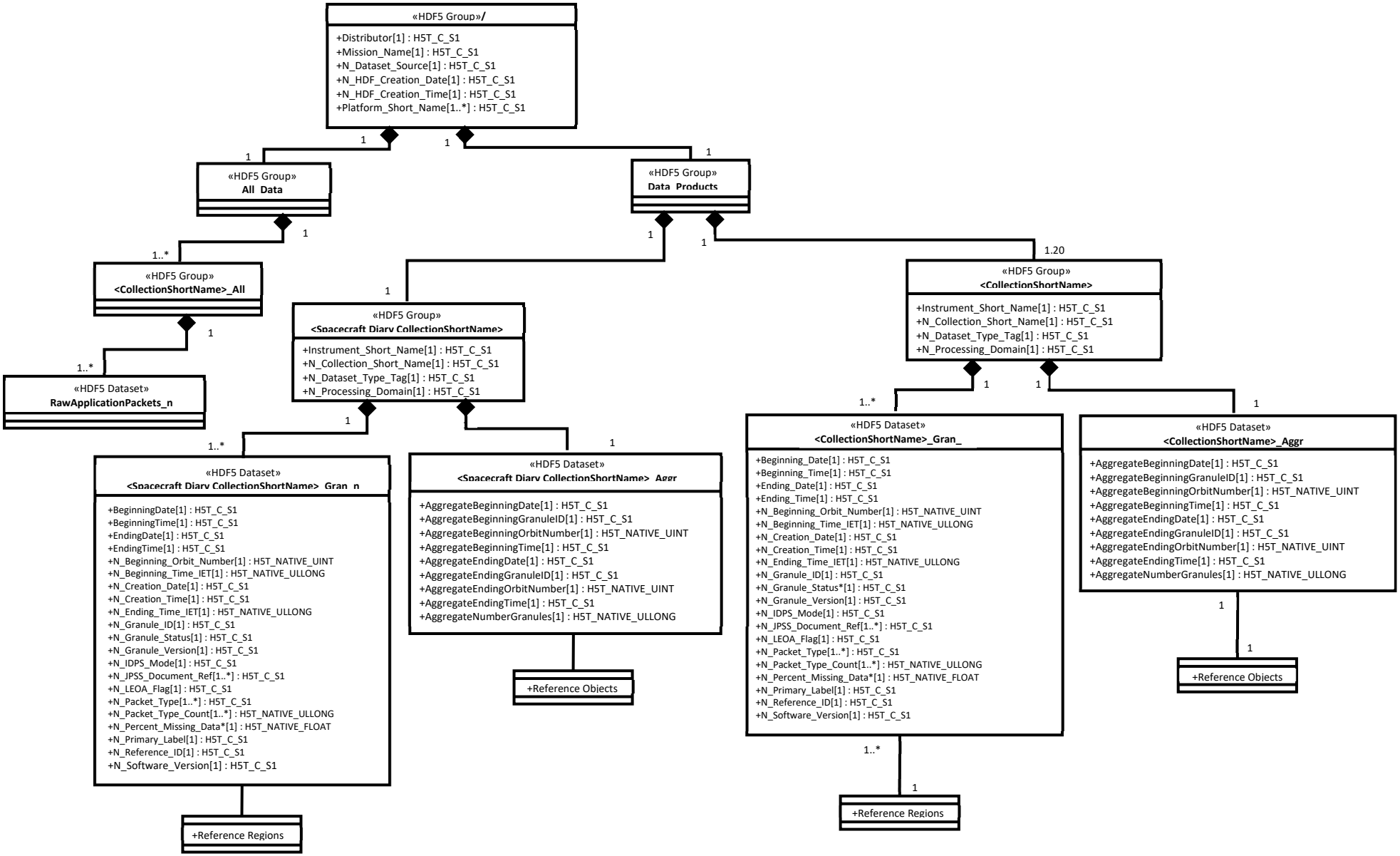

Figure: 3.1-1 Science and Diagnostic RDR Generalized UML Diagram

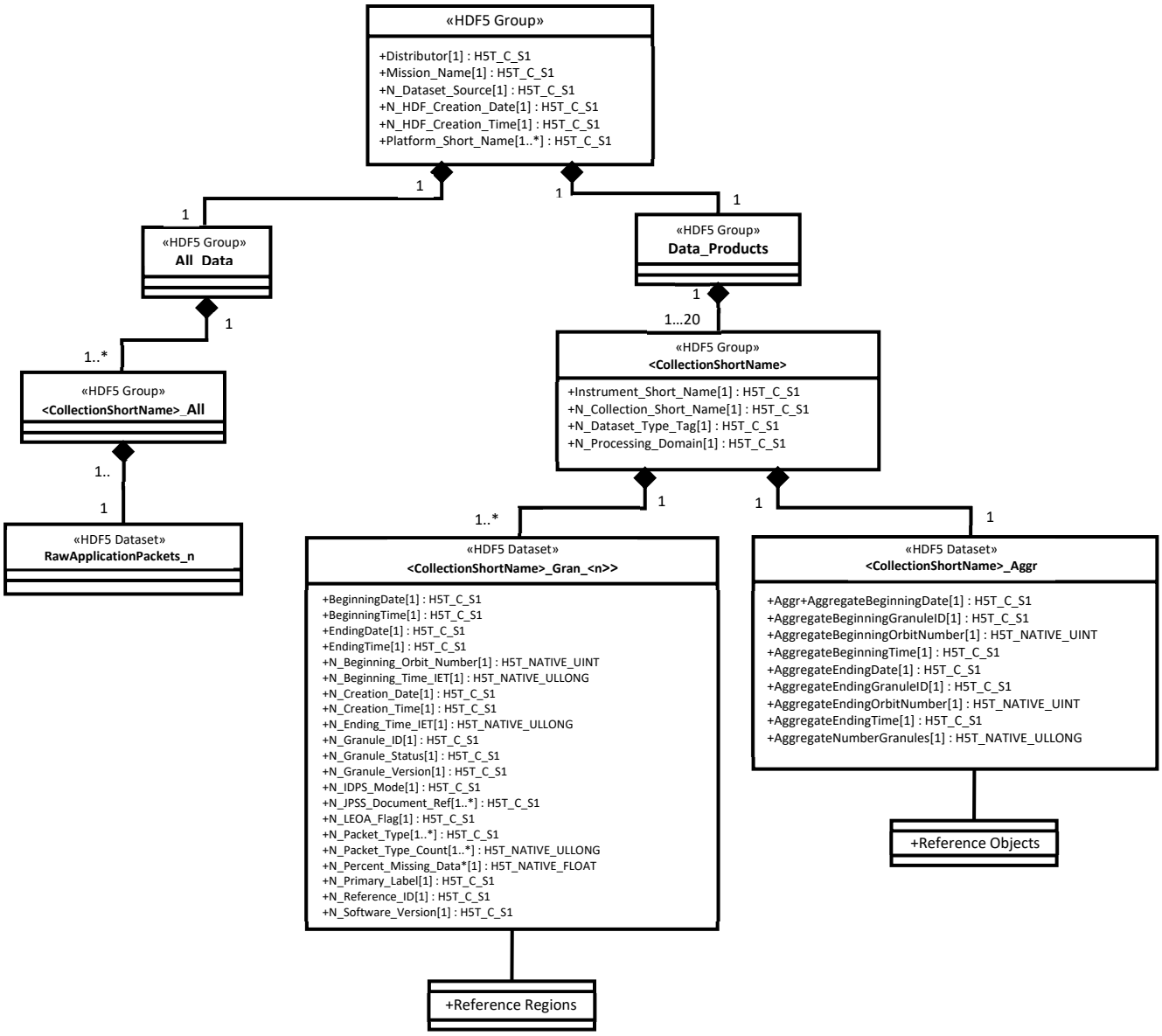

Figure: 3.1-2 Dwell, Dump, Telemetry, and Spacecraft Diary (when requested separately) RDR Generalized UML Diagram

3.2 TDR/SDR HDF5 Details

Figure 3.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, depicts the HDF5 SDR/TDR organization as a Unified Modeling Language (UML) class diagram. Each HDF5 SDR/TDR file contains an HDF5 Root Group, '/', a Data Products Group, Product Groups (Collection Short Name), an optional Geolocation Group (depending upon packaging option, see the JPSS CDFCB-X Vol. I for a description of the geolocation packaging), and an All Data Group (dataset arrays). The Product Groups and Geolocation Group both contain datasets - an

Aggregation Dataset (Collection Short Name_Aggr) and Granule Datasets (Collection Short Name_Gran_n) - where n indicates the nth granule in a temporal aggregation of granules (0 .. n-1). A granule is a general term used to describe the minimum quanta of data collected per processing period, generally on the order of seconds. For the definition and organization of the metadata attributes contained in the HDF5 files, see 474-00448-02-01, JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms. Attributes that are specific to a particular SDR/TDR are listed with the specific SDR/TDR's data format definition. For the generalized formats and packaging options for the Geolocation data, see the JPSS CDFCB-X Vol. I.

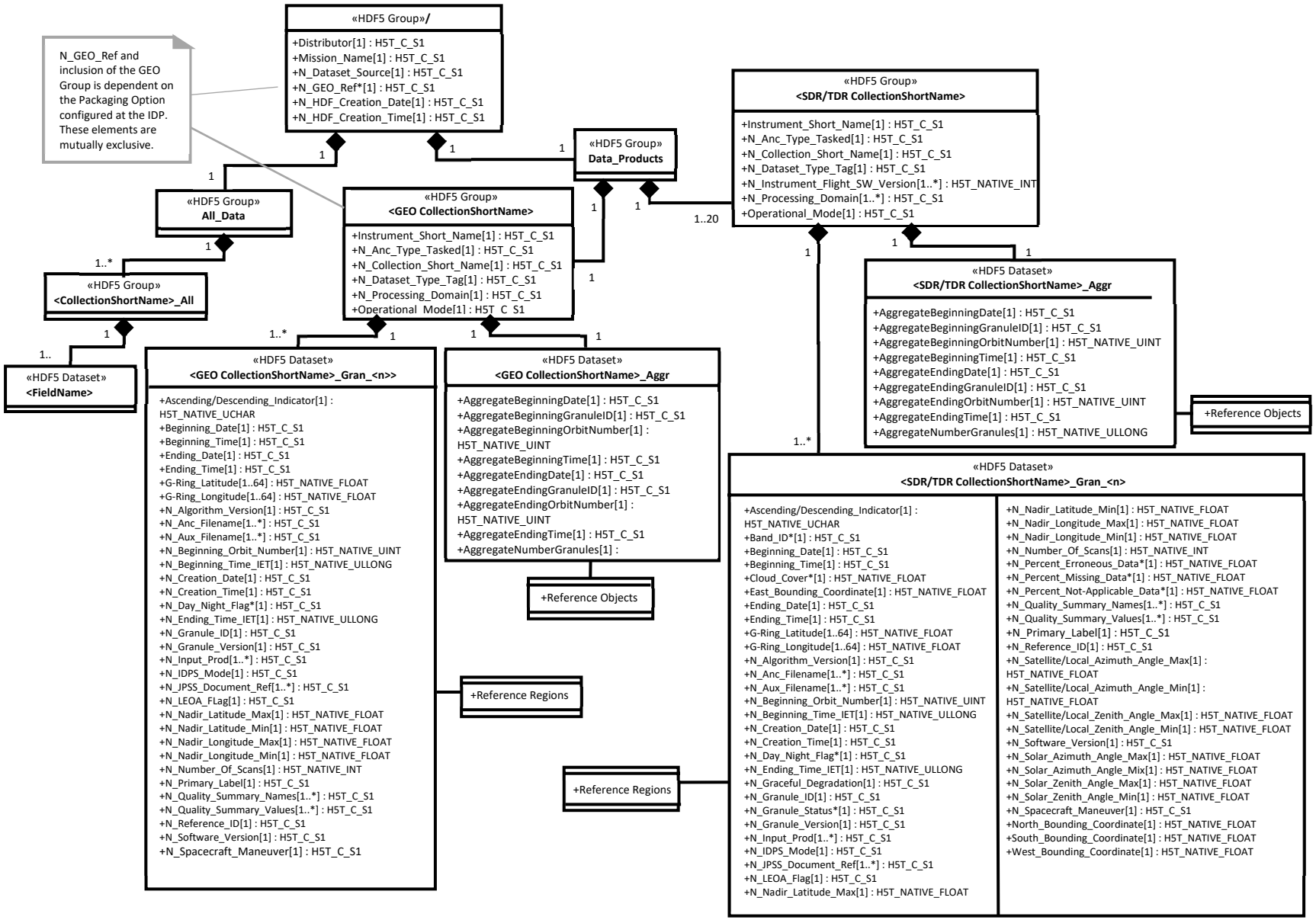

Figure: 3.2-1 Generalized UML Diagram for HDF5 SDR/TDR Files

3.3 Auxiliary Data Formats

Auxiliary data is data other than that included in the sensor application packets, which is produced internally by JPSS, and is used to produce the JPSS Data Products. The following information describes the HDF5 file's format via a UML diagram. The UML diagram indicates the attributes, groups, and datasets used in the HDF5 file to describe the Auxiliary Data files.

Figure 3.3-1, Generalized UML Diagram for HDF5 Auxiliary Data Files, depicts the HDF5 Auxiliary Data organization as a UML class diagram. Each HDF5 Auxiliary Data file contains an HDF5 Root Group, '/', an Auxiliary Dataset, and an All Data Group (the actual data). For the definition and organization of the metadata attributes contained in the HDF5 files, see the JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms (474-00448-02-01).

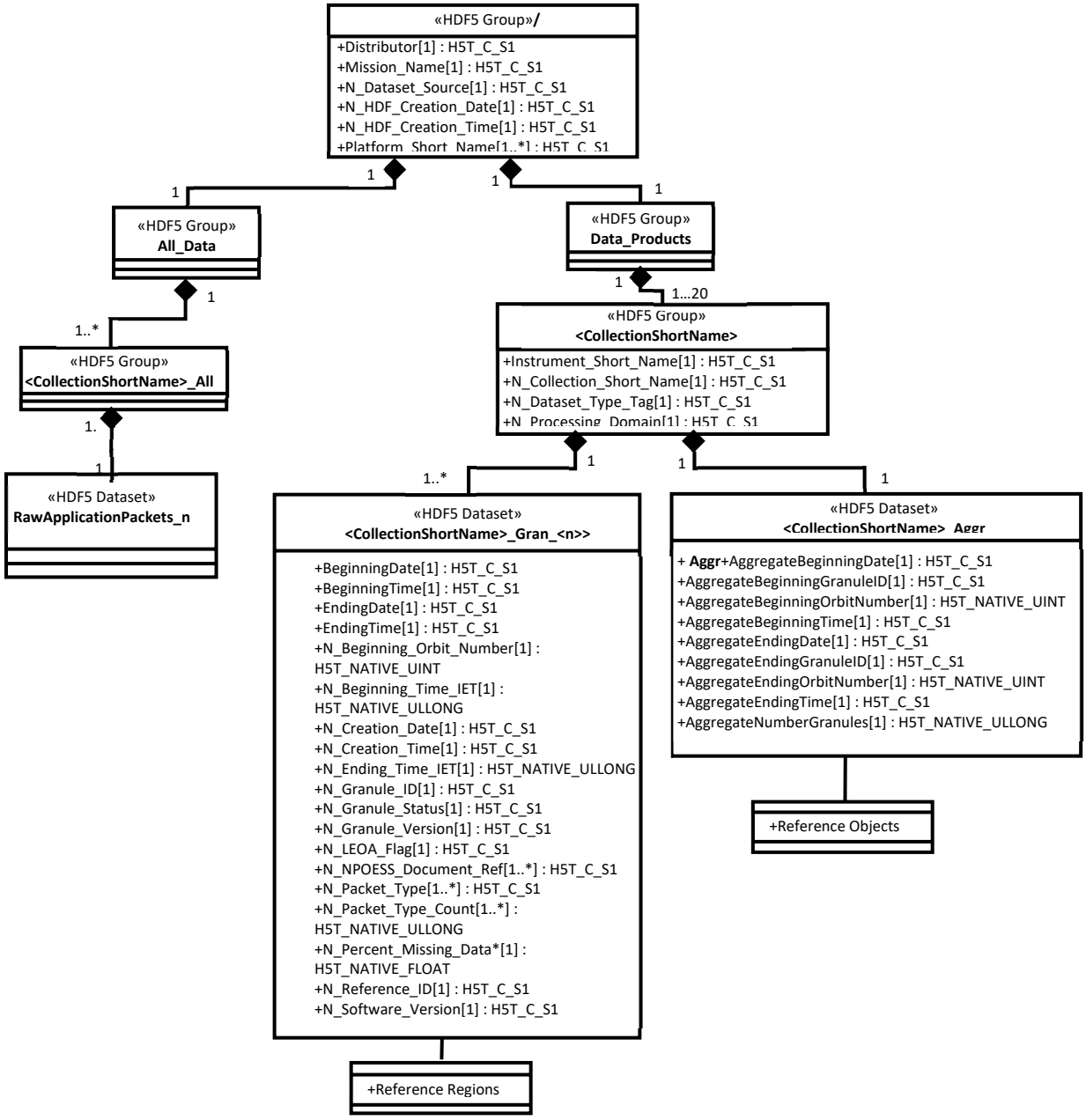

Figure: 3.3-1 Generalized UML Diagram for HDF5 Auxiliary Data Files

4 JPSS RAW DATA RECORDS (RDRS)

The following paragraphs describe the structure and contents of the RDR granules formed by the JPSS ground processing software. The ground processing software generates several RDRs for each sensor by accumulating one or more specific Application Packets (APs) into a single collection. The accumulated APs are not byte-aligned or otherwise altered. They are merely collected and placed into storage in the order that they are received. The following paragraphs describe the binary packaging structure for these accumulated APs. Table 4-1, Common RDR Structure, shows the common JPSS RDR Structure. All JPSS RDRs are based on the same generic granule storage framework and is illustrated conceptually in Figure 4-1 Common RDR Layout.

The detailed structure and contents of the APs are documented in the Mission Data Format Control Book (MDFCB) for each mission, GSFC 429-05-02-42 for S-NPP, 472-00251 for JPSS-1, and 472-00717 for JPSS-2. For more information on AP formatting, see the Recommendations for Advanced Orbiting Systems, Networks and Data Links, CCSDS 701.0-B-2, Section 3.3.3.

Table: 4-1 Common RDR Structure

Field Name	Description
Static Header	Static header describing the RDR
APID List	Array of structures that contains information about each APID that is collected in the RDR
Packet Tracker	Array of structures that contains information about each AP that is in the RDR
AP Storage area	General buffer where the APs are stored back-to-back in the order that they are received

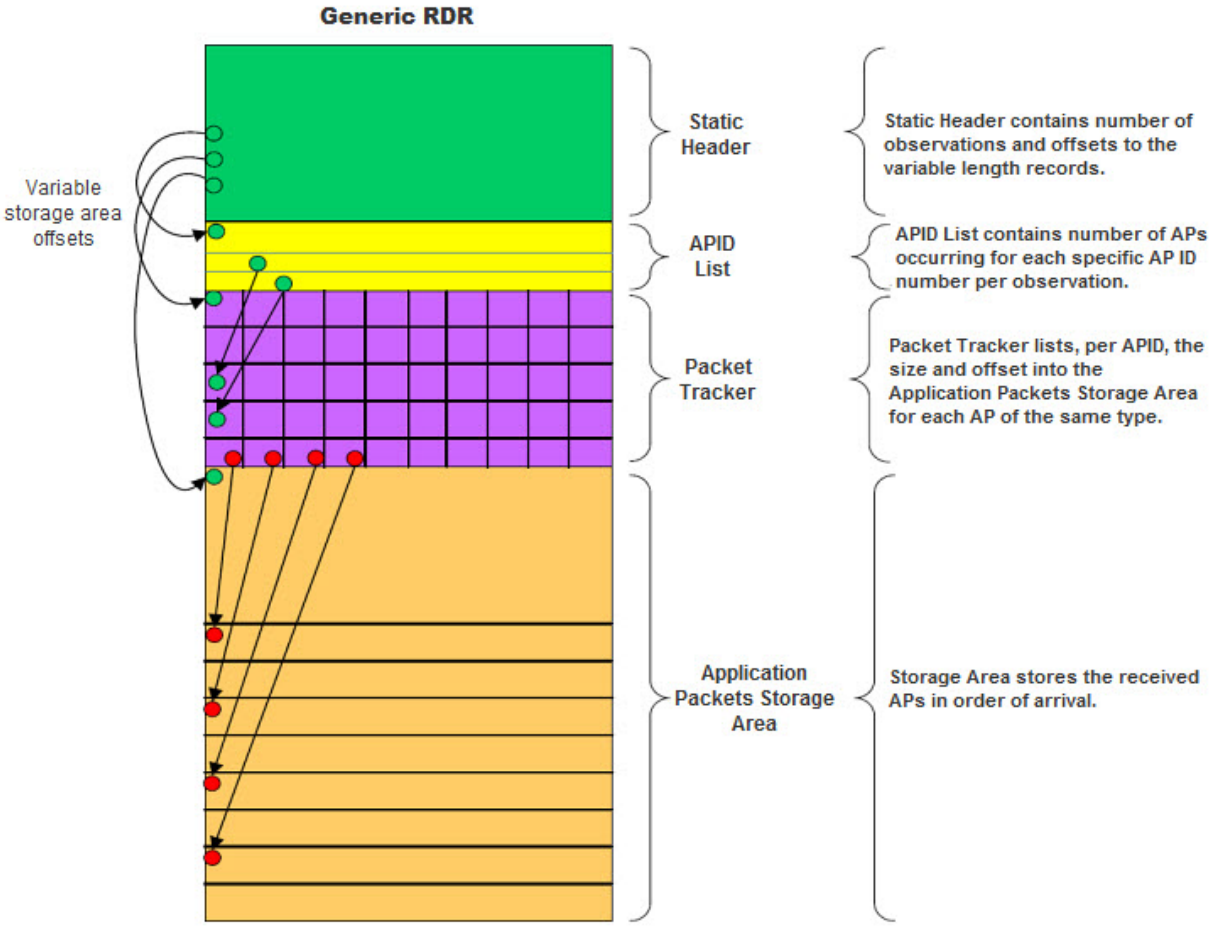

Figure: 4-1 Common RDR Layout

4.1 Common RDR Structures

The following section defines these structures and provides methods for determining the variable length RDR components.

Description/ Purpose	The following tables describe the four structures found in the common RDR Structure. The common RDR Structure granules are referenced by the HDF5 Object and Reference Region pointers in the CollectionShortName_Aggr and CollectionShortName_Gran_# datasets, respectively.
File-Naming Construct	See the JPSS CDFCB-X Vol. I-Overview, Section 3 for details.
File Size	Nominally specified per RDR
File Format Type	Big Endian Binary (structure stored within HDF5)
Production Frequency	Common structure created for each RDR granule Granule durations specified per RDR

Data Content and Data Format	Each RDR has a single RDR Static Header and a dynamic Application Packet content area with three major entries: 1) APID List, 2) Packet Tracker List, and 3) Application Packet Storage Area. Table 4.1-1, RDR Static Header, details the spacecraft and sensor that the RDR data originated from, the type of data the RDR contains, and the start and end boundary times of the RDR granule. It also provides byte offset information needed to access individual APs and the number of AP types that are contained in the RDR. Tables 4.1-2, 4.1-3, and 4.1-4 define the Dynamic Application Packet content area. Table 4.1-2, RDR APID List, defines the structure used to identify the AP data type and it provides information necessary for accessing the RDR Packet Tracker. The APID List has details for each APID including number expected and received. Table 4.1-3, RDR Packet Tracker provides information about individual APs. Table 4.1-4, Application Packet Storage Area, describes the storage area containing the APs. Table 4.1-5, Application Packet Tables, provides explanations of the fields given for each RDR described in the following sections.

Table 4.1-1, RDR Static Header, details the spacecraft and sensor that the data originated from, the type of the data the RDR contains, and the start and end boundary times of the RDR granule. The RDR contains APs that have observation times which are greater than or equal to the start boundary and less than the end boundary time. The total size of the RDR Static Header is 72 bytes.

Table: 4.1-1 RDR Static Header

Field Name	DataType	Description
satellite	char[4]	Source satellite name as found in JPSS CDFCB-X Vol. I, Table 3.4.1-1, Spacecraft ID.
Sensor	char[16]	The RDR sensor name in a case-sensitive string (Example: “VIIRS”, “ATMS”, “CrIS”, etc. See Appendix B, Common Static Header Values, for specific values.)
typeID	char[16]	The RDR type in an upper case string (Example: “SCIENCE”, “DIAGNOSTIC”, “TELEMETRY”, “MEMORY DUMP”, “DWELL”. See Appendix B, Common Static Header Values, for specific values.)
numAPIDs	Uint32	The number of different types of expected APIDs that make the RDR. (numAPIDs is specific for each type of RDR, see Appendix B, Common Static Header Values, for specific values.)
apidListOffset	Uint32	Byte offset of the APID List (this is equivalent to the size of the static header: 72). The APID List starts immediately after the Generic RDR Static Header. Note: Always use this value to find the APID address.
pktTrackerOffset	Uint32	Byte offset from the beginning of the Common RDR to the Packet Tracker list

Field Name	DataType	Description
		Note: Always use this value to find the Packet Tracker list.
apStorageOffset	Uint32	Byte offset from the beginning of the Common RDR to the AP Storage Note: Always use this value to find the AP Storage.
nextPktPos	Uint32	Byte offset from the beginning of the Application Packet Storage Area (apStorageOffset) to the end of valid data within the Application Packet Storage Area
startBoundary	int64	All APs occur at or after this time in IDPS Epoch Time (IET) format. Note IET begins January 1, 1958 and is measured in microseconds. For more information on IET see JPSS CDFCB-X Vol. I, Section 3.3.1.
endBoundary	int64	The RDR non-inclusive boundary time in IET format. All APs occur before this time.

Table 4.1-2, RDR APID List, details the APIDs that are in the RDR. The number of elements in the list is equal to the numAPIDs field in the RDR Static Header. The size of a single RDR APID list element is 32 bytes.

Table: 4.1-2 RDR APID List

Field Name	DataType	Description
name	char[16]	Shortname describing the data type (Example: M01 for VIIRS. See individual RDR sections for specific values.)
value	Uint32	This field stores an APID that is in the RDR.
pktTrackerStartIndex	Uint32	The first index in the pktTracker array that will contain an AP of this APID. This index is zero based.
pktsReserved	Uint32	This field stores the number of APs reserved for this APID in this RDR. This value accounts for the worst case expected for the temporal granule period. Due to variability in scan rates, the actual number of packets received can be less than the "reserved" and still be 100% complete as shown in the metadata.
pktsReceived	Uint32	The number of APs of this APID that have been received for this RDR

Each RDR contains an array of Packet Trackers. Table 4.1-3, RDR Packet Tracker, details information about the AP and its location in the storage buffer. The number of elements in this array is equal to the total number of packets that are expected for all expected APIDs. The size of a single RDR Packet Tracker is 24 bytes.

Table: 4.1-3 RDR Packet Tracker

Field Name	DataType	Description
obsTime	int64	The IET observation time of the AP as derived from the CCSDS Secondary Header of the AP or associated with the segmented group of the APID.
sequenceNumber	int32	The 14-bit sequence number extracted from the Primary Header's Packet Sequence Control word of the AP. This is used to track segmented packets and their location.

Field Name	DataType	Description
size	int32	The AP size in bytes as received
offset	int32	The AP begins at this offset from the beginning of the AP Storage Area. From the beginning of the RDR, the AP is at "offset" + apStorageOffset. (offset = -1 for packets not received).
fillPercent	int32	Percentage of fill data included in the AP. Based on received and expected bytes per AP with valid values being 0-100% reported to the nearest %. Any AP with fill data (even one byte) will be reported with at least 1% fill data. Under normal conditions the value is 0. In packets received at a Field Terminal, this value is always zero. If the primary AP header indicates a secondary AP header is present, and the time code of the secondary AP header is fill, the AP is not made available. In the event that an AP is repaired, resulting in less fillPercent, a repaired RDR granule may be produced. See JPSS CDFCB-X, Vol. I, Section 3.5.7 for more information on Repair Granules.

Table 4.1-4 Application Packet Storage Area describes the AP storage area.

Table: 4.1-4 Application Packet Storage Area

Field Name	Data Type	Description
apStorage	Array of unsigned int8	Storage area where application packets are stored as they arrive in consecutive order

Table 4.1-5, Application Packet Tables, provides explanations of the fields given for each RDR described in the following sections. APIDs are listed in the JPSS Alg. Spec. for OMPS Volume IV: SRSPF (474-00448-04-04).

Table: 4.1-5 Application Packet Tables

APID Short Name	Description
Short name of this Application Packet as an upper-case string	Brief description of this application packet

Note: Grouped or segmented packets contain mission data exceeding the size of a single CCSDS packet.

Accessing APs can be achieved in two fashions; Random Access or Sequential Access.

To access APs in random order by AP type:

- Get the range for a specific type of data from the APID List
    - Find desired AP type using name field
    - Get pktTrackerStartIndex
    - Get pktsReserved
- Loop over the elements in Packet Tracker array starting at pktTrackerStartIndex

- Get offset (if -1 stop processing no packet received)
- Get size
- Access the AP by adding the offset to the apStorageOffset value found in the Static Header
- Extract size (the AP size in bytes) from the AP Storage Area
- Repeat above for pktsReserved

To access APs in sequential order:

- Get the apStorageOffset from the Static Header to determine memory location for start of APs in AP Storage Area
- Get the nextPktPos from the Static Header (The nextPktPos value indicates the end of valid RDR data within the AP Storage Area)
- Parse AP's manually by reading the primary header, accessing the size of the packet, and accessing the user data section in the CCSDS packet

Repeat until nextPktPos equals current position.

4.2 OMPS TC RDR Overview

Data Mnemonic	Science: RDRE-OMPS-C0031 Calibration: RDRE-OMPS-C0038 Diagnostic Earth View: RDRE-OMPS-C0050 Diagnostic Calibration: RDRE-OMPS-C0051 See Section 4.2 of the JPSS Algorithm Specification Volume II: Data Dictionary for the OMPS Nadir Profile RDR/SDR (474-00448-02-05) for the following OMPS RDRs. Dwell: RDRE-OMPS-C0036 Telemetry: RDRE-OMPS-C0034 Memory Dump: RDRE-OMPS-C0035 Flight Software (FSW) Boot-Up Status: RDRE-OMPS-C0057
Description/ Purpose	OMPS uses two primary sensors within a single instrument suite to perform complementary functions for atmospheric ozone monitoring. Total column ozone is retrieved from backscattered UV radiance measurements, using a 2-D Charge-Coupled Device (CCD) system, which points towards the nadir and simultaneously observes across the orbital track to provide daily global mapping. An additional CCD focal plane collects nadir data at shorter wavelengths to create a non-EDR profile ozone product for continuity with previous instruments.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, Section 3 for details

File Size	**TC Science:** See the following Tables in Section 4.3 for size: S-NPP OMPS TC Science RDR Structure, JPSS-1 OMPS TC Science RDR Structure and JPSS-2 OMPS TC Science RDR Structure **TC Calibration:** See the following Tables in Section 4.4 for size: S-NPP OMPS TC Calibration RDR Structure, JPSS-1 OMPS TC Calibration RDR Structure and JPSS-2 OMPS TC Calibration RDR Structure **TC Diagnostic Earth View:** See the following Tables in Section 4.5.2 for size: S-NPP OMPS TC Diagnostic Earth View RDR Structure, S-NPP OMPS TC Diagnostic Earth View RDR Structure, JPSS-1 OMPS TC Diagnostic Earth View RDR Structure and JPSS-2 OMPS TC Diagnostic Earth View RDR Structure **TC Diagnostic Calibration:** See the following Tables in Section 4.6.2 for size: S-NPP OMPS TC Diagnostic Calibration RDR Structure, JPSS-1 OMPS TC Diagnostic Calibration RDR Structure and JPSS-2 OMPS TC Diagnostic Calibration RDR Structure HDF5 overhead is not included in sizing. Due to operational sensor configuration, actual delivered granule sizes may be significantly smaller for those RDRs specified as "Maximum".
File Format Type	HDF5
Data Content and Data Format	Section 4.3 describes the OMPS TC Science RDR Section 4.4 describes the OMPS TC Calibration RDR Section 4.5 describes the OMPS TC Diagnostic Earth View RDR Section 4.6 describes the OMPS TC Diagnostic Calibration RDR Section 4.7, 4.8, 4.9 and 4.10 reference the JPSS Algorithm Specification Volume II: Data Dictionary for the OMPS Nadir Profile RDR/SDR (474-00448-02-05) for the following OMPS RDRs: 1. OMPS Dwell RDR 2. OMPS Telemetry RDR 3. OMPS Memory Dump RDR 4. OMPS Flight Software (FSW) Boot-Up Status:

4.3 OMPS TC Science RDR

4.3.1 OMPS TC Science RDR HDF5 Files

The OMPS TC Science RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.3.2 OMPS TC Science RDR Data Content Summary

The tables below list the APIDs accumulated for the OMPS TC Science RDRs. In the event of a discrepancy in the APIDs listed here, see the applicable mission's Data Format Control Book (MDFCB).

Table: 4.3.2-1 S-NPP OMPS TC Science RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
NTC	Science TC Earth View	560

Table: 4.3.2-2 JPSS-1 OMPS TC Science RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
NTC	Science NTC Earth View	560
NTC_CMP	Science NTC Earth View Compressed	616
NTC_RF	Science NTC Earth View Reduced Frame	592
NTC_RF_CMP	Science NTC Earth View RF Compressed	608

Table: 4.3.2-3 JPSS-2 OMPS TC Science RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
NTC	Science NTC Earth View	560
NTC_CMP	Science NTC Earth View Compressed	616
NTC_RF	Science NTC Earth View Reduced Frame	592
NTC_RF_CMP	Science NTC Earth View RF Compressed	608

Packets in the TC Science RDR are collected into granules based on the actual observation time rather than the secondary header timestamp of each packet. This is accomplished by removing the integration time needed to create the packet when determining the granule boundary it belongs to. This means that packet timestamps in the RDRs will not necessarily fall within the granule boundary times in the metadata. Each observation is max-sized to accept at most a single segment (256 packets).

The tables below show the layout and static contents of the OMPS TC Science RDR.

Table: 4.3.2-4 S-NPP OMPS NTC Science RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	SCIENCE
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	30824
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[1280]	Varies
	30824	AP storage area	Uint8[1310720]	Varies
File Size	1,341,544 Bytes			

Table: 4.3.2-5 JPSS-1 OMPS NTC Science RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	SCIENCE
	36	numAPIDs	Uint32	4
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	200
	48	apStorageOffset	Uint32	737480
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[4]	Varies
	200	Pkt Tracker List	IngSmdCommon_PktTrackerType[30720]	Varies
	737480	AP storage area	Uint8[31457280]	Varies
File Size	32,194,760 Bytes			

Table: 4.3.2-6 JPSS-2 OMPS NTC Science RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	SCIENCE
	36	numAPIDs	Uint32	4
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	200
	48	apStorageOffset	Uint32	737480
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[4]	Varies
	200	Pkt Tracker List	IngSmdCommon_PktTrackerType[30720]	Varies
	737480	AP storage area	Uint8[31457280]	Varies
File Size	32,194,760 Bytes			

4.4 OMPS TC Calibration RDR

4.4.1 OMPS TC Calibration RDR HDF5 Files

The OMPS TC Calibration RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.4.2 OMPC TC Calibration RDR Data Content Summary

The tables below list the APIDs accumulated for the OMPS TC Calibration RDRs. In the event of a discrepancy in the APIDs listed here, see the applicable mission's Data Format Control Book (MDFCB).

Table: 4.4.2-1 S-NPP OMPS TC Calibration RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
NTC_CAL	Science TC Calibration	564

Table: 4.4.2-2 JPSS-1 OMPS TC Calibration RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
NTC_CAL	Science NTC Calibration	564
NTC_CAL_CMP	Science NTC Calibration Compressed	624

Table: 4.4.2-3 JPSS-2 OMPS TC Calibration RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
NTC_CAL	Science TC Calibration	564
NTC_CAL_CMP	Science TC Calibration Compressed	624

OMPS TC Calibration RDRs contain all images for a single event. Each event is made up of a number of images. Each image can be made up of anywhere from 1 Standalone packet to a multiple segmented group. The RDR is max sized to handle data based on the values provided in Table 4.4.2-4, S-NPP OMPS TC Calibration RDR Maximum Sizes, Table 4.4.2-5, JPSS-1 OMPS TC Calibration RDR Maximum Sizes and Table 4.4.2-6, JPSS-2 OMPS TC Calibration RDR Maximum Sizes.

Table: 4.4.2-4 S-NPP OMPS TC Calibration RDR Maximum Sizes

Sizing Parameter	Value
Max Number of images	200
Maximum segments per image	5

Table: 4.4.2-5 JPSS-1 OMPS TC Calibration RDR Maximum Sizes

Sizing Parameter	Value
Max Number of images	200
Maximum segments per image	5

Table: 4.4.2-6 JPSS-2 OMPS TC Calibration RDR Maximum Sizes

Sizing Parameter	Value
Max Number of images	200
Maximum segments per image	5

The tables below show the layout and static contents of the OMPS TC Calibration RDR.

Table: 4.4.2-7 S-NPP OMPS NTC Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	CALIBRATION
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	6144104
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[256000]	Varies
	6144104	AP storage area	Uint8[262144000]	Varies
File Size	268,288,104 Bytes			

Table: 4.4.2-8 JPSS-1 OMPS NTC Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	CALIBRATION
	36	numAPIDs	Uint32	2
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	136
	48	apStorageOffset	Uint32	12288136
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[2]	Varies
	136	Pkt Tracker List	IngSmdCommon_PktTrackerType[512000]	Varies
	12288136	AP storage area	Uint8[524288000]	Varies
File Size	536,576,136 Bytes			

Table: 4.4.2-9 JPSS-2 OMPS TC Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	CALIBRATION
	36	numAPIDs	Uint32	2

	Byte	Field	Type	Value
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	136
	48	apStorageOffset	Uint32	12288136
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType [2]	Varies
	136	Pkt Tracker List	IngSmdCommon_PktTrackerType [512000]	Varies
	12288136	AP storage area	Uint8[524288000]	Varies
File Size	536,576,136 Bytes			

4.5 OMPS TC Diagnostic Earth View RDR

4.5.1 OMPS TC Diagnostic Earth View RDR HDF5 Files

The OMPS TC Diagnostic RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.5.2 OMPS TC Diagnostic Earth View RDR Data Content Summary

The tables below list the APIDs accumulated for the OMPS TC Diagnostic EV RDRs. In the event of a discrepancy in the APIDs listed here, see the applicable mission's Data Format Control Book (MDFCB).

Table: 4.5.2-1 S-NPP OMPS TC Diagnostic Earth View RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_SCI	Diagnostic Nadir Total Column Earth View	576

Table: 4.5.2-2 JPSS-1 OMPS TC Diagnostic Earth View RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_SCI	Diagnostic Nadir Total Column Earth View	576
DIA_SCI_CMP	Diagnostic Nadir Total Column Earth View Compressed	620
DIA_SCI_RF	Diagnostic Nadir Total Column Earth View Reduced Frame	596
DIA_SCI_RF_CMP	Diagnostic Nadir Total Column Earth View RF Compressed	612

Table: 4.5.2-3 JPSS-2 OMPS TC Diagnostic Earth View RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_SCI	Diagnostic Nadir Total Column Earth View	576
DIA_SCI_CMP	Diagnostic Nadir Total Column Earth View Compressed	620
DIA_SCI_RF	Diagnostic Nadir Total Column Earth View Reduced Frame	596
DIA_SCI_RF_CMP	Diagnostic Nadir Total Column Earth View RF Compressed	612

OMPS TC Diagnostic Earth View RDRs are sized to expect one observation per granule. This observation is max-sized such that it can only be up to 5 segmented groups (5*256 packets) using the OMPS super segmentation approach. The data may be collected at a different rate than the granule size, so gaps between granule IDs can be expected (does not imply there are data gaps). The minimum granule size was chosen to support flexibility for Diagnostic activities.

The tables below show the layout and static contents of the OMPS TC Diagnostic Earth View RDR.

Table: 4.5.2-4 S-NPP OMPS NTC Diagnostic Earth View RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	DIAGNOSTIC
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	30824
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[1280]	Varies
	30824	AP storage area	Uint8[1310720]	Varies
File Size	1,341,544 Bytes			

Table: 4.5.2-5 JPSS-1 OMPS NTC Diagnostic Earth View RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	DIAGNOSTIC
	36	numAPIDs	Uint32	4
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	200
	48	apStorageOffset	Uint32	123080
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[4]	Varies
	200	Pkt Tracker List	IngSmdCommon_PktTrackerType[5120]	Varies
	123080	AP storage area	Uint8[5242880]	Varies
File Size	5,365,960 Bytes			

Table: 4.5.2-6 JPSS-2 OMPS TC Diagnostic Earth View RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	DIAGNOSTIC
	36	numAPIDs	Uint32	4
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	200
	48	apStorageOffset	Uint32	123080
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[4]	Varies
	200	Pkt Tracker List	IngSmdCommon_PktTrackerType[5120]	Varies
	123080	AP storage area	Uint8[5242880]	Varies
File Size	5,365,960 Bytes			

4.6 OMPS TC Diagnostic Calibration RDR

4.6.1 OMPS TC Diagnostic Calibration RDR HDF5 Files

The OMPS TC Diagnostic Calibration RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.6.2 OMPS TC Diagnostic Calibration RDR Data Content Summary

The tables below list the APIDs accumulated for the OMPS TC Diagnostic RDRs. In the event of a discrepancy in the APIDs listed here, see the applicable mission's Data Format Control Book (MDFCB).

Table: 4.6.2-1 S-NPP OMPS TC Diagnostic Calibration RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_CAL	Diagnostic Nadir Total Column Calibration	580

Table: 4.6.2-2 JPSS-1 OMPS TC Diagnostic Calibration RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_CAL	Diagnostic Nadir Total Column Calibration	580
DIA_CAL _CMP	Diagnostic Nadir Total Column Calibration Compressed	627

Table: 4.6.2-3 JPSS-2 OMPS TC Diagnostic Calibration RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_CAL	Diagnostic Nadir Total Column Calibration	580
DIA_CAL _CMP	Diagnostic Nadir Total Column Calibration Compressed	627

OMPS TC Diagnostic Calibration RDRs are sized to expect one image per granule. This observation is max-sized such that it can only be up to 5 segmented groups (5*256 packets) using the OMPS super segmentation approach. The data may be collected at a different rate than the granule size, so gaps between granule IDs can be expected (does not imply there are data gaps). The minimum granule size was chosen to support flexibility for Diagnostic activities.

The tables below show the layout and static contents of the OMPS TC Diagnostic Calibration RDR.

Table: 4.6.2-4 S-NPP OMPS NTC Diagnostic Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	DIAGCAL
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	30824
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[1]	Varies
	104	Pkt Tracker List	IngSmdCommon_PktTrackerType[1280]	Varies
	30824	AP storage area	Uint8[1310720]	Varies
File Size	1,341,544 Bytes			

Table: 4.6.2-5 JPSS-1 OMPS NTC Diagnostic Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	DIAGCAL
	36	numAPIDs	Uint32	2
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	136
	48	apStorageOffset	Uint32	61576
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[2]	Varies
	136	Pkt Tracker List	IngSmdCommon_PktTrackerType[2560]	Varies
	61576	AP storage area	Uint8[2621440]	Varies
File Size	2,683,016 Bytes			

Table: 4.6.2-6 JPSS-2 OMPS TC Diagnostic Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS-TC
	20	typeID	char[16]	DIAGCAL
	36	numAPIDs	Uint32	2
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	136
	48	apStorageOffset	Uint32	61576
	52	nextPktPos	Uint32	Varies
	56	startBoundary	int64	Varies
	64	endBoundary	int64	Varies
Dynamic	72	APID List	IngSmdCommon_ApidDetailType[2]	Varies
	136	Pkt Tracker List	IngSmdCommon_PktTrackerType[2560]	Varies
	61576	AP storage area	Uint8[2621440]	Varies
File Size	2,683,016 Bytes			

4.7 OMPS Dwell RDR

See Section 4.7 of the JPSS Algorithm Specification Volume II: Data Dictionary for the OMPS Nadir Profile RDR/SDR (474-00448-02-05) for the OMPS Dwell RDR.

4.8 OMPS Telemetry RDR

See Section 4.8 of the JPSS Algorithm Specification Volume II: Data Dictionary for the OMPS Nadir Profile RDR/SDR (474-00448-02-05) for the OMPS Telemetry RDR.

4.9 OMPS Memory Dump RDR

See Section 4.9 of the JPSS Algorithm Specification Volume II: Data Dictionary for the OMPS Nadir Profile RDR/SDR (474-00448-02-05) for the OMPS Memory Dump RDR.

4.10 OMPS Flight Software (FSW) Boot-up Status RDR

See Section 4.10 of the JPSS Algorithm Specification Volume II: Data Dictionary for the OMPS Nadir Profile RDR/SDR (474-00448-02-05) for the OMPS Flight Software (FSW) Boot-up Status RDR.

5 TEMPERATURE DATA RECORDS (TDRS)

Not Applicable

6 SENSOR DATA RECORDS (SDRS)

SDR processing is instrument-specific and is an event-driven process. All instrument data required to create an SDR granule is contained within relevant Raw Data Record (RDR) granule(s). Processing an RDR into an SDR involves unpacking and de-commutating the Application Packet (AP) data, as necessary, applying calibration (radiometric, geometric, engineering), and finally geo-locating, as needed, using ephemeris and attitude information and earth model information.

An SDR contains the following:

- Calibrated sensor data
- Geolocation data (where applicable)
- Quality flags
- Metadata at the granule and aggregation level

6.1 SDR Granule Size

The granule sizes for SDRs given below are not absolute over the life of the sensor. Application software will need to determine the SDR array size by using the HDF5 software API.

The SDR granule is the smallest component of an HDF5 aggregation. Each HDF5 file will be composed of an aggregation of contiguous granules covering the time period specified in a request (the range being from one granule to the total number of granules in one orbit). To correctly use the HDF5 SDR files, operational software will need to determine the SDR array size by examining the appropriate HDF5 API's returned values per granule, or aggregation, as desired. The estimated size for each SDR granule is given in the SDR Data Unit Format.

6.2 Ozone Mapping and Profiler Suite Total Column SDRs

Data Mnemonic	SDRE-OMTC-C0030 Total Column (Science) SDRE-OMTC-C0031 Reserved GEOE-OMTC-C0030 Geolocation - ellipsoid
Description/ Purpose	The OMPS raw sensor data is decommutated, corrected, and calibrated by the SDR software and then stored in the Total Column (TC) SDR product. In addition to the data needed to support EDR generation, the TC SDR includes a number of other parameters described in more detail in Section 6.2.1. The OMPS nadir sensor uses a wide field-of-view push-broom telescope to feed two separate spectrometers. The nadir total column spectrometer measures the scene radiance between approximately 300 and 380 nanometers (nm) with a resolution of 1 nm sampled at 0.42 nm. In the parameters described below certain array dimensions are sized to a maximum expected value to allow some flexibility in sensor and algorithm configuration. For example, the actual number of Integrated Field of Views (IFOVs), Swaths, and SpectralPixels could change based on the configuration. In the case where actual data does not complete the array, fill values (Does Not

	Exist) are used. For these three dimensions, parameters available in the product indicate the number of actual values to be interpreted. Example geospatial coverage: The cross -track pixels are binned into 35 equal angle Integrated Field of Views (IFOV). The IFOV for the nadir cell of the total column measurement is ~46 km cross-track with an along-track reporting interval of 50 km. The 50km along-track interval is a result of the pixel extent combined with the spacecraft motion during the 7.5 second integration time. The OMPS TC SDR is used in the generation of the Ozone EDR/IPs.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, Section 3 for details.
File Size	Science: See Table 6.2.1.1-1 OMPS TC SDR Data Content Summary for size Science Geolocation: See Table 6.2.1.5-1 OMPS TC SDR Geolocation Data Content Summary for size Sizes are for a single granule without HDF5 overhead.
File Format Type	HDF5
Data Content and Data Format	The TC SDR format is described in Section 6.2.1, OMPS TC SDR Format.

6.2.1 OMPS TC SDR Format

The OMPS TC SDR format is described in the following subparagraphs.

6.2.1.1 OMPS TC SDR Data Content Summary

The OMPS TC SDR product structure contains the data arrays shown below in Table 6.2.1.1-1, OMPS TC SDR Data Content Summary.

Table: 6.2.1.1-1 OMPS TC SDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
SmearDataEarth	Raw smear counts of Earth image	32-bit floating point	[N*30, 2, 260]	[30, 2, 260]	count
RadianceEarth	Calibrated Earth View Radiances	32-bit floating point	[N*30, 240, 260]	[30, 240, 260]	W/(cm^3*sr)
Wavelengths	Estimated Earth wavelengths used in SDR processing (wref) Shift from solar reference is in [*,260]	64-bit floating point	[N*240, 260]	[240, 260]	nanometer
SolarFlux	Reference solar flux from calibration data base adjusted to Earth wavelength scale (rsf_piece)	32-bit floating point	[N*240, 260]	[240, 260]	W/cm^3
Bias1	Average electronics bias CCD side 1	32-bit floating point	[N*1]	[1]	count
Bias2	Average electronics bias CCD side 2	32-bit floating point	[N*1]	[1]	count
DarkCurrentEarth	Averaged dark current in earth data (dark_piece)	32-bit floating point	[N*242, 260]	[242, 260]	count
DarkExposeEarth	Averaged integration time for dark data (expose_dark)	64-bit floating point	[N*1]	[1]	second
Cal	Radiometric calibration	32-bit floating point	[N*240, 260]	[240, 260]	W/(cm^3*sr)
NumberOfSwaths	Number of actual swaths in Granule	16-bit integer	[N*1]	[1]	unitless
NumberOfIFOVs	Number of actual IFOVs	16-bit integer	[N*1]	[1]	unitless
NumberOfSpectralPixels	Number of actual spectral pixels	16-bit integer	[N*1]	[1]	unitless
LinearityTblVersion	Version and Profile ID of on-board Linearity Table from RDR	unsigned 16-bit integer	[N*2]	[2]	unitless
GainTblVersion	Version and Profile ID of on-board Gain Table from RDR	unsigned 16-bit integer	[N*2]	[2]	unitless
OutDatedCal	Wavelength CF_Earth cal factor is out of date (greater than 29 days old)	unsigned 8-bit char	[N*1]	[1]	unitless
SunGlint	Sun glint indication (scattering angle and surface type thresholds)	unsigned 8-bit char	[N*30, 240]	[30, 240]	unitless
SolarEclipse	All or part of the IFOV is affected by a solar eclipse, umbra or penumbra viewing.	unsigned 8-bit char	[N*30, 240]	[30, 240]	unitless
WaveFlag	This data field is obsolete	unsigned 8-bit char	[N*30, 240]	[30, 240]	unitless

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
RadFlag	This data field is obsolete	32-bit floating point	[N*30, 240]	[30, 240]	unitless
TCLinearCorrection	Indicates Linearity Correction performed inflight	unsigned 8-bit char	[N*30]	[30]	unitless
SAA	Spacecraft within South Atlantic Anomaly (extent in percent based on Climatological data)	unsigned 8-bit char	[N*30]	[30]	unitless
QualityEarth	Earth processing reliability (cumulative relative quality indicator count)	16-bit integer	[N*30]	[30]	unitless
File Size	2,228,396 Bytes				

6.2.1.2 OMPS TC SDR - Product Profile Data

Table: 6.2.1.2-1 OMPS TC SDR Product Profile

OMPS TC SDR Product Profile

Fields

Name	Data Size	Dimensions
SmearDataEarth	4byte(s)	Name / Granule Boundary / Dynamic / Min Array Size / Max Array Size: Swath / Yes / No / 30 / 30; CCD / No / No / 2 / 2; SpectralPixel / No / No / 260 / 260 Datum — Description: Smear counts of Earth image; Datum Offset: 0; Unscaled Valid Range Min: MIN_VAL; Unscaled Valid Range Max: MAX_VAL; Measurement Units: count; Scaled: No; Scale Factor Name: ; Data Type: 32-bit floating point Fill Values: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; VDNE_FLOAT32_FILL -999.3 Legend Entries: Name / Value
RadianceEarth	4byte(s)	Name / Granule Boundary / Dynamic / Min Array Size / Max Array Size: Swath / Yes / No / 30 / 30; IFOV / No / No / 240 / 240; SpectralPixel / No / No / 260 / 260 Datum — Description: Calibrated Earth View Radiances; Datum Offset: 0; Unscaled Valid Range Min: MIN_VAL; Unscaled Valid Range Max: MAX_VAL; Measurement Units: W/(cm^3*sr); Scaled: No; Scale Factor Name: ; Data Type: 32-bit floating point Fill Values: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; VDNE_FLOAT32_FILL -999.3 Legend Entries: Name / Value
Wavelengths	8byte(s)	Name / Granule Boundary / Dynamic / Min Array Size / Max Array Size: IFOV / Yes / No / 240 / 240; SpectralPixel / No / No / 260 / 260 Datum — Description / Datum Offset / Unscaled Valid Range Min / Unscaled Valid Range Max / Measurement Units / Scaled / Scale Factor Name / Data Type / Fill Values / Legend Entries

Fields

		Wavelengths used in SDR processing (wref)	0	MIN_VAL	MAX_VAL	nanometer	No		64-bit floating point	**Name** / **Value**: NA_FLOAT64_FILL -999.9; MISS_FLOAT64_FILL -999.8; ERR_FLOAT64_FILL -999.5; VDNE_FLOAT64_FILL -999.3		**Name** / **Value**	

SolarFlux	4byte(s)	**Name**: IFOV; SpectralPixel	**Granule Boundary**: Yes; No	**Dynamic**: No; No	**Min Array Size**: 240; 260	**Max Array Size**: 240; 260								
		Datum												
		Description: Reference solar flux (rsf_piece)	**Datum Offset**: 0	**Unscaled Valid Range Min**: MIN_VAL	**Unscaled Valid Range Max**: MAX_VAL	**Measurement Units**: W/cm^3	**Scaled**: No	**Scale Factor Name**	**Data Type**: 32-bit floating point	**Fill Values**: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; VDNE_FLOAT32_FILL -999.3		**Legend Entries**		
Bias1	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**								
		Datum												
		Description: Average electronics bias CCD side 1	**Datum Offset**: 0	**Unscaled Valid Range Min**: MIN_VAL	**Unscaled Valid Range Max**: MAX_VAL	**Measurement Units**: count	**Scaled**: No	**Scale Factor Name**	**Data Type**: 32-bit floating point	**Fill Values**: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; VDNE_FLOAT32_FILL -999.3		**Legend Entries**		
Bias2	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**								
		Datum												
		Description: Average electronics bias CCD side 2	**Datum Offset**: 0	**Unscaled Valid Range Min**: MIN_VAL	**Unscaled Valid Range Max**: MAX_VAL	**Measurement Units**: count	**Scaled**: No	**Scale Factor Name**	**Data Type**: 32-bit floating point	**Fill Values**: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; VDNE_FLOAT32_FILL -999.3		**Legend Entries**		
DarkCurrentEarth	4byte(s)	**Name**: IFOV; SpectralPixel	**Granule Boundary**: Yes; No	**Dynamic**: No; No	**Min Array Size**: 242; 260	**Max Array Size**: 242; 260								
		Datum												
		Description: Averaged dark current in earth data (dark_piece)	**Datum Offset**: 0	**Unscaled Valid Range Min**: MIN_VAL	**Unscaled Valid Range Max**: MAX_VAL	**Measurement Units**: count	**Scaled**: No	**Scale Factor Name**	**Data Type**: 32-bit floating point	**Fill Values**: NA_FLOAT32_FILL -999.9; MISS_FLOAT32_FILL -999.8; ERR_FLOAT32_FILL -999.5; VDNE_FLOAT32_FILL -999.3		**Legend Entries**		
DarkExposeEarth	8byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**								
		Datum												
		Description: Averaged integration time for dark data (expose_dark)	**Datum Offset**: 0	**Unscaled Valid Range Min**: MIN_VAL	**Unscaled Valid Range Max**: MAX_VAL	**Measurement Units**: second	**Scaled**: No	**Scale Factor Name**	**Data Type**: 64-bit floating point	**Fill Values**: NA_FLOAT64_FILL -999.9; MISS_FLOAT64_FILL -999.8; ERR_FLOAT64_FILL -999.5; VDNE_FLOAT64_FILL -999.3		**Legend Entries**		
Cal	4byte(s)	**Name**: IFOV; SpectralPixel	**Granule Boundary**: Yes; No	**Dynamic**: No; No	**Min Array Size**: 240; 260	**Max Array Size**: 240; 260								

Fields

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Radiometric calibration	0	MIN_VAL	MAX_VAL	W/(cm^3*sr)	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		

NumberOfSwaths — 2byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Number of actual swaths in granule	0	MIN_VAL	MAX_VAL	unitless	No		16-bit integer	Name	Value	Name	Value
								NA_INT16_FILL	-999		
								MISS_INT16_FILL	-998		
								ERR_INT16_FILL	-995		
								VDNE_INT16_FILL	-993		

NumberOfIFOVs — 2byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Number of actual IFOVs	0	MIN_VAL	MAX_VAL	unitless	No		16-bit integer	Name	Value	Name	Value
								NA_INT16_FILL	-999		
								MISS_INT16_FILL	-998		
								ERR_INT16_FILL	-995		
								VDNE_INT16_FILL	-993		

NumberOfSpectralPixels — 2byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Number of actual spectral pixels	0	MIN_VAL	MAX_VAL	unitless	No		16-bit integer	Name	Value	Name	Value
								NA_INT16_FILL	-999		
								MISS_INT16_FILL	-998		
								ERR_INT16_FILL	-995		
								VDNE_INT16_FILL	-993		

LinearityTblVersion — 2byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Granule	Yes	No	2	2

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Version and Profile ID of on-board Linearity Table from RDR	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 16-bit integer	Name	Value	Name	Value
								NA_UINT16_FILL	65535		
								MISS_UINT16_FILL	65534		
								ERR_UINT16_FILL	65531		
								VDNE_UINT16_FILL	65529		

GainTblVersion — 2byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Granule	Yes	No	2	2

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Version and Profile ID of on-board Gain Table from RDR	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 16-bit integer	Name	Value	Name	Value
								NA_UINT16_FILL	65535		
								MISS_UINT16_FILL	65534		
								ERR_UINT16_FILL	65531		
								VDNE_UINT16_FILL	65529		

OutDatedCal — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size

Fields

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Wavelength cal factor is out of date (greater than 29 days old)	0	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
CF_Earth cal factor is out of date (greater than 29 days old)	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	Name Value	Name Value False 0 True 1
Spare	2	MIN_VAL	MAX_VAL	unitless	No		6 bit(s)	Name Value	Name Value

SunGlint — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Sun glint indication (scattering angle and surface type thresholds)	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	Name Value	Name Value False 0 True 1

SolarEclipse — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
All or part of the IFOV is affected by a solar eclipse, umbra or penumbra viewing	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	Name Value	Name Value False 0 True 1

WaveFlag — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
This data field is obsolete	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	Name Value NA_UINT8_FILL 255 MISS_UINT8_FILL 254 ERR_UINT8_FILL 251 VDNE_UINT8_FILL 249	Name Value False 0 True 1

RadFlag — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
This data field is obsolete	0	MIN_VAL	MAX_VAL	unitless	No		32-bit floating point	Name Value NA_FLOAT32_FILL -999.9 MISS_FLOAT32_FILL -999.8 ERR_FLOAT32_FILL -999.5 VDNE_FLOAT32_FILL -999.3	Name Value

TCLinearCorrection — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Linearity Correction performed inflight	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	Name Value NA_UINT8_FILL 255	Name Value False 0

Fields

										MISS_UINT8_FILL 254 ERR_UINT8_FILL 251 VDNE_UINT8_FILL 249	True 1

SAA — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Spacecraft within South Atlantic Anomaly (extent in percent based on Climatological data)	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	Name / Value	0% <= SAA <= 10% : 0 10% < SAA <= 20% : 1 20% < SAA <= 30% : 2 30% < SAA <= 40% : 3 40% < SAA <= 50% : 4 50% < SAA <= 60% : 5 60% < SAA <= 70% : 6 70% < SAA <= 80% : 7 80% < SAA : 8

QualityEarth — 2byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Earth processing reliability --- value bit# Meaning of Flag --- 0 Good scan # warning Flags 1 1 less than 1 %radiance are negative, degraded warning 2 2 >= 1% and < 10% radiance are negative, degraded warning 4 3 >= 10% and < 100% radiance are negative, serious degradation warning 8 4 # reserved for future, probably smear transient warning. 16 5 # reserved for future 32 6 # reserved for future 64 7 # reserved for future # Data not usable processing error Flags 128 8 Negative dark table, Do Not Use. 256 9 No usable radiance data, this seems to happen only for j01 with missing packets. 512 10 Wavelength out of range do not use. 1024 11 Solar flux out of range, do not use. 2048 12 # reserved for future 4096 13 # reserved for future 8192 14 # reserved for future 16384 15 # reserved for future	0	MIN_VAL	MAX_VAL	unitless	No		16-bit integer	Name / Value NA_INT16_FILL -999 MISS_INT16_FILL -998 ERR_INT16_FILL -995	Name / Value

6.2.1.3 OMPS TC SDR HDF5 Details

Figure 6.2.1.3-1, OMPS TC SDR UML Diagram, provides the details on the content and data types of the OMPS TC SDR. This UML diagram provides details at the granule level only. In addition to this UML diagram, refer to Section 3, Sensor Data Records and Temperature Data Records HDF5 Details, Figure 3.2-1, Generalized UML Diagram for HDF5 SDR/TDR Files, for a complete UML rendering of this product.

The OMPS TC SDR within the HDF5 files can be found within the Data Products group with the group name of OMPS-TC-SDR. The aggregation and granule(s) contain the data fields listed in the UML diagrams. The corresponding HDF5 data type for each field is also provided.

OMPS-TC-SDR
+SmearDataEarth : H5T_NATIVE_FLOAT
+RadianceEarth : H5T_NATIVE_FLOAT
+Wavelengths : H5T_NATIVE_DOUBLE
+SolarFlux : H5T_NATIVE_FLOAT
+Bias1 : H5T_NATIVE_FLOAT
+Bias2 : H5T_NATIVE_FLOAT
+DarkCurrentEarth : H5T_NATIVE_FLOAT
+DarkExposeEarth : H5T_NATIVE_DOUBLE
+Cal : H5T_NATIVE_FLOAT
+NumberOfSwaths : H5T_NATIVE_SHORT
+NumberOfIFOVs : H5T_NATIVE_SHORT
+NumberOfSpectralPixels : H5T_NATIVE_SHORT
+LinearityTblVersion : H5T_NATIVE_USHORT
+GainTblVersion : H5T_NATIVE_USHORT
+OutDatedCal : H5T_NATIVE_UCHAR
+SunGlint : H5T_NATIVE_UCHAR
+SolarEclipse : H5T_NATIVE_UCHAR
+WaveFlag : H5T_NATIVE_UCHAR
+RadFlag : H5T_NATIVE_FLOAT
+TCLinearCorrection : H5T_NATIVE_UCHAR
+SAA : H5T_NATIVE_UCHAR
+QualityEarth : H5T_NATIVE_SHORT

Figure: 6.2.1.3-1 OMPS TC SDR UML Diagram

6.2.1.4 OMPS TC SDR HDF5 Metadata Details

The HDF5 metadata elements associated with the OMPS TC SDR are listed in the JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms, Section5.3, HDF5 (Metadata) Hierarchy. The OMPS TC SDR metadata includes all common metadata at the root, product, aggregation, and granule levels. No summary level metadata is produced for OMPS TC SDR.

6.2.1.5 OMPS TC SDR Geolocation Content Summary

The OMPS TC SDR geolocation data arrays structures are summarized below in Table 6.2.1.5-1, OMPS TC SDR Geolocation Content Summary.

Table: 6.2.1.5-1 OMPS TC SDR Geolocation Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
StartTime	Starting Time of Swath in IET (1/1/1958)	64-bit integer	[N*30]	[30]	microsecond
MidTime	Mid Time of Swath in IET(1/1/1958)	64-bit integer	[N*30]	[30]	microsecond
Latitude	Latitude of each IFOV (positive North)	32-bit floating point	[N*30, 240]	[30, 240]	degree
Longitude	Longitude of each IFOV (positive East)	32-bit floating point	[N*30, 240]	[30, 240]	degree
LatitudeCorners	Latitude of each IFOV Corner - Array starts at upper right and proceeds clockwise	32-bit floating point	[N*30, 240, 4]	[30, 240, 4]	degree
LongitudeCorners	Longitude of each IFOV Corner - Array starts at upper right and proceeds clockwise	32-bit floating point	[N*30, 240, 4]	[30, 240, 4]	degree
SolarZenithAngle	Zenith angle of sun at each IFOV position	32-bit floating point	[N*30, 240]	[30, 240]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each IFOV position	32-bit floating point	[N*30, 240]	[30, 240]	degree
SatelliteZenithAngle	Zenith angle to satellite at each IFOV position	32-bit floating point	[N*30, 240]	[30, 240]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each IFOV position	32-bit floating point	[N*30, 240]	[30, 240]	degree
RelativeAzimuthAngle	Difference between solar and satellite azimuth angles at each IFOV position (solar - satellite)	32-bit floating point	[N*30, 240]	[30, 240]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*30, 240]	[30, 240]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*30, 240]	[30, 240]	meter
MoonVector	Lunar position in Spacecraft Coordinates at MidTime	32-bit floating point	[N*30, 3]	[30, 3]	meter
SunVector	Solar position in Spacecraft Coordinates at MidTime	32-bit floating point	[N*30, 3]	[30, 3]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime	32-bit floating point	[N*30, 3]	[30, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime	32-bit floating point	[N*30, 3]	[30, 3]	m/s
SCAttitude	Spacecraft attitude with respect to the Geodetic Reference Frame (roll, pitch, yaw) at MidTime	32-bit floating point	[N*30, 3]	[30, 3]	arcsecond

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
NumberOfSwaths	Number of actual swaths in granule	16-bit integer	[N*1]	[1]	unitless
NumberOfIFOVs	Number of actual IFOVs	16-bit integer	[N*1]	[1]	unitless
QF1_OMPSTCGEO	Attitude/Ephemeris availability status	unsigned 8-bit char	[N*30]	[30]	unitless
File Size	108,259 Bytes				

6.2.1.6 OMPS TC SDR Geolocation Product Profile

Table: 6.2.1.6-1 OMPS TC SDR Geolocation Product Profile

OMPS TC SDR Geolocation Product Profile

Fields

Name | **Data Size** | **Dimensions**

StartTime | 8byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Starting Time of Swath in IET (1/1/1958)	0	MIN_VAL	MAX_VAL	microsecond	No		64-bit integer	Name	Value	Name	Value
								NA_INT64_FILL	-999		
								MISS_INT64_FILL	-998		
								ERR_INT64_FILL	-995		
								VDNE_INT64_FILL	-993		

MidTime | 8byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Mid Time of Swath in IET (1/1/1958)	0	MIN_VAL	MAX_VAL	microsecond	No		64-bit integer	Name	Value	Name	Value
								NA_INT64_FILL	-999		
								MISS_INT64_FILL	-998		
								ERR_INT64_FILL	-995		
								VDNE_INT64_FILL	-993		

Latitude | 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Latitude of each IFOV (positive North)	0	-90	90	degree	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3		

Longitude | 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Longitude of each IFOV (positive East)	0	-180	180	degree	No		32-bit floating point	Name	Value	Name	Value

Fields

										NA_FLOAT32_FILL	-999.9
										MISS_FLOAT32_FILL	-999.8
										ERR_FLOAT32_FILL	-999.5
										ELLIPSOID_FLOAT32_FILL	-999.4
										VDNE_FLOAT32_FILL	-999.3

LatitudeCorners — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240
Corner	No	No	4	4

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Latitude of each IFOV corner - Array starts at upper right and proceeds clockwise	0	-90	90	degree	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3		

LongitudeCorners — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240
Corner	No	No	4	4

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Longitude of each IFOV corner - Array starts at upper right and proceeds clockwise	0	-180	180	degree	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3		

SolarZenithAngle — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Zenith angle of sun at each IFOV position	0	0	180	degree	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3		

SolarAzimuthAngle — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Fields

		Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
		Azimuth angle of sun (measured clockwise positive from North) at each IFOV position	0	-180	180	degree	No		32-bit floating point	Name: NA_FLOAT32_FILL, Value: -999.9 Name: MISS_FLOAT32_FILL, Value: -999.8 Name: ERR_FLOAT32_FILL, Value: -999.5 Name: ELLIPSOID_FLOAT32_FILL, Value: -999.4 Name: VDNE_FLOAT32_FILL, Value: -999.3	

		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
SatelliteZenithAngle	4byte(s)	Swath	Yes	No	30	30
		IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Zenith angle to satellite at each IFOV position	0	0	Approx. 70	degree	No		32-bit floating point	Name: NA_FLOAT32_FILL, Value: -999.9 Name: MISS_FLOAT32_FILL, Value: -999.8 Name: ERR_FLOAT32_FILL, Value: -999.5 Name: ELLIPSOID_FLOAT32_FILL, Value: -999.4 Name: VDNE_FLOAT32_FILL, Value: -999.3	

		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
SatelliteAzimuthAngle	4byte(s)	Swath	Yes	No	30	30
		IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Azimuth angle (measured clockwise positive from North) to Satellite at each IFOV position	0	-180	180	degree	No		32-bit floating point	Name: NA_FLOAT32_FILL, Value: -999.9 Name: MISS_FLOAT32_FILL, Value: -999.8 Name: ERR_FLOAT32_FILL, Value: -999.5 Name: ELLIPSOID_FLOAT32_FILL, Value: -999.4 Name: VDNE_FLOAT32_FILL, Value: -999.3	

		Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
RelativeAzimuthAngle	4byte(s)	Swath	Yes	No	30	30
		IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Difference between solar and satellite azimuth angles at each IFOV position (solar - satellite)	0	-180	180	degree	No		32-bit floating point	Name: NA_FLOAT32_FILL, Value: -999.9 Name: MISS_FLOAT32_FILL, Value: -999.8 Name: ERR_FLOAT32_FILL, Value: -999.5 Name: ELLIPSOID_FLOAT32_FILL, Value: -999.4 Name: VDNE_FLOAT32_FILL, Value: -999.3	

Fields

Height — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Ellipsoid-Geoid separation	0	MIN_VAL	MAX_VAL	meter	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3		

SatelliteRange — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
IFOV	No	No	240	240

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Line of sight distance from the ellipsoid intersection to the satellite	0	MIN_VAL	MAX_VAL	meter	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								ELLIPSOID_FLOAT32_FILL	-999.4		
								VDNE_FLOAT32_FILL	-999.3		

MoonVector — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
SCCoordinate	No	No	3	3

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Lunar Position in Spacecraft Coordinates at MidTime	0	MIN_VAL	MAX_VAL	meter	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		

SunVector — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
SCCoordinate	No	No	3	3

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values		Legend Entries	
Solar position in Spacecraft Coordinates at MidTime	0	MIN_VAL	MAX_VAL	meter	No		32-bit floating point	Name	Value	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		

SCPosition — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30
ECRCoordinate	No	No	3	3

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries

Fields

		Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime	0	MIN_VAL	MAX_VAL	meter	No		32-bit floating point	Name: NA_FLOAT32_FILL, Value: -999.9 Name: MISS_FLOAT32_FILL, Value: -999.8 Name: ERR_FLOAT32_FILL, Value: -999.5 Name: VDNE_FLOAT32_FILL, Value: -999.3				
SCVelocity	4byte(s)	Name: Swath, Granule Boundary: Yes, Dynamic: No, Min Array Size: 30, Max Array Size: 30 Name: ECRCoordinate, Granule Boundary: No, Dynamic: No, Min Array Size: 3, Max Array Size: 3												
		Datum												
		Description	**Datum Offset**	**Unscaled Valid Range Min**	**Unscaled Valid Range Max**	**Measurement Units**	**Scaled**	**Scale Factor Name**	**Data Type**	**Fill Values**			**Legend Entries**	
		Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime	0	MIN_VAL	MAX_VAL	m/s	No		32-bit floating point	Name: NA_FLOAT32_FILL, Value: -999.9 Name: MISS_FLOAT32_FILL, Value: -999.8 Name: ERR_FLOAT32_FILL, Value: -999.5 Name: VDNE_FLOAT32_FILL, Value: -999.3				
SCAttitude	4byte(s)	Name: Swath, Granule Boundary: Yes, Dynamic: No, Min Array Size: 30, Max Array Size: 30 Name: GRFCoordinate, Granule Boundary: No, Dynamic: No, Min Array Size: 3, Max Array Size: 3												
		Datum												
		Description	**Datum Offset**	**Unscaled Valid Range Min**	**Unscaled Valid Range Max**	**Measurement Units**	**Scaled**	**Scale Factor Name**	**Data Type**	**Fill Values**			**Legend Entries**	
		Spacecraft attitude with respect to the Geodetic Reference Frame (roll, pitch, yaw) at MidTime	0	MIN_VAL	MAX_VAL	arcsecond	No		32-bit floating point	Name: NA_FLOAT32_FILL, Value: -999.9 Name: MISS_FLOAT32_FILL, Value: -999.8 Name: ERR_FLOAT32_FILL, Value: -999.5 Name: VDNE_FLOAT32_FILL, Value: -999.3				
NumberOfSwaths	2byte(s)	Name: Granule Boundary: Dynamic: Min Array Size: Max Array Size:												
		Datum												
		Description	**Datum Offset**	**Unscaled Valid Range Min**	**Unscaled Valid Range Max**	**Measurement Units**	**Scaled**	**Scale Factor Name**	**Data Type**	**Fill Values**			**Legend Entries**	
		Number of actual swaths in granule	0	MIN_VAL	MAX_VAL	unitless	No		16-bit integer	Name: NA_INT16_FILL, Value: -999 Name: MISS_INT16_FILL, Value: -998 Name: ERR_INT16_FILL, Value: -995 Name: ELLIPSOID_INT16_FILL, Value: -994 Name: VDNE_INT16_FILL, Value: -993				
NumberOfIFOVs	2byte(s)	Name: Granule Boundary: Dynamic: Min Array Size: Max Array Size:												
		Datum												
		Description	**Datum Offset**	**Unscaled Valid Range Min**	**Unscaled Valid Range Max**	**Measurement Units**	**Scaled**	**Scale Factor Name**	**Data Type**	**Fill Values**			**Legend Entries**	
		Number of actual IFOVs	0	MIN_VAL	MAX_VAL	unitless	No		16-bit integer	Name: NA_INT16_FILL, Value: -999 Name: MISS_INT16_FILL, Value: -998 Name: ERR_INT16_FILL, Value: -995 Name: ELLIPSOID_INT16_FILL, Value: -994 Name: VDNE_INT16_FILL, Value: -993				

OMPS TC SDR Geolocation Product Profile - Quality Flags

Fields

Name	Data Size	Dimensions

QF1_OMPSTCGEO — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	30	30

Datum

Description	Datum Offset	Unscaled Valid Range Min	Unscaled Valid Range Max	Measurement Units	Scaled	Scale Factor Name	Data Type	Fill Values	Legend Entries
Attitude and Ephemeris Availability Status	0	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	Name / Value	Name / Value
									Nominal - E&A data available / 0
									Missing Data <= Small Gap / 1
									Small Gap < Missing Data < Granule Boundary / 2
									Missing Data >= Granule Boundary / 3
Spare	2	MIN_VAL	MAX_VAL	unitless	No		6 bit(s)	Name / Value	Name / Value

6.2.1.7 OMPS TC SDR Geolocation HDF5 Details

The OMPS TC SDR Geolocation is based on a simple spatial average over the geometric cell bounds, regardless of pixel sampling. Geolocation is reported on the ellipsoid. Figure 6.2.1.7-1, OMPS TC SDR Geolocation UML Diagram, provides details on the contents and data types of the OMPS TC SDR geolocation.

OMPS-TC-GEO
+StartTime : H5T_NATIVE_LLONG
+MidTime : H5T_NATIVE_LLONG
+Latitude : H5T_NATIVE_FLOAT
+Longitude : H5T_NATIVE_FLOAT
+LatitudeCorners : H5T_NATIVE_FLOAT
+LongitudeCorners : H5T_NATIVE_FLOAT
+SolarZenithAngle : H5T_NATIVE_FLOAT
+SolarAzimuthAngle : H5T_NATIVE_FLOAT
+SatelliteZenithAngle : H5T_NATIVE_FLOAT
+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT
+RelativeAzimuthAngle : H5T_NATIVE_FLOAT
+Height : H5T_NATIVE_FLOAT
+SatelliteRange : H5T_NATIVE_FLOAT
+MoonVector : H5T_NATIVE_FLOAT
+SunVector : H5T_NATIVE_FLOAT
+SCPosition : H5T_NATIVE_FLOAT
+SCVelocity : H5T_NATIVE_FLOAT
+SCAttitude : H5T_NATIVE_FLOAT
+NumberOfSwaths : H5T_NATIVE_SHORT
+NumberOfIFOVs : H5T_NATIVE_SHORT
+QF1_OMPSTCGEO : H5T_NATIVE_UCHAR

Figure: 6.2.1.7-1 OMPS TC SDR Geolocation UML Diagram

6.2.1.8 OMPS TC SDR Geolocation Metadata Details

The HDF5 metadata elements associated with the OMPS TC SDR Geolocation are listed in the JPSS Algorithm Specification Volume II: Data Dictionary for the Common algorithms, Section 5.3, HDF5 (Metadata) Hierarchy. There are no additional metadata elements or granule level quality flags for this geolocation.

6.2.2 Reserved

6.3 Reserved

7 LOOK-UP TABLES AND PROCESSING COEFFICIENT TABLES

The template used for these formats in this document is described below.

Data Mnemonic: This is a unique identifier. JPSS CDFCB-X Vol. I, 474-00001-01 describes the data mnemonic definition methodology.

Description/Purpose: A brief description of the data format and its purpose.

Instrument: Identification of the Instrument associated with the table.

File-Naming Construct: A description of the file-naming constructs for those data units that apply. JPSS CDFCB-X Vol. I, 474-00001-01 defines file-naming conventions.

File Size: The size of the data file.

File Format Type: The format type of the data file.

Production Frequency: Production frequency is the interval of time for data generation. A production frequency equal to dynamic implies that it is only as requested or as needed.

Data Format/Structure: This defines the actual data format. The definitions provide information for every data element in the data unit.

The following rules apply to all tables:

1. All field names mandatory, unless specified otherwise.
2. Fill data is specified, where applicable.
3. Strings are left-aligned and integers are right-aligned, unless specified otherwise.
4. For information regarding Coordinated Universal Time (UTC) and IDPS Epoch Time (IET) conventions, see the JPSS CDFCB-X Vol. I, 474-00001-01.
5. For all references of the ASCII Standard, the corresponding International Standards Organization (ISO) standard is ISO/IEC 10646. The specific Unicode is UTF8, unless stated otherwise.
6. The fields are presented in order (either top - down or most significant first), unless stated otherwise.

7.1 Look-up Tables

Algorithm Look-up Table (LUT) files contain tables of pre-computed values used in lieu of real-time algorithm computations to reduce processing resource demands. Table values are typically the result of RTM executions and other environmental model simulations. These data generally cover broad, multi-dimensional parameter spaces which are unique to each algorithm.

7.1.1 OMPS Total Column RDR/SDR LUTs

OMPS Total Column RDR/SDR data production currently use no LUTs.

7.2 Processing Coefficient Tables

The S-NPP/JPSS-1 ground system data product generation subsystem uses Processing Coefficient Table (PCT) file parameters. PCT files can be either Automated or Manual coefficient tables. Within the Manual table type are two coefficient classes: Initial and Ephemeral. Sections below describe all three and any tables of that type for the product.

7.2.1 Automated Processing Coefficient Tables

Automated Processing Coefficient (PC) files contain parameters updated and/or created during the processing of the S-NPP/JPSS Data Products by the processing algorithms. The processing environment subsequently uses these files without human review of their contents. Files can be used immediately after creation or in future processing such as the next granule in the production data stream processing. OMPS TC has no Automated Processing Coefficient Tables.

7.2.2 Manual Processing Coefficients

Manual Processing Coefficient (PC) files contain parameters used for S-NPP/JPSS Data Product generation which require human review prior to operational processing environment insertion. Manual Processing Coefficients have two classes:

- Initialization PCTs contain infrequently updated initial parameters sets S-NPP/JPSS uses for data product generation.
- Ephemeral PCTs contain frequently updated parameters sets S-NPP/JPSS uses for data product generation.

7.2.2.1 OMPS Total Column RDR/SDR Initialization PCTs

7.2.2.1.1 OMPS TC Calibration Constant PC

Data Mnemonic	NP_NU-LM0240-008
Description/ Purpose	The OMPS TC Calibration Constant PC contains radiance calibration constant (from pre-launch calibration). This file is used in the OMPS TC SDR algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.1-1, OMPS TC Calibration Constant PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.1-1, OMPS TC Calibration Constant PC Data Format

Table: 7.2.2.1.1-1 OMPS TC Calibration Constant PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
radevresp	2271360	32-bit floating point	2.89661 - 3299.13	counts/W/cm^3/sr	Radiometric sensitivities 3 Dimensional Array: tc::NUM_ELECTRONICS x tc::MAX_NSPEC_CCD x tc::NO_SPAT_CCD Size of Dimension(s): 2 x 364 x 780
File Size	2,271,360 Bytes				

7.2.2.1.2 OMPS TC Field Angles Map PC

Data Mnemonic	NP_NU-LM0240-009
Description/ Purpose	The OMPS TC Field Angles Map PC Table contains the detector map of pixel optical angles This file is used in the OMPS TC SDR algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.2-1, OMPS TC Field Angles Map PC Table Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.2-1, OMPS TC Field Angles Map PC Table Data Format

Table: 7.2.2.1.2-1 OMPS TC Field Angles Map PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
angles Array	12480	64-bit floating point	-1 - 8.6044729E-02	nanometers	Pre-launch cross-track and along-track view angles map Note: OPTICAL_ANGLE_TYPE refers to the azimuth angle (0) and elevation angle (1) 2 Dimensional Array: tc::NO_SPAT_CCD x tc::NUM_IMAGE_HALF Size of Dimension(s): 780 x 2
File Size	12,480 Bytes				

7.2.2.1.3 OMPS TC Observed Solar PC

Data Mnemonic	NP_NU-LM0240-010
Description/ Purpose	The OMPS TC Observed Solar PC Table contains observed reference solar irradiances. This file is used in the OMPS TC SDR algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.3-1, OMPS TC Observed Solar PC Table Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.3-1, OMPS TC Observed Solar PC Table Data Format

Table: 7.2.2.1.3-1 OMPS TC Observed Solar PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
rsf_data Array	1135680	32-bit floating point	0 - ~1316	W/cm^3/sr	Baseline OMPS observed reference solar irradiances 2 Dimensional Array: tc::MAX_NSPEC_CCD x tc::NO_SPAT_CCD Size of Dimension(s): 364 x 780
rsf_counts Array	1135680	32-bit floating point	24,531.2 - 16,708,400	counts	Baseline OMPS observed reference solar counts 2 Dimensional Array: tc::MAX_NSPEC_CCD x tc::NO_SPAT_CCD Size of Dimension(s): 364 x 780
File Size	2,271,360 Bytes				

7.2.2.1.4 Reserved

7.2.2.1.5 Reserved

7.2.2.1.6 Reserved

7.2.2.1.7 Reserved

7.2.2.1.8 Reserved

7.2.2.1.9 Reserved

7.2.2.1.10 Reserved

7.2.2.1.11 Reserved

7.2.2.1.12 OMPS TC Timing Pattern Ground PC

Data Mnemonic	NP_NU-LM0240-020
Description/ Purpose	The OMPS TC Timing Pattern Ground Table contains integration times and offsets for Earth View, Solar, LED and Dark. This file is used in the OMPS TC SDR algorithm. This file has two forms – a single pattern format and a dual pattern format. The dual pattern format contains two timing patterns (an input and output pattern for the RDR aggregator). The dual format will be used starting with Block 2.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The following version information will be appended to the Provenance Version in the Version Number field of the File-Naming Convention for OMPS Automatic PCs: Vxxx-yyy Where xxx and-yyy are the major and minor version numbers of the table. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.12-1, OMPS TC Timing Pattern Ground Table Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.12-1, OMPS TC Timing Pattern Ground Table Data Format

Table: 7.2.2.1.12-1 OMPS TC Timing Pattern Ground PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
TPev_num_in	4	32-bit integer	1	unitless	number of Earth View Frames
TPsol_num_in	4	32-bit integer	1	unitless	number of solar frames
TPdark_num_in	4	32-bit integer	1	unitless	number of dark frames
TPled_num_in	4	32-bit integer	1	unitless	number of lamp frames
TPev_conum_in	4	32-bit integer	1	unitless	number of Earth View coadds
TPsol_conum_in	4	32-bit integer	1 - 7	unitless	number of solar coadds
TPdark_conum_in	4	32-bit integer	1	unitless	number of dark coadds
TPled_conum_in	4	32-bit integer	1 - 83	unitless	number of lamp coadds
TPev_time_in	60	32-bit floating point	1 - MAX_VAL	second	total integration time for each frame - Earth View 1 Dimensional Array: tc:: TC_TP_NSCANS Size of Dimension(s): 15
TPsol_time_in	252	32-bit floating point	1 - MAX_VAL	second	total integration time for each frame - Solar 1 Dimensional Array: tc::NO_SOLAR_IMAGES Size of Dimension(s): 63
TPdark_time_in	20	32-bit floating point	1 - MAX_VAL	second	total integration time for each frame - Dark 1 Dimensional Array: tc::NO_DARK_IMAGES Size of Dimension(s): 5
TPled_time_in	600	32-bit floating point	1 - MAX_VAL	second	total integration time for each frame - LED 1 Dimensional Array: tc::NO_LAMP_IMAGES Size of Dimension(s): 150
ev_time_offset_in	8	64-bit integer	MIN_VAL - MAX_VAL	microsecond	EV time offset
sol_time_offset_in	8	64-bit integer	MIN_VAL - MAX_VAL	microsecond	Solar time offset
dark_time_offset_in	8	64-bit integer	MIN_VAL - MAX_VAL	microsecond	Dark time offset

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
led_time_offset_in	1200	64-bit integer	MIN_VAL - MAX_VAL	microsecond	1 Dimensional Array: tc::NO_LAMP_IMAGES Size of Dimension(s): 150
TPev_num	4	32-bit integer	1	unitless	number of Earth View Frames
TPsol_num	4	32-bit integer	1	unitless	number of solar frames
TPdark_num	4	32-bit integer	1	unitless	number of dark frames
TPled_num	4	32-bit integer	1	unitless	number of lamp frames
TPev_conum	4	32-bit integer	1	unitless	number of Earth View coadds
TPsol_conum	4	32-bit integer	1 - 7	unitless	number of solar coadds
TPdark_conum	4	32-bit integer	1	unitless	number of dark coadds
TPled_conum	4	32-bit integer	1 - 83	unitless	number of lamp coadds
TPev_time Array	60	32-bit floating point	1 - MAX_VAL	second	total integration time for each frame - Earth View 1 Dimensional Array: tc:: TC_TP_NSCANS Size of Dimension(s): 15
TPsol_time Array	252	32-bit floating point	1 - MAX_VAL	second	total integration time for each frame - Solar 1 Dimensional Array: tc::NO_SOLAR_IMAGES Size of Dimension(s): 63
TPdark_time Array	20	32-bit floating point	1 - MAX_VAL	second	total integration time for each frame - Dark 1 Dimensional Array: tc::NO_DARK_IMAGES Size of Dimension(s): 5
TPled_time Array	600	32-bit floating point	1 - MAX_VAL	second	total integration time for each frame - LED 1 Dimensional Array: tc::NO_LAMP_IMAGES Size of Dimension(s): 150
ev_time_offset	8	64-bit integer	MIN_VAL - MAX_VAL	microsecond	EV time offset
sol_time_offset	8	64-bit integer	MIN_VAL - MAX_VAL	microsecond	Solar time offset

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
dark_time_offset	8	64-bit integer	MIN_VAL - MAX_VAL	microsecond	Dark time offset
led_time_offset	1200	64-bit integer	MIN_VAL - MAX_VAL	microsecond	1 Dimensional Array: tc::NO_LAMP_IMAGES Size of Dimension(s): 150
File Size	4,376 Bytes				

7.2.2.1.13 Reserved

7.2.2.1.14 OMPS TC Earth View Sample Ground PC

Data Mnemonic	NP_NU-LM0240-022
Description/ Purpose	The OMPS TC Earth View Sample Ground Table contains the BATC generated database of utilized pixels. This file is used in the OMPS TC SDR algorithm. This file has two forms – a single sample format and a dual sample format. The dual sample format contains two sample patterns (an input and output pattern for the RDR aggregator). The dual format will be used starting with Block 2.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The following version information will be appended to the Provenance Version in the Version Number field of the File-Naming Convention for OMPS Automatic PCs: Vxxx-yyy Where xxx and-yyy are the major and minor version numbers of the table. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.14-1, OMPS TC Earth View Sample Ground Table Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.14-1, OMPS TC Earth View Sample Ground Table Data Format

Table: 7.2.2.1.14-1 OMPS TC Earth View Sample Ground PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
macrot_in	1135680	32-bit integer	0 - 3 0 = unused pixel 1 = macropixel A 2 = macropixel B 3 = bad pixel	unitless	Flight-like Earth-view sample table array. 2 Dimensional Array: tc::MAX_NSPEC_CCD x tc::NO_SPAT_CCD Size of Dimension(s): 364 x 780
macrot	1135680	32-bit integer	0 - 3 0 = unused pixel 1 = macropixel A 2 = macropixel B 3 = bad pixel	unitless	Flight-like Earth-view sample table array. 2 Dimensional Array: tc::MAX_NSPEC_CCD x tc::NO_SPAT_CCD Size of Dimension(s): 364 x 780
File Size	2,271,360 Bytes				

7.2.2.1.15 OMPS TC Macropixel Ground PC

Data Mnemonic	NP_NU-LM0240-023
Description/ Purpose	The OMPS TC Macropixel Ground Table contains the ccd map of EV macropixels. This file is used in the OMPS TC SDR algorithm. This file has two forms – a single macropixel table format and a dual table format. The dual table format contains two macropixel tables (an input and output pattern for the RDR aggregator). The dual format will be used starting with Block 2.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The following version information will be appended to the Provenance Version in the Version Number field of the File-Naming Convention for OMPS Automatic PCs: Vxxx-yyy Where xxx and-yyy are the major and minor version numbers of the table. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.15-1, OMPS TC Macropixel Ground Table Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.15-1, OMPS TC Macropixel Ground Table Data Format

Table: 7.2.2.1.15-1 OMPS TC Macropixel Ground PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
macrot_in	1135680	32-bit integer	-N - N : negative number indicates all bad macropixel, N goes from 1 to the number of macropixels	unitless	Macropixel table array 2 Dimensional Array: tc::MAX_NSPEC_CCD x tc::NO_SPAT_CCD Size of Dimension(s): 364 x 780
macrot	1135680	32-bit integer	-N - N : negative number indicates all bad macropixel, N goes from 1 to the number of macropixels	unitless	Macropixel table array 2 Dimensional Array: tc::MAX_NSPEC_CCD x tc::NO_SPAT_CCD Size of Dimension(s): 364 x 780
File Size	2,271,360 Bytes				

7.2.2.1.16 Reserved

7.2.2.1.17 Reserved

7.2.2.1.18 OMPS TC Wavelengths Ground PC

Data Mnemonic	NP_NU-LM0240-026
Description/ Purpose	The OMPS TC Wavelengths Ground Table contains band center wavelengths corrected for solar doppler shift. This file is used in the OMPS TC SDR algorithm. Starting with Block 2 the wavelength ground table will contain additional information, specifically the coefficients for a model fit of the intra-orbit wavelength and an adjustment limit value.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The following version information will be appended to the Provenance Version in the Version Number field of the File-Naming Convention: Vxxx-yyy Where xxx and-yyy are the major and minor version numbers of the table. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.18-1, OMPS TC Wavelengths Ground Table Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.18-1, OMPS TC Wavelengths Ground Table Data Format

Table: 7.2.2.1.18-1 OMPS TC Wavelengths Ground PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
obs_year	58	16-bit integer	2000 - 2050	years	Year 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
obs_day	58	16-bit integer	1 - 366	days	Day 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
resolution	232	64-bit floating point	0 - MAX_VAL	nanometers	FWHM wavelength resolution 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
intercept	55680	64-bit floating point	MIN_VAL - MAX_VAL	nanometers	Intercept line 2 Dimensional Array: tc::TC_CAL_DAYS x tc::MAXCTPX Size of Dimension(s): 29 x 240
slope	55680	64-bit floating point	MIN_VAL - MAX_VAL	unitless	Slope line 2 Dimensional Array: tc::TC_CAL_DAYS x tc::MAXCTPX Size of Dimension(s): 29 x 240
correl	55680	64-bit floating point	-1 - 1 Only valid if ntrends > 0	unitless	Correlation 2 Dimensional Array: tc::TC_CAL_DAYS x tc::MAXCTPX Size of Dimension(s): 29 x 240
ntrends	116	32-bit integer	0 - MAX_VAL	unitless	Number of calibrations used for trend 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
newestyear	58	16-bit integer	2000 - 2050	years	Year of newest calibration trended 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
newestday	58	16-bit integer	1 - 366	days	Day of newest calibration 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
wbands	20267520	64-bit floating point	260 - 410	nanometers	Wavelengths 3 Dimensional Array: tc::TC_CAL_DAYS x tc::MAX_NSPEC_CCD x tc::MAXCTPX Size of Dimension(s): 29 x 364 x 240
rsf_parameters	5160960	64-bit floating point	-1 - 1	nanometers	Fit coefficients 5 Dimensional Array: FIT_MONTHS x HOURS_IN_DAY x INC_DEC_SZA x IFOV x N_SZA_COEFFS Size of Dimension(s): 14 x 24 x 2 x 240 x 4
rsf_pw_limit	8	64-bit floating point	-1 - 1	nanometers	Absolute shift limit. 1 Dimensional Array: N_FIT_LIMIT Size of Dimension(s): 1
File Size	25,596,108 Bytes				

7.2.2.1.19 OMPS TC CF Earth Ground PC

Data Mnemonic	NP_NU-LM0240-027
Description/ Purpose	The OMPS TC CF Earth Ground Table contains radiometric calibration factors for the Earth scene spatial cells. This file is used in the OMPS SDR algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The following version information will be appended to the Provenance Version in the Version Number field of the File-Naming Convention for OMPS Automatic PCs: Vxxx-yyy Where xxx and-yyy are the major and minor version numbers of the table. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.19-1, OMPS TC CF Earth Ground Table Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.19-1, OMPS TC CF Earth Ground Table Data Format

Table: 7.2.2.1.19-1 OMPS TC CF Earth Ground PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
obs_year	116	32-bit integer	2000 - 2050	years	year of calibration record 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
obs_day	116	32-bit integer	1 - 366	days	day of calibration record 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
old_nmonitor	116	32-bit integer	0 - MAX_VAL > 0	unitless	number of observations used in trending 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
monitor_year	116	32-bit integer	2000 - 2050	years	last year of data used for flat field trending 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
monitor_day	116	32-bit integer	1 - 366	days	last day of data used for flat field trending 1 Dimensional Array: tc::TC_CAL_DAYS Size of Dimension(s): 29
cfearth	10133760	32-bit floating point	0 - MAX_VAL > 0	unitless	radiometric calibration factors 3 Dimensional Array: tc::TC_CAL_DAYS x tc::MAX_NSPEC_CCD x tc::MAXCTPX Size of Dimension(s): 29 x 364 x 240
File Size	10,134,340 Bytes				

7.2.2.1.20 OMPS TC Straylight PC

Data Mnemonic	NP_NU-LM0240-129
Description/ Purpose	The OMPS Total Column Straylight LUT are stray light coefficients used in corrections by the OMPS TC Earthview SDR.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.20-1, OMPS Total Column Straylight PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.20-1, OMPS Total Column Straylight PC Data Format

Table: 7.2.2.1.20-1 OMPS TC Straylight PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
nblock	4	32-bit integer	1 - 260	unitless	Number of regions
nfov	4	32-bit integer	1 - 240	unitless	Number of spatial macropixels
nchan	4	32-bit integer	1 - 260	unitless	Number of spectral channels
indx_blck	160	32-bit integer	1 - 260	unitless	Spectral block boundaries: nchan is divided into nblock regions 2 Dimensional Array: 2 x tc::SLC_NBLOCK Size of Dimension(s): 2 x 20
indx_oor	16	32-bit integer	1 - 260	unitless	Gives the super channels used in the OOR calculation 1 Dimensional Array: 4 Size of Dimension(s): 4
c370	4	32-bit floating point	0 - 260	unitless	
c360	4	32-bit floating point	0 - 260	unitless	
c_power	4	32-bit floating point	0 - 260	unitless	
sl_cor_oor	59904000	32-bit floating point	MIN_VAL - MAX_VAL	unitless	3 Dimensional Array: tc::MAXCTPX x tc::MAX_SPEC_ALLOCATION x tc::MAXCTPX Size of Dimension(s): 240 x 260 x 240
sl_cor_coef	1198080000	32-bit floating point	MIN_VAL - MAX_VAL	unitless	4 Dimensional Array: tc::SLC_NBLOCK x tc::MAXCTPX x tc::MAX_SPEC_ALLOCATION x tc::MAXCTPX Size of Dimension(s): 20 x 240 x 260 x 240
File Size	1,257,984,200 Bytes				

7.2.2.1.21 OMPS TC Table Version Ground PC

Data Mnemonic	NP_NU-LM0240-130
Description/ Purpose	The OMPS Table Version Ground Table contains information to track table and version identification of the following OMPS TC tables: OMPS TC Solar Sample Table OMPS TC Timing Pattern Table OMPS TC Linearity Table versions OMPS TC Lamp Sample Table OMPS TC Earth View Sample This tracking is necessary to coordinate the IDPS versions of these tables to their equivalents uploaded to the spacecraft. This file is used by all OMPS SDR algorithms.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.21-1, OMPS Table Version Ground PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.21-1, OMPS Table Version Ground PC Data Format

Table: 7.2.2.1.21-1 OMPS TC Version Ground PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
numEntriesUsed	4	32-bit integer	1 - 30	unitless	Number of version entries used in subsequent fields of the structure.
flightTableIds	44	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of flight table IDs. 1 Dimensional Array: OMPS_NUM_TABLE_IDS Size of Dimension(s): 22
flightTableVersions	1320	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of flight table versions, up to 30 per flight table ID 2 Dimensional Array: OMPS_NUM_VER_ENTRIES x OMPS_NUM_TABLE_IDS Size of Dimension(s): 30 x 22
tcSolSampVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS TC Solar Sample table versions 1 Dimensional Array: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
tcTimPatVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS TC Timing Pattern table versions 1 Dimensional Array: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
tcLinearityVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS TC Linearity table versions 1 Dimensional Array: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
tcLampSampVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS TC Lamp Sample table versions 1 Dimensional Array: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
tcEvSampVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS TC Earth View Sample table versions 1 Dimensional Array:

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
npSolSampVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS NP Solar Sample table versions 1 Dimensional Array: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
npTimPatVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS NP Timing Pattern table versions 1 Dimensional Array: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
npLinearityVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS NP Linearity table versions 1 Dimensional Array: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
npLampSampVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS NP Lamp Sample table versions 1 Dimensional Array: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
npEvSampVer	60	unsigned 16-bit integer	0 - MAX_VAL	unitless	List of up to 30 OMPS NP Earth View Sample table versions 1 Dimensional Array: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30
File Size	1,968 Bytes				

7.2.2.1.22 OMPS TC Darks Manual PC

Data Mnemonic	NP_NU-LM0240-131
Description/ Purpose	The OMPS TC Darks PC table contains averaged detector dark signal in linearity corrected counts (the average of the dark frames during a specific calibration event). This file is used in the OMPS TC Earth View SDR algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.22-1, OMPS TC Darks Manual PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.22-1, OMPS TC Darks Manual PC Data Format

Table: 7.2.2.1.22-1 OMPS TC Dark Manual PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
orbit_number	20	32-bit integer	0 - MAX_VAL	unitless	Orbit Number 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
profile_id	20	32-bit integer	0 - MAX_VAL	unitless	Profile ID Number 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
iyear_dark	20	32-bit integer	2000 - 2050	years	Year of observation 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
iday_dark	20	32-bit integer	1 - 366	days	Day of observation 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
time_start_dark	40	64-bit floating point	0 - MAX_VAL	second	Time start of observation 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
time_end_dark	40	64-bit floating point	0 - MAX_VAL	second	Time end of observation 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
expose_dark	8	64-bit floating point	0 - MAX_VAL	second	Average exposure time of dark current frames
good_darks	4	32-bit integer	1 - 100	unitless	Number of good dark frames that made up the average dark data
qual_dark	10	16-bit integer	MIN_VAL - MAX_VAL	unitless	Quality of processing 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
istat_dark	10	16-bit integer	MIN_VAL - MAX_VAL	unitless	Instrument/data record status 1 Dimensional Array: tc::MAX_COADDS_D

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					Size of Dimension(s): 5
analog_dark	20	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Instrument/data record status 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
saa_dark	20	32-bit floating point	0 - 100	percent	South Atlantic Anomaly severity flag 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
dark_data	1077440	32-bit floating point	MIN_VAL - MAX_VAL	counts	Average corrected dark current counts (averaged over the dark frames) 2 Dimensional Array: tc::MAX_NSPEC_CCD x tc::NO_SPAT_PIX Size of Dimension(s): 364 x 740
File Size	1,077,672 Bytes				

7.2.2.1.23 OMPS TC SAA Darks Manual PC

Data Mnemonic	NP_NU-LM0240-132
Description/ Purpose	The OMPS TC SAA Darks PC table contains detected dark signal in linear corrected counts during South Atlantic Anomaly This file is used in the OMPS TC Earth View SDR algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.23-1, OMPS TC SAA Darks Manual PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.23-1, OMPS TC SAA Darks Manual PC Data Format

Table: 7.2.2.1.23-1 OMPS TC SAA Darks Manual PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
orbit_numbersaa	20	32-bit integer	0 - MAX_VAL	unitless	Orbit Number 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
profile_idsaa	20	32-bit integer	0 - MAX_VAL	unitless	Profile ID Number 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
iyear_darksaa	20	32-bit integer	2000 - 2050	years	Year of observation 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
iday_darksaa	20	32-bit integer	1 - 366	days	Day of observation 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
time_start_darksaa	40	64-bit floating point	0 - MAX_VAL	second	Time start of observation 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
time_end_darksaa	40	64-bit floating point	0 - MAX_VAL	second	Time end of observation 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
delta_time_darksaa	40	64-bit floating point	0 - MAX_VAL	second	Integration time during observation 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
darksaa_frames	4	32-bit integer	1 - 5	unitless	Number of good dark frames that made up the average dark data
saa_darksaa	20	32-bit floating point	0 - 100	percent	South Atlantic Anomaly severity flag 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
istat_darksaa	10	16-bit integer	MIN_VAL - MAX_VAL	unitless	Instrument/data record status 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
analog_darksaa	20	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Instrument/data record status 1 Dimensional Array: tc::MAX_COADDS_D Size of Dimension(s): 5
darksaa_array	5387200	32-bit floating point	0 - MAX_VAL	counts	Corrected average dark current counts for SAA observation; smear values are in individual pixels 3 Dimensional Array: tc::MAX_COADDS_D x tc::MAX_NSPEC_CCD x tc::NO_SPAT_PIX Size of Dimension(s): 5 x 364 x 740
File Size	5,387,454 Bytes				

7.2.2.1.24 OMPS TC Bias Manual PC

Data Mnemonic	NP_NU-LM0240-133
Description/ Purpose	The OMPS TC Bias PC table contains detector electronic offset in counts. This file is used in the OMPS TC Earth View SDR algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.24-1, OMPS TC Bias Manual PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.24-1, OMPS TC Bias Manual PC Data Format

Table: 7.2.2.1.24-1 OMPS TC Bias Manual PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
bias1	4	32-bit floating point	0 - 1e5	counts	bias electronics 1st CCD
bias2	4	32-bit floating point	0 - 1e5	counts	bias electronics 2nd CCD
File Size	8 Bytes				

7.2.2.1.25 OMPS Surface Type Ground PC

Data Mnemonic	NP_NU-LM0240-138
Description/ Purpose	The OMPS surface Type Ground Table contains surface type classification. The surface type is needed to set the glint possibility flag. This file is used by all OMPS SDR algorithms.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.25-1, OMPS Surface Type Ground PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.25-1, OMPS Surface Type Ground PC Data Format

Table: 7.2.2.1.25-1 OMPS Surface Type Ground PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
ompssurftype	37324800	8-bit unsigned integer	1-17 : IGBP land cover classification system.	unitless	OMPS 5km Surface Type array 2 Dimensional Array: nLat by nLon Size of Dimension(s): 4320 x 8640
File Size	37,324,800 Bytes				

7.2.2.2 OMPS TC SDR PCs

Data Mnemonic	DP_NU-LM2020-005
Description/ Purpose	The OMPS TC SDR Ephemeral PC provides tunable processing coefficients for use by the algorithm during execution. The coefficients can be modified (tuned) through a configuration control process in response to algorithm, performance, inputs, sensitivity, etc. changes.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, Table B-1 for the applicable Collection Short Names.
File Size	See Table 7.2.2.2-1, OMPS TC SDR PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.2-1, OMPS TC SDR PC Data Format

Table: 7.2.2.2-1 OMPS TC SDR Ephemeral PCT

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
deviate	8	64-bit floating point	0 - 1000	unitless	Wavelength shift deviation threshold
qUpPrimaryElec	8	64-bit floating point	0 - 16384	counts	Upper tie point for linearity calculation on CCD1 (Primary)
qUpRedundantElec	8	64-bit floating point	0 - 16384	counts	Upper tie point for linearity calculation on CCD1 (Redundant)
qUp2PrimaryElec	8	64-bit floating point	0 - 16384	counts	Upper tie point for linearity calculation on CCD2 (Primary)
qUp2RedundantElec	8	64-bit floating point	0 - 16384	counts	Upper tie point for linearity calculation on CCD2 (Redundant)
mountMatrix	72	64-bit floating point	-1 - 1	unitless	mountMatrix is sensor mounting matrix 2 Dimensional Array: MOUNT MATRIX DIM x MOUNT MATRIX DIM Size of Dimension(s):3x3
flopdownAngle	8	64-bit floating point	0 - 180	degrees	Diffuser rotation in y plane
xangle	8	64-bit floating point	-180 - 180	degrees	Diffuser rotation in x (rotor) plane
chiTol	4	32-bit floating point	0 - 1000	unitless	Wavelength shift chi-squared tolerance
motorRate	4	32-bit floating point	0 - 1000	unitless	
tcFov	4	32-bit floating point	0 - 180	degrees	Field of view
diffusersOffset	4	32-bit floating point	0 - 1000	unitless	
diffuserSep	4	32-bit floating point	0 - 1000	unitless	
biasDefault	4	32-bit floating point	0 - 1000	unitless	Bias default value
radHigh	4	32-bit floating point	3.00000064E8	W/cm-3 / sterad	Max expected radiance
badSaa	4	32-bit floating point	0-100	percent	Bad SAA threshold
fullWidth	4	32-bit floating point	0 - 1000	unitless	Nominal spectral FWHM
solarSize	4	32-bit floating point	0 - 360	degrees	
diffEdgeAngle	4	32-bit floating point	0 - 1000	unitless	Diffuser grazing angle threshold
smearFilterLimitHigh	4	32-bit integer	0 - 250000	unitless	Max counts difference in first pass smear outlier filter
smearFilterLimitLow	4	32-bit integer	0 - 250000	unitless	Max counts difference in second pass smear outlier filter
trendCf	4	32-bit integer	0 - 1000	unitless	No of values to use save for trending albedo

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
cfInterval	4	32-bit integer	0 - 1000	unitless	No of days between trending observations for albedo
bias_indx	16	32-bit integer	0 - 1000	unitless	Bias_indx specified the lower and upper bounds of the serial overclock pixels 1 Dimensional Array: Size of Dimension(s): 4
nalts	4	32-bit integer	0 - 1000	unitless	
altitudeBinM	4	32-bit integer	0 - 1000	unitless	
lpSeparation	4	32-bit integer	0 - 1000	unitless	
lpNoTrack	4	32-bit integer	0 - 1000	unitless	
nsamp	4	32-bit integer	0 - 1000	unitless	
nfunc	4	32-bit integer	0 - 1000	unitless	
norder	4	32-bit integer	0 - 1000	unitless	
diffEndEdges	32	32-bit integer	0 - 780	spatial location on CCD	Defines boundaries used in code for the 7 solar diffusers 1 Dimensional Array: Size of Dimension(s): 8
trendGapMax	4	32-bit integer	0 - 1000	days	Max gap allowed before trending begins anew
badPixLowerThreshold	4	32-bit integer	0 - 1000	dark counts	Lower threshold used to determine if a pixel might be bad
badPixUpperThreshold	4	32-bit integer	0 - 27550	unitless	Upper threshold to determine if a pixel might be bad
goniometryOn	1	unsigned 8-bit char	MIN_VAL - MAX_VAL	unitless	
cfSolarCorrect	1	unsigned 8-bit char	MIN_VAL - MAX_VAL	unitless	
isSlCor	1	unsigned 8-bit char	MIN_VAL - MAX_VAL	unitless	
PadByte	1	unsigned 8-bit char	MIN_VAL - MAX_VAL	unitless	
File Size	280 Bytes				

8 INTERMEDIATE PRODUCTS (IPS)

Not Applicable

Appendix A. Data Mnemonic to Interface Mapping

For a complete list of Data Mnemonic to Interface Mapping, see 474-00001-01, JPSS CDFCB-X Vol I. The CDFCB contains Data Mnemonics, Identifiers, Collection Short Names, Interface Documents, and Collection Long Names for each JPSS Data Product and for Geolocation data.

Appendix B. Common RDR Static Header Values

Common RDR Static Header Values lists pre-defined unique values for the fields from the static header for each of the RDRs defined.

Table: B-1 Common RDR Static Header Values

RDR Name	Sensor	TypeID	numAPIDS
OMPS TC Science	OMPS-TC	SCIENCE	1
OMPS TC Calibration	OMPS-TC	CALIBRATION	1
OMPS TC Diagnostic Earth View	OMPS-TC	DIAG-SCI	1
OMPS TC Diagnostic Calibration	OMPS-TC	DIA-CAL	1

Appendix C. DQTT Quality Flag Mapping

The following table maps the quality flags by sensor and product that are reportable to the associated data product quality flag Test ID used in the processing environment.

Table: C-1 DQTT Quality Flag Mapping

Algorithm	Product	TestID	Quality Flag
OMPS TC SDR	OMPS-TC-SDR	1500	None

Appendix D. Abbreviations and Acronyms

See 470-00041 JPSS Program Lexicon for abbreviations and acronyms.

Attachment A. XML Formats for Related Data products

Table: ATT-1 XML Formats for Related Products

File Number	XML Filename
1	Reserved
2	Reserved
3	474-00448-02-04_JPSS-OMPS-TC-SDR-DD-Part-4_M_OMPS-TC-GEO-PP.xml
4	474-00448-02-04_JPSS-OMPS-TC-SDR-DD-Part-4_M_OMPS-TC-SDR-PP.xml