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Goddard Space Flight Center Greenbelt, Maryland

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

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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:

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1 INTRODUCTION

1.1 Scope

The Joint Polar Satellite System (JPSS) Algorithm Specification for OMPS NP RDR/SDR - Volume II: Data Dictionary contains the specifications for the format of the OMPS NP 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, as reference material only.
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 a 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
474-00448-01-05	JPSS Algorithm Specification Volume I: Software Requirements Specification (SRS) for the OMPS Nadir Profile 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-B0200, JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms. 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.

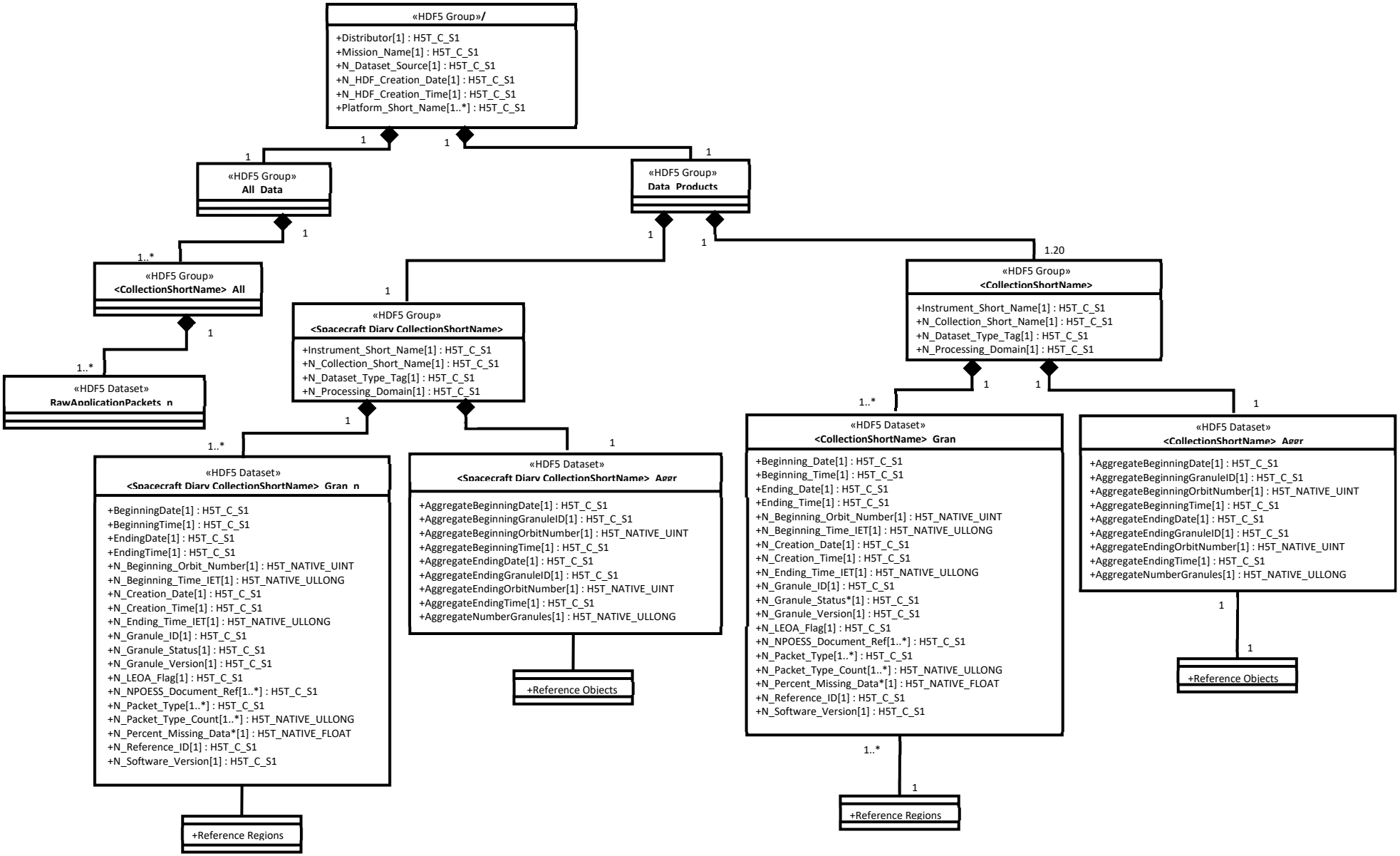

Figure: 3.1-1 Science and Diagnostic RDR Generalized UML Diagram

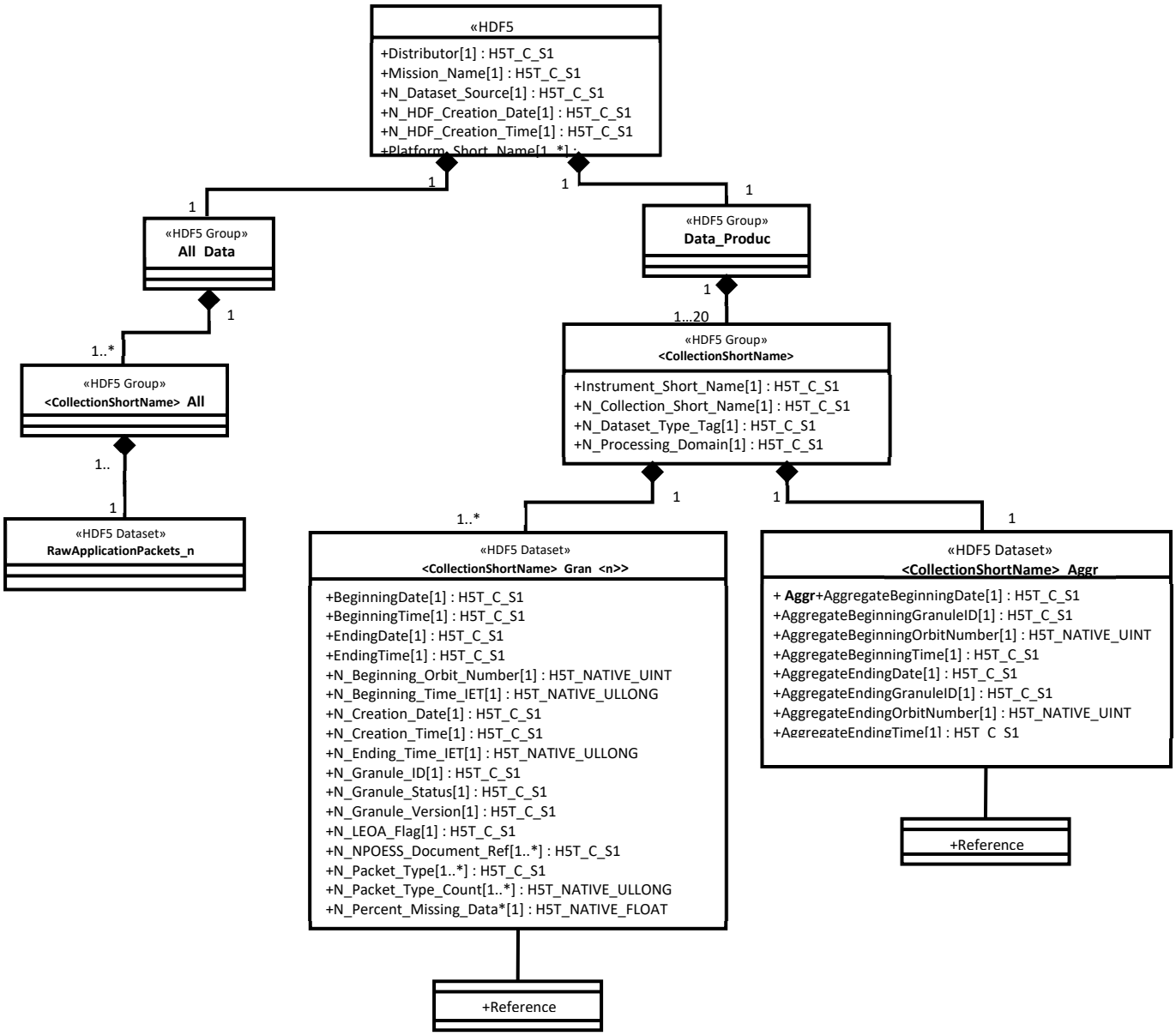

Figure: 3.1-2 Dwell, Dump, Telemetry, and Spacecraft Diary (when requested separately) RDR Generalized UML Diagram

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.

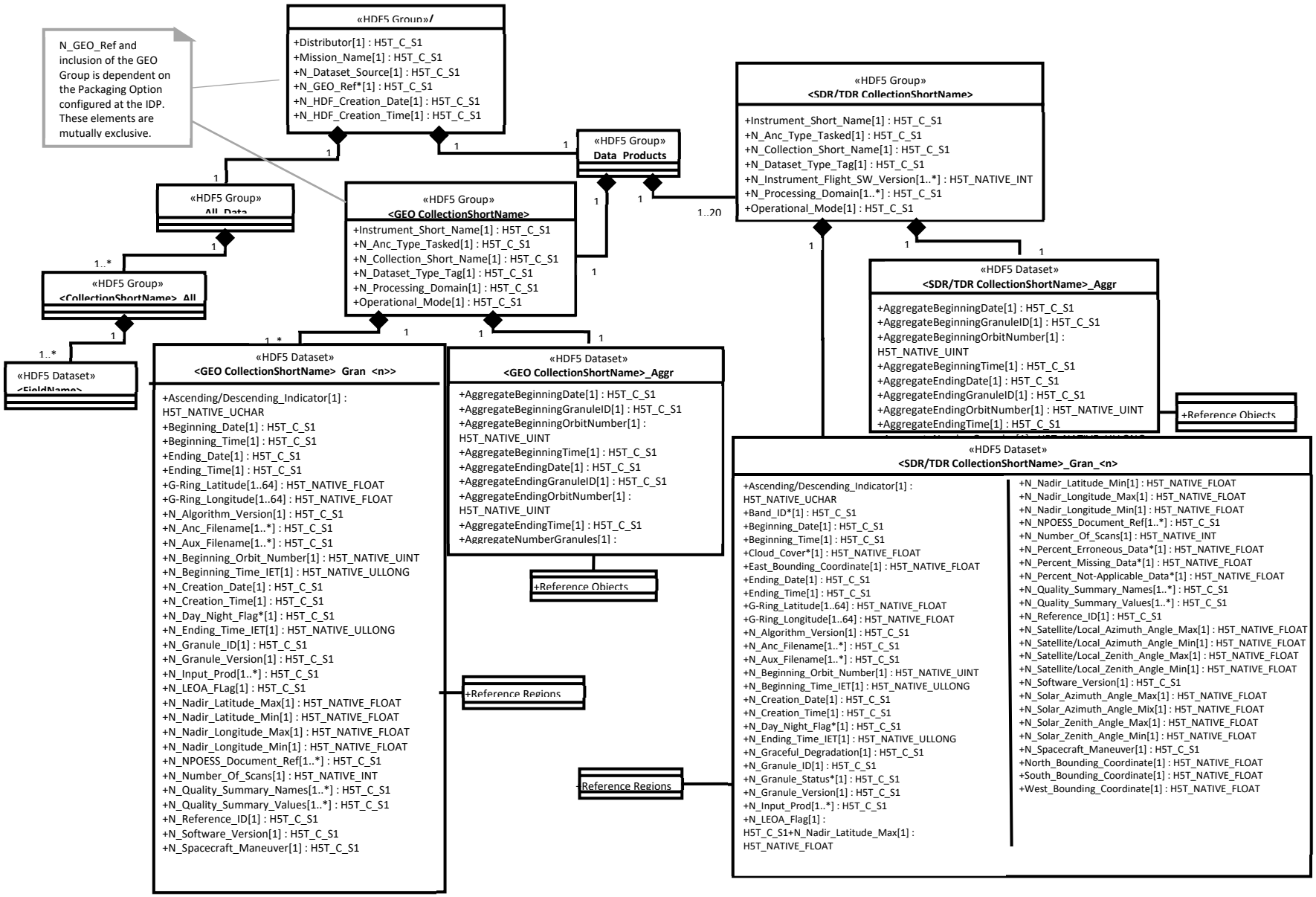

Figure: 3.2-1 Generalized UML Diagram for HDF5 SDR/TDR Files

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).

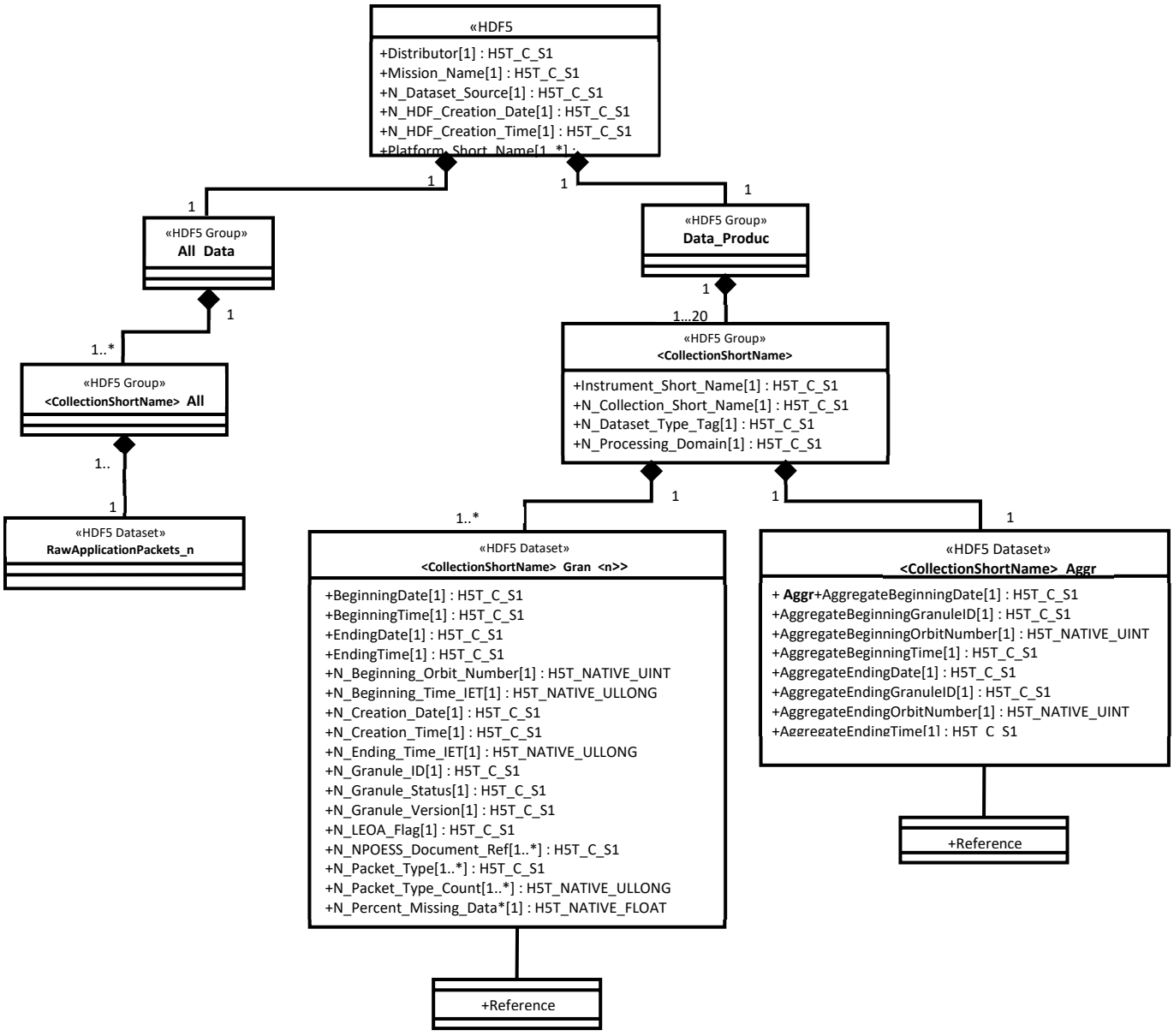

Figure: 3.3-1 Generalized UML Diagram for HDF5 Auxiliary Data Files

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 APs into a single collection. The accumulated Application Packets (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

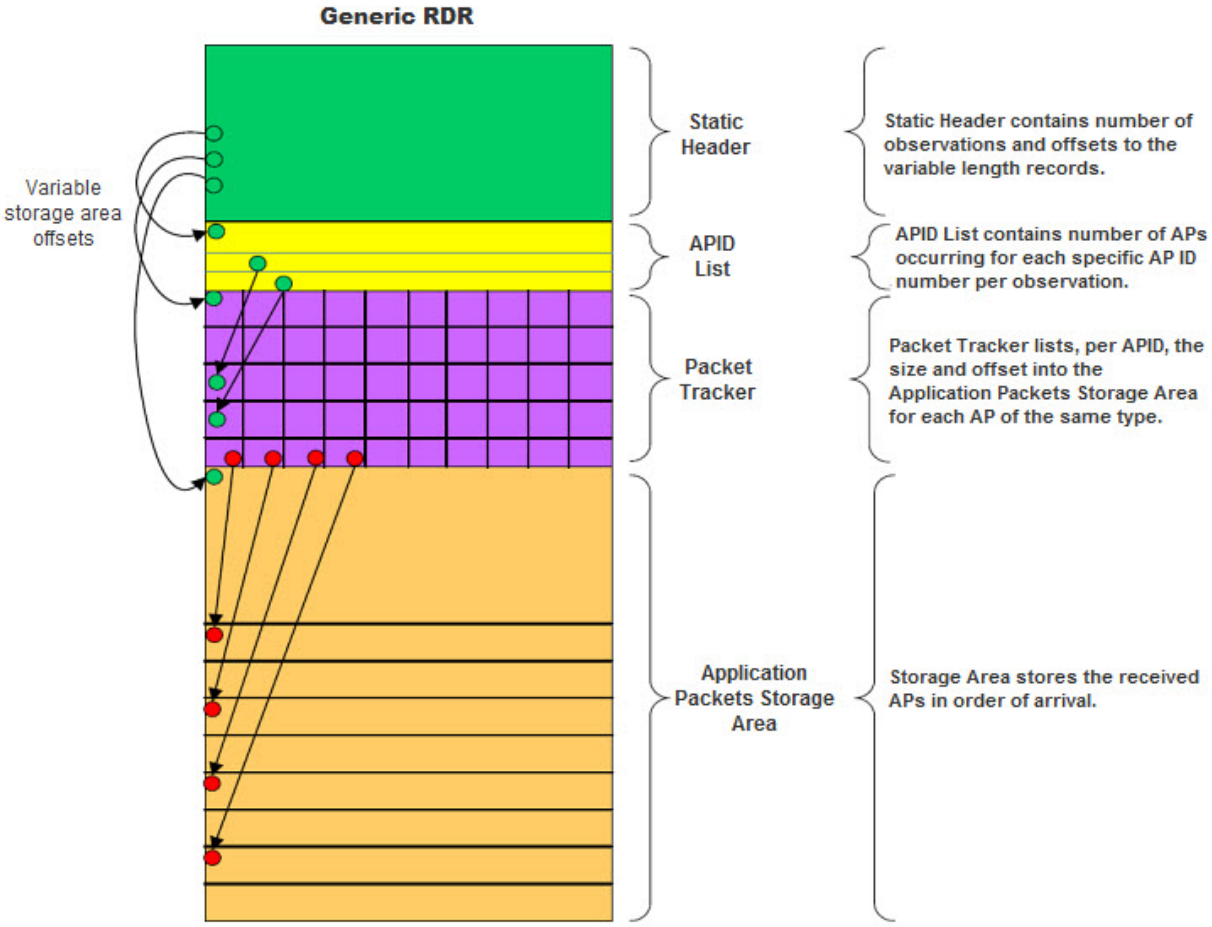

Figure: 4-1 Common RDR Layout

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	Data Type	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.

Field Name	Data Type	Description
pktTrackerOffset	Uint32	Byte offset from the beginning of the Common RDR to the Packet Tracker list 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	Data Type	Description
name	char[16]	Short name 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.
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. Vol IV: SRSPF for OMPS NP (474-00448-04-05).

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 NP RDR Overview

Data Mnemonic	Nadir Profile (NP) Science: RDRE-OMPS-C0030 Calibration: RDRE-OMPS-C0037 Diagnostic Earth View: RDRE-OMPS-C0052 Diagnostic Calibration: RDRE-OMPS-C0053 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. They are Nadir Total Column Mapper (NM) sensor to produce OMPS Total Column RDR and Nadir Profiler (NP) sensor to produce OMPS Nadir Profile RDR. Total column ozone is retrieved from backscattered UV radiance measurements, using a 2-D Charge-Coupled Device (CCD) system in the NM sensor, which points towards the nadir and simultaneously observes across the orbital track

	to provide daily global mapping. An additional CCD focal plane in the NP sensor collects nadir data at shorter wavelengths to create a non-EDR profile ozone product for continuity with previous instruments. When an OMPS Limb instrument is present, the OMPS measurements can be used to make (limb) ozone profile EDRs with high vertical resolution. Profile ozone data is obtained from limb-scattered UV and visible measurements, using a CCD array-based system.
File-Naming Construct	See the JPSS CDFCB-X Vol. I, Section 3 for details
File Size	**NP Science:** See the following Tables in Section 4.3 for size: S-NPP OMPS NP Science RDR Structure, JPSS-1 OMPS NP Science RDR Structure and JPSS-2 OMPS NP Science RDR Structure **NP Calibration:** See the following Tables in Section 4.4 for size: S-NPP OMPS NP Calibration RDR Structure, JPSS-1 OMPS NP Calibration RDR Structure and JPSS-2 OMPS NP Calibration RDR Structure **NP Diagnostic Earth View:** See the following Tables in Section 4.5 for size: S-NPP OMPS NP Diagnostic Earth View RDR Structure, JPSS-1 OMPS NP Diagnostic Earth View RDR Structure and JPSS-2 OMPS NP Diagnostic Earth View RDR Structure **NP Diagnostic Calibration:** See the following Tables in Section 4.6 for size: S-NPP OMPS NP Diagnostic Calibration RDR Structure, JPSS-1 OMPS NP Diagnostic Calibration RDR Structure, JPSS-2 OMPS NP Diagnostic Calibration RDR Structure **Dwell:** See the following Tables in Section 4.7 for size: S-NPP OMPS Dwell RDR Structure, JPSS-1 OMPS Dwell RDR Structure, JPSS-2 OMPS Dwell RDR Structure **Telemetry:** See the following Tables in Section 4.8 for size: S-NPP OMPS Telemetry RDR Structure, JPSS-1 OMPS Telemetry RDR Structure and JPSS-2 OMPS Telemetry RDR Structure **Memory Dump:** See the following Tables in Section 4.9 for size: S-NPP OMPS Memory Dump RDR Structure, JPSS-1 OMPS Memory Dump RDR Structure and JPSS-2 OMPS Memory Dump RDR Structure **FSW Boot-Up Status** See the following Tables in Section 4.10 for size: S-NPP OMPS FSW Boot-up RDR Structure, S-NPP OMPS FSW Boot-up 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 NP Science RDR Section 4.4 describes the OMPS NP Calibration RDR Section 4.5 describes the OMPS NP Diagnostic Earth View RDR Section 4.6 describes the OMPS NP Diagnostic Calibration RDR Section 4.7 describes the OMPS Dwell RDR

	Section 4.8 describes the OMPS Telemetry RDR Section 4.9 describes the OMPS Memory Dump RDR Section 4.10 describes the OMPS FSW Boot-Up Status RDR

4.3 OMPS NP Science RDR

4.3.1 OMPS NP Science RDR HDF5 Files

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

4.3.2 OMPS NP Science RDR Data Content Summary

The tables below list the APIDs accumulated for the OMPS NP 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 NP Science RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
NP	Science Nadir Profile Earth View	561

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

APID Short Name	Description	Value $APID_{10}$
NP	Science Nadir Profile Earth View	561
NP_CMP	Science Nadir Profile Earth View Compressed	617
NP_RF	Science Nadir Profile Earth View Reduced Frame	593
NP_RF_CMP	Science Nadir Profile Earth View RF Compressed	609

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

APID Short Name	Description	Value $APID_{10}$
NP	Science Nadir Profile Earth View	561
NP_CMP	Science Nadir Profile Earth View Compressed	617
NP_RF	Science Nadir Profile Earth View Reduced Frame	593
NP_RF_CMP	Science Nadir Profile Earth View RF Compressed	609

Packets in the NP 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 NP Science RDR

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

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP

	Byte	Field	Type	Value
	4	sensor	char[16]	OMPS-NP
	20	typeID	char[16]	SCIENCE
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	6248
	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[256]	Varies
	6248	AP storage area	Uint8[262144]	Varies
File Size	268,392 Bytes			

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

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS-NP
	20	typeID	char[16]	SCIENCE
	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: 4.3.2-6 JPSS-2 OMPS NP Science RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS-NP
	20	typeID	char[16]	SCIENCE
	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

	Byte	Field	Type	Value
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			

4.4 OMPS NP Calibration RDR

4.4.1 OMPS NP Calibration RDR HDF5 Files

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

4.4.2 OMPS NP Calibration RDR Data Content Summary

The tables below list the APIDs accumulated for the OMPS NP 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 NP Calibration RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
NP_CAL	Science Nadir Profile Calibration	565

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

APID Short Name	Description	Value $APID_{10}$
NP_CAL	Science Nadir Profile Calibration	565
NP_CAL_CMP	Science Nadir Profile Calibration Compressed	625

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

APID Short Name	Description	Value $APID_{10}$
NP_CAL	Science Nadir Profile Calibration	565
NP_CAL_CMP	Science Nadir Profile Calibration Compressed	625

OMPS NP 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 S-NPP RDR is max sized to handle data based on the values provided in Table 4.4.2-4, S-NPP OMPS NP Calibration RDR Maximum Sizes. The JPSS-1 RDR is max sized to handle data based on the values provided in Table 4.4.2-5, JPSS-1 OMPS NP Calibration RDR Maximum Sizes. The JPSS-2 RDR is max sized to handle data based on the values provided in Table 4.4.2-6, JPSS-2 OMPS NP Calibration RDR Maximum Sizes.

Table: 4.4.2-4 S-NPP OMPS NP 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 NP 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 NP 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 NP Calibration RDR.

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

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS-NP
	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 NP Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS-NP
	20	typeID	char[16]	CALIBRATION
	36	numAPIDs	Uint32	2
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	136

	Byte	Field	Type	Value
	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 NP Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS-NP
	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			

4.5 OMPS NP Diagnostic Earth View RDR

4.5.1 OMPS NP Diagnostic Earth View RDR HDF5 Files

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

4.5.2 OMPS NP Diagnostic Earth View RDR Data Content Summary

The tables below list the APIDs accumulated for the OMPS NP 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 NP Diagnostic Earth View RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_SCI	Nadir Profile Diagnostic Earth View	577

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

APID Short Name	Description	Value $APID_{10}$
DIA_SCI	Nadir Profile Diagnostic Earth View	577
DIA_SCI_RF	Nadir Profile Diagnostic Earth View Reduced Frame	597
DIA_SCI_RF_CMP	Nadir Profile Diagnostic Earth View RF Compressed	613
DIA_SCI_CMP	Nadir Profile Diagnostic Earth View Compressed	621

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

APID Short Name	Description	Value $APID_{10}$
DIA_SCI	Nadir Profile Diagnostic Earth View	577
DIA_SCI_RF	Nadir Profile Diagnostic Earth View Reduced Frame	597
DIA_SCI_RF_CMP	Nadir Profile Diagnostic Earth View RF Compressed	613
DIA_SCI_CMP	Nadir Profile Diagnostic Earth View Compressed	621

OMPS NP 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 NP Diagnostic Earth View RDR.

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

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS-NP
	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

	Byte	Field	Type	Value
	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 NP Diagnostic Earth View RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS-NP
	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 NP Diagnostic Earth View RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS-NP
	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 NP Diagnostic Calibration RDR

4.6.1 OMPS NP Diagnostic Calibration RDR HDF5 Files

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

4.6.2 OMPS NP Diagnostic Calibration RDR Data Content Summary

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

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

APID Short Name	Description	Value $APID_{10}$
DIA_CAL	Diagnostic Nadir Profile Calibration	581

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

APID Short Name	Description	Value $APID_{10}$
DIA_CAL	Diagnostic Nadir Profile Calibration	581
DIA_CAL_CMP	Diagnostic Nadir Profile Calibration Compression	628

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

APID Short Name	Description	Value $APID_{10}$
DIA_CAL	Diagnostic Nadir Profile Calibration	581
DIA_CAL_CMP	Diagnostic Nadir Profile Calibration Compression	628

OMPS NP 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 NP Diagnostic Calibration RDR.

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

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS-NP
	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

	Byte	Field	Type	Value
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 NP Diagnostic Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS-NP
	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 NP Diagnostic Calibration RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS-NP
	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

4.7.1 OMPS Dwell RDR HDF5 Files

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

4.7.2 OMPS Dwell RDR Data Content Summary

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

Table: 4.7.2-1 S-NPP OMPS Dwell RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DWELL	Dwell Telemetry	549

Table: 4.7.2-2 JPSS-1 OMPS Dwell RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DWELL	Dwell Telemetry	549

Table: 4.7.2-3 JPSS-2 OMPS Dwell RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DWELL	Dwell Telemetry	549

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

Table: 4.7.2-4 S-NPP OMPS Dwell RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	DWELL
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	14504
	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[600]	Varies
	14504	AP storage area	Uint8[146400]	Varies
File Size	160,904 Bytes			

Table: 4.7.2-5 JPSS-1 OMPS Dwell RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	DWELL
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	14504

	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[600]	Varies
	14504	AP storage area	Uint8[146400]	Varies
File Size	160,904 Bytes			

Table: 4.7.2-6 JPSS-2 OMPS Dwell RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	DWELL
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	14504
	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[600]	Varies
	14504	AP storage area	Uint8[146400]	Varies
File Size	160,904 Bytes			

4.8 OMPS Telemetry RDR

4.8.1 OMPS Telemetry RDR HDF5 Files

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

4.8.2 OMPS Telemetry RDR Data Content Summary

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

Table: 4.8.2-1 S-NPP OMPS Telemetry RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
HK	Housekeeping	544

Table: 4.8.2-2 JPSS-1 OMPS Telemetry RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
HK	Housekeeping	544

Table: 4.8.2-3 JPSS-2 OMPS Telemetry RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
HK	Housekeeping	544

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

Table: 4.8.2-4 S-NPP OMPS Telemetry RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	TELEMETRY
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	296
	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[8]	Varies
	296	AP storage area	Uint8[7760]	Varies
File Size	8,056 Bytes			

Table: 4.8.2-5 JPSS-1 OMPS Telemetry RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	TELEMETRY
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	296
	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[8]	Varies
	296	AP storage area	Uint8[7936]	Varies
File Size	8,232 Bytes			

Table: 4.8.2-6 JPSS-2 OMPS Telemetry RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	TELEMETRY

	Byte	Field	Type	Value
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	296
	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[8]	Varies
	296	AP storage area	Uint8[7936]	Varies
File Size	8,232 Bytes			

4.9 OMPS Memory Dump RDR

4.9.1 OMPS Memory Dump RDR HDF5 Files

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

4.9.2 OMPS Memory Dump RDR Data Content Summary

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

Table: 4.9.2-1 S-NPP OMPS Memory Dump RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DUMP	Memory Dump	556

Table: 4.9.2-2 JPSS-1 OMPS Memory Dump RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DUMP	Memory Dump	556

Table: 4.9.2-3 JPSS-2 OMPS Memory Dump RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DUMP	Memory Dump	556

The tables below show the layout and static contents of the OMPS Memory Dump RDR.

Table: 4.9.2-4 S-NPP OMPS Memory Dump RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	DUMP
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72

	Byte	Field	Type	Value
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	104552
	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[4352]	Varies
	104552	AP storage area	Uint8[4456448]	Varies
File Size	4,561,000 Bytes			

Table: 4.9.2-5 JPSS-1 OMPS Memory Dump RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	DUMP
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	104552
	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[4352]	Varies
	104552	AP storage area	Uint8[4456448]	Varies
File Size	4,561,000 Bytes			

Table: 4.9.2-6 JPSS-2 OMPS Memory Dump RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	DUMP
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	104552
	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[4352]	Varies
	104552	AP storage area	Uint8[4456448]	Varies
File Size	4,561,000 Bytes			

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

4.10.1 OMPS FSW Boot-up RDR HDF5 Files

The OMPS FSW Boot-Up RDR HDF5 files are described in Section 3, Raw Data Records HDF5 Details.

4.10.2 OMPS FSW Boot-up RDR Data Content Summary

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

Table: 4.10.2-1 S-NPP OMPS FSW Boot-up RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_BU	Diagnostic - Flight Software Boot-Up Status	550

Table: 4.10.2-2 JPSS-1 OMPS FSW Boot-up RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_BU	Diagnostic - Flight Software Boot-Up Status	550

Table: 4.10.2-3 JPSS-2 OMPS FSW Boot-up RDR Application Packets

APID Short Name	Description	Value $APID_{10}$
DIA_BU	Diagnostic - Flight Software Boot-Up Status	550

The tables below show the layout and static contents of the OMPS FSW Boot-Up RDR.

Table: 4.10.2-4 S-NPP OMPS FSW Boot-Up RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	NPP
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	FSWBU
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	128
	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[1]	Varies
	128	AP storage area	Uint8[193]	Varies
File Size	321 Bytes			

Table: 4.10.2-5 JPSS-1 OMPS FSW Boot-Up RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J01
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	FSWBU
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	128
	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[1]	Varies
	128	AP storage area	Uint8[196]	Varies
File Size	324 Bytes			

Table: 4.10.2-6 JPSS-2 OMPS FSW Boot-Up RDR Structure

	Byte	Field	Type	Value
Static Header	0	satellite	char[4]	J02
	4	sensor	char[16]	OMPS
	20	typeID	char[16]	FSWBU
	36	numAPIDs	Uint32	1
	40	apidListOffset	Uint32	72
	44	pktTrackerOffset	Uint32	104
	48	apStorageOffset	Uint32	128
	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[1]	Varies
	128	AP storage area	Uint8[196]	Varies
File Size	324 Bytes			

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 Nadir Profile SDRs

Data Mnemonic	SDRE-OMPS-C0030 Nadir Profile (Science) SDRE-OMPS-C0031 Reserved GEOE-OMPS-C0030 Geolocation - ellipsoid
Description/ Purpose	The OMPS raw sensor data is DE commutated, corrected, and calibrated by the SDR software and then stored in the Nadir Profile (NP) SDR product. In addition to the data needed to support IP/EDR generation, the NP SDR includes a number of other parameters described in more detail in Section 6.2.1, OMPS Nadir Profile SDR Format. The OMPS nadir sensor uses a wide field-of-view push-broom telescope to feed two separate spectrometers. The nadir profile spectrometer measures the scene radiance between approximately 250 and 310 nanometers (nm) with a resolution of 1 nm sampled every 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 Spectral Pixels 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 across-track pixels are binned into a single IFOV within a single swath (time integration), per granule. The IFOV is 250 km cross track with a 250 km along track. The 250km along track interval is a result of the pixel extent combined with the spacecraft motion during the 37.44 second integration time. The OMPS NP 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 NP SDR Data Content Summary for size Science Geolocation: See Table 6.2.1.5-1 OMPS NP 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 NP SDR format is described in Section 6.2.1, OMPS NP SDR Format.

6.2.1 OMPS NP SDR Format

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

6.2.1.1 OMPS NP SDR Data Content Summary

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

Table: 6.2.1.1-1 OMPS NP 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*5, 1, 200]	[5, 1, 200]	count
RadianceEarth	Calibrated Earth View Radiances	32-bit floating point	[N*5, 5, 200]	[5, 5, 200]	W/(cm^3*sr)
Wavelengths	Wavelengths used in SDR processing (wref)	64-bit floating point	[N*5, 200]	[5, 200]	nanometer
SolarFlux	Reference solar flux from calibration database (rsf_piece)	32-bit floating point	[N*5, 200]	[5, 200]	W/cm^3
Bias1	Average electronics bias CCD Side 1	32-bit floating point	[N*1]	[1]	count
DarkCurrentEarth	Averaged dark current in earth data (dark_piece)	32-bit floating point	[N*6, 200]	[6, 200]	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*5, 200]	[5, 200]	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

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
OutDatedCal	Wavelength and/or 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*5, 5]	[5, 5]	unitless
SolarEclipse	All or part of the IFOV is affected by a solar eclipse, umbra or penumbra viewing.	unsigned 8-bit char	[N*5, 5]	[5, 5]	unitless
WaveFlag	This data field is obsolete	unsigned 8-bit char	[N*5, 5]	[5, 5]	unitless
RadFlag	This data field is obsolete	32-bit floating point	[N*5, 5]	[5, 5]	unitless
NPLinearCorrection	Indicates Linearity Correction performed inflight	unsigned 8-bit char	[N*5]	[5]	unitless
SAA	Spacecraft within South Atlantic Anomaly (extent in percent based on Climatological data)	unsigned 8-bit char	[N*5]	[5]	unitless
QualityEarth	Earth processing reliability (cumulative relative quality indicator count)	16-bit integer	[N*5]	[5]	unitless
File Size	45,022 Bytes				

6.2.1.2 OMPS NP SDR - Product Profile Data

Table: 6.2.1.2-1 OMPS NP SDR Product Profile

OMPS NP SDR Product Profile

Fields						
Name	**Data Size**	**Dimensions**				
SmearDataEarth	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**

Fields

		Swath, Yes, No, 5, 5 CCD, No, No, 1, 1 SpectralPixel, No, No, 200, 200 **Datum** **Description**: Raw 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**:
RadianceEarth	4byte(s)	**Name**, **Granule Boundary**, **Dynamic**, **Min Array Size**, **Max Array Size** Swath, Yes, No, 5, 5 IFOV, No, No, 5, 5 SpectralPixel, No, No, 200, 200 **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**:
Wavelengths	8byte(s)	**Name**, **Granule Boundary**, **Dynamic**, **Min Array Size**, **Max Array Size** IFOV, Yes, No, 5, 5 SpectralPixel, No, No, 200, 200 **Datum** **Description**: Wavelengths used in SDR processing (wref); **Datum Offset**: 0; **Unscaled Valid Range Min**: MIN_VAL; **Unscaled Valid Range Max**: MAX_VAL; **Measurement Units**: nanometer; **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**:
SolarFlux	4byte(s)	**Name**, **Granule Boundary**, **Dynamic**, **Min Array Size**, **Max Array Size** IFOV, Yes, No, 5, 5 SpectralPixel, No, No, 200, 200 **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** Granule, Yes, No, 1, 1 **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**:
DarkCurrentEarth	4byte(s)	**Name**, **Granule Boundary**, **Dynamic**, **Min Array Size**, **Max Array Size** IFOV, Yes, No, 6, 6 SpectralPixel, No, No, 200, 200

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	
Averaged dark current in earth data (dark_piece)	0	MIN_VAL	MAX_VAL	count	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		

DarkExposeEarth (8byte(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	
Averaged integration time for dark data (expose_dark)	0	MIN_VAL	MAX_VAL	second	No		64-bit floating point	Name	Value	Name	Value
								NA_FLOAT64_FILL	-999.9		
								MISS_FLOAT64_FILL	-999.8		
								ERR_FLOAT64_FILL	-999.5		
								VDNE_FLOAT64_FILL	-999.3		

Cal (4byte(s))

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
IFOV	Yes	No	5	5
SpectralPixel	No	No	200	200

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

Fields

		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 NA_UINT16_FILL: 65535 MISS_UINT16_FILL: 65534 ERR_UINT16_FILL: 65531 VDNE_UINT16_FILL: 65529	Name: Value

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 NA_UINT16_FILL: 65535 MISS_UINT16_FILL: 65534 ERR_UINT16_FILL: 65531 VDNE_UINT16_FILL: 65529	Name: Value

OutDatedCal — 1byte(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
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	5	5
IFOV	No	No	5	5

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	5	5
IFOV	No	No	5	5

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	5	5
IFOV	No	No	5	5

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	Name: Value False: 0 True: 1

Fields

		ERR_UINT8_FILL 251 VDNE_UINT8_FILL 249

RadFlag — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	5	5
IFOV	No	No	5	5

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	Name	Value
								NA_FLOAT32_FILL	-999.9		
								MISS_FLOAT32_FILL	-999.8		
								ERR_FLOAT32_FILL	-999.5		
								VDNE_FLOAT32_FILL	-999.3		

NPLinearCorrection — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	5	5

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	Name	Value
								NA_UINT8_FILL	255	False	0
								MISS_UINT8_FILL	254	True	1
								ERR_UINT8_FILL	251		
								VDNE_UINT8_FILL	249		

SAA — 1byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	5	5

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	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	5	5

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	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		

Fields											
		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 The solar intrusion correction was applied 4096 13 # reserved for future 8192 14 # reserved for future 16384 15 # reserved for future									

6.2.1.3 OMPS NP SDR HDF5 Details

Figure 6.2.1.3-1, OMPS NP SDR UML Diagram, provides the details on the content and data types of the OMPS NP 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 NP SDR within the HDF5 files can be found within the Data Products group with the group name of OMPS-NP-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.

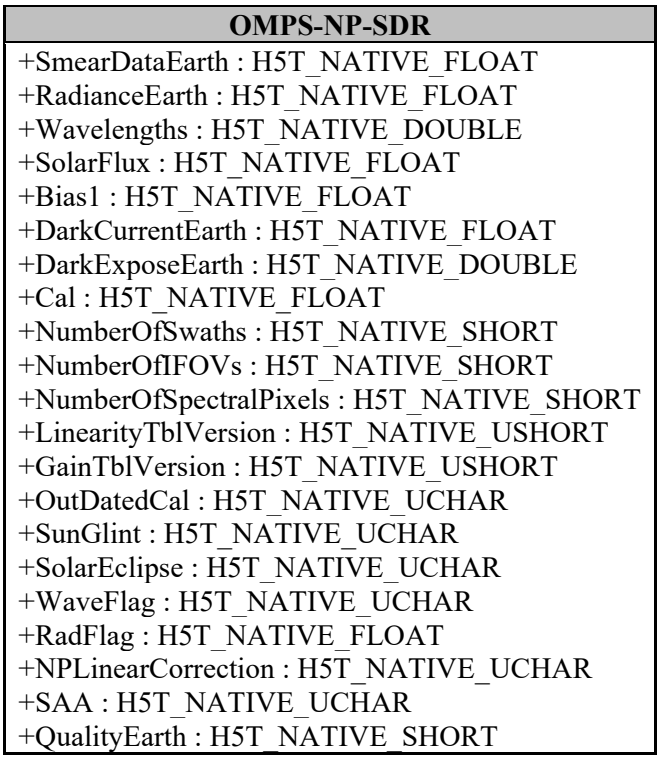

Figure: 6.2.1.3-1 OMPS NP SDR UML Diagram

6.2.1.4 OMPS NP SDR HDF5 Metadata Details

The HDF5 metadata elements associated with the OMPS NP SDR are listed in the JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms (474-00448-02-01). The OMPS NP SDR metadata includes all common metadata at the root, product, aggregation, and granule levels. No summary level metadata is produced for OMPS NP SDR.

6.2.1.5 OMPS NP SDR Geolocation Content Summary

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

Table: 6.2.1.5-1 OMPS NP 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*5]	[5]	microsecond
MidTime	Mid Time of Swath in IET (1/1/1958)	64-bit integer	[N*5]	[5]	microsecond
Latitude	Latitude of each IFOV (positive North)	32-bit floating point	[N*5, 5]	[5, 5]	degree
Longitude	Longitude of each IFOV (positive East)	32-bit floating point	[N*5, 5]	[5, 5]	degree
LatitudeCorners	Latitude of each IFOV Corner - Array starts at upper right and proceeds clockwise	32-bit floating point	[N*5, 5, 4]	[5, 5, 4]	degree
LongitudeCorners	Longitude of each IFOV Corner - Array starts at upper right and proceeds clockwise	32-bit floating point	[N*5, 5, 4]	[5, 5, 4]	degree
SolarZenithAngle	Zenith angle of sun at each IFOV position	32-bit floating point	[N*5, 5]	[5, 5]	degree
SolarAzimuthAngle	Azimuth angle of sun (measured clockwise positive from North) at each IFOV position	32-bit floating point	[N*5, 5]	[5, 5]	degree
SatelliteZenithAngle	Zenith angle to satellite at each IFOV position	32-bit floating point	[N*5, 5]	[5, 5]	degree
SatelliteAzimuthAngle	Azimuth angle (measured clockwise positive from North) to Satellite at each IFOV position	32-bit floating point	[N*5, 5]	[5, 5]	degree

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
RelativeAzimuthAngle	Difference between solar and satellite azimuth angles at each IFOV position (solar - satellite)	32-bit floating point	[N*5, 5]	[5, 5]	degree
Height	Ellipsoid-Geoid separation	32-bit floating point	[N*5, 5]	[5, 5]	meter
SatelliteRange	Line of sight distance from the ellipsoid intersection to the satellite	32-bit floating point	[N*5, 5]	[5, 5]	meter
MoonVector	Lunar position in Spacecraft Coordinates at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	meter
SunVector	Solar position in Spacecraft Coordinates at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	meter
SCPosition	Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	meter
SCVelocity	Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	m/s
SCAttitude	Spacecraft attitude with respect to the Geodetic Reference Frame (roll, pitch, yaw) at MidTime	32-bit floating point	[N*5, 3]	[5, 3]	arcsecond
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_OMPSNPGEO	Attitude/Ephemeris availability status	unsigned 8-bit char	[N*5]	[5]	unitless
File Size	2,089 Bytes				

6.2.1.6 OMPS NP SDR Geolocation Product Profile

Table: 6.2.1.6-1 OMPS NP SDR Geolocation Product Profile

OMPS NP SDR Geolocation Product Profile

Fields

Name	Data Size	Dimensions
StartTime	8byte(s)	Name: Swath; Granule Boundary: Yes; Dynamic: No; Min Array Size: 5; Max Array Size: 5 Datum: Description: Starting Time of Swath in IET (1/1/1958); Datum Offset: 0; Unscaled Valid Range Min: MIN_VAL; Unscaled Valid Range Max: MAX_VAL; Measurement Units: microsecond; Scaled: No; Scale Factor Name: ; Data Type: 64-bit integer Fill Values: NA_INT64_FILL -999; MISS_INT64_FILL -998; ERR_INT64_FILL -995; VDNE_INT64_FILL -993 Legend Entries: Name: ; Value:
MidTime	8byte(s)	Name: Swath; Granule Boundary: Yes; Dynamic: No; Min Array Size: 5; Max Array Size: 5 Datum: Description: Mid Time of Swath in IET (1/1/1958); Datum Offset: 0; Unscaled Valid Range Min: MIN_VAL; Unscaled Valid Range Max: MAX_VAL; Measurement Units: microsecond; Scaled: No; Scale Factor Name: ; Data Type: 64-bit integer Fill Values: NA_INT64_FILL -999; MISS_INT64_FILL -998; ERR_INT64_FILL -995; VDNE_INT64_FILL -993 Legend Entries: Name: ; Value:
Latitude	4byte(s)	Name: Swath; Granule Boundary: Yes; Dynamic: No; Min Array Size: 5; Max Array Size: 5 Name: IFOV; Granule Boundary: No; Dynamic: No; Min Array Size: 5; Max Array Size: 5 Datum: Description: Latitude of each IFOV (positive North); Datum Offset: 0; Unscaled Valid Range Min: -90; Unscaled Valid Range Max: 90; Measurement Units: degree; 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; ELLIPSOID_FLOAT32_FILL -999.4; VDNE_FLOAT32_FILL -999.3 Legend Entries: Name: ; Value:
Longitude	4byte(s)	Name: Swath; Granule Boundary: Yes; Dynamic: No; Min Array Size: 5; Max Array Size: 5 Name: IFOV; Granule Boundary: No; Dynamic: No; Min Array Size: 5; Max Array Size: 5 Datum: Description: Longitude of each IFOV (positive East); Datum Offset: 0; Unscaled Valid Range Min: -180; Unscaled Valid Range Max: 180; Measurement Units: degree; 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; ELLIPSOID_FLOAT32_FILL -999.4; VDNE_FLOAT32_FILL -999.3 Legend Entries: Name: ; Value:
LatitudeCorners	4byte(s)	Name: Swath; Granule Boundary: Yes; Dynamic: No; Min Array Size: 5; Max Array Size: 5 Name: IFOV; Granule Boundary: No; Dynamic: No; Min Array Size: 5; Max Array Size: 5 Name: Corner; Granule Boundary: No; Dynamic: No; Min Array Size: 4; Max Array Size: 4 Datum:

		Description: Latitude of each IFOV corner - Array starts at upper right and proceeds clockwise **Datum Offset**: 0 **Unscaled Valid Range Min**: -90 **Unscaled Valid Range Max**: 90 **Measurement Units**: degree **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; ELLIPSOID_FLOAT32_FILL: -999.4; VDNE_FLOAT32_FILL: -999.3 **Legend Entries**:
LongitudeCorners	4byte(s)	**Name**: Swath; **Granule Boundary**: Yes; **Dynamic**: No; **Min Array Size**: 5; **Max Array Size**: 5 **Name**: IFOV; **Granule Boundary**: No; **Dynamic**: No; **Min Array Size**: 5; **Max Array Size**: 5 **Name**: Corner; **Granule Boundary**: No; **Dynamic**: No; **Min Array Size**: 4; **Max Array Size**: 4 **Datum** **Description**: Longitude of each IFOV corner - Array starts at upper right and proceeds clockwise **Datum Offset**: 0 **Unscaled Valid Range Min**: -180 **Unscaled Valid Range Max**: 180 **Measurement Units**: degree **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; ELLIPSOID_FLOAT32_FILL: -999.4; VDNE_FLOAT32_FILL: -999.3 **Legend Entries**:
SolarZenithAngle	4byte(s)	**Name**: Swath; **Granule Boundary**: Yes; **Dynamic**: No; **Min Array Size**: 5; **Max Array Size**: 5 **Name**: IFOV; **Granule Boundary**: No; **Dynamic**: No; **Min Array Size**: 5; **Max Array Size**: 5 **Datum** **Description**: Zenith angle of sun at each IFOV position **Datum Offset**: 0 **Unscaled Valid Range Min**: 0 **Unscaled Valid Range Max**: 180 **Measurement Units**: degree **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; ELLIPSOID_FLOAT32_FILL: -999.4; VDNE_FLOAT32_FILL: -999.3 **Legend Entries**:
SolarAzimuthAngle	4byte(s)	**Name**: Swath; **Granule Boundary**: Yes; **Dynamic**: No; **Min Array Size**: 5; **Max Array Size**: 5 **Name**: IFOV; **Granule Boundary**: No; **Dynamic**: No; **Min Array Size**: 5; **Max Array Size**: 5 **Datum** **Description**: Azimuth angle of sun (measured clockwise positive from North) at each IFOV position **Datum Offset**: 0 **Unscaled Valid Range Min**: -180 **Unscaled Valid Range Max**: 180 **Measurement Units**: degree **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; ELLIPSOID_FLOAT32_FILL: -999.4; VDNE_FLOAT32_FILL: -999.3 **Legend Entries**:

SatelliteZenithAngle — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	5	5
IFOV	No	No	5	5

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	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		

SatelliteAzimuthAngle — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	5	5
IFOV	No	No	5	5

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	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		

RelativeAzimuthAngle — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	5	5
IFOV	No	No	5	5

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	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		

Height — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	5	5
IFOV	No	No	5	5

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, 5, 5 IFOV: No, No, 5, 5 **Datum** **Description**: Line of sight distance from the ellipsoid intersection to the satellite **Datum Offset**: 0 **Unscaled Valid Range Min**: MIN_VAL **Unscaled Valid Range Max**: MAX_VAL **Measurement Units**: meter **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; ELLIPSOID_FLOAT32_FILL: -999.4; VDNE_FLOAT32_FILL: -999.3 **Legend Entries**:
MoonVector	4byte(s)	**Name**: Swath, Yes, No, 5, 5 SCCoordinate, No, No, 3, 3 **Datum** **Description**: Lunar Position in Spacecraft Coordinates at MidTime **Datum Offset**: 0 **Unscaled Valid Range Min**: MIN_VAL **Unscaled Valid Range Max**: MAX_VAL **Measurement Units**: meter **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**:
SunVector	4byte(s)	**Name**: Swath, Yes, No, 5, 5 SCCoordinate, No, No, 3, 3 **Datum** **Description**: Solar position in Spacecraft Coordinates at MidTime **Datum Offset**: 0 **Unscaled Valid Range Min**: MIN_VAL **Unscaled Valid Range Max**: MAX_VAL **Measurement Units**: meter **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**:
SCPosition	4byte(s)	**Name**: Swath, Yes, No, 5, 5 ECRCoordinate, No, No, 3, 3 **Datum** **Description**: Spacecraft position in ECR Coordinates (X, Y, Z) at MidTime **Datum Offset**: 0 **Unscaled Valid Range Min**: MIN_VAL **Unscaled Valid Range Max**: MAX_VAL **Measurement Units**: meter **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**:
SCVelocity	4byte(s)	**Name**: Swath, Yes, No, 5, 5 ECRCoordinate, No, No, 3, 3 **Datum** **Description**: Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at MidTime **Datum Offset**: 0 **Unscaled Valid Range Min**: MIN_VAL **Unscaled Valid Range Max**: MAX_VAL **Measurement Units**: m/s **Scaled**: No **Scale Factor Name**: **Data Type**: 32-bit floating point **Fill Values**: NA_FLOAT32_FILL: -999.9 **Legend Entries**:

										MISS_FLOAT32_FILL	-999.8
										ERR_FLOAT32_FILL	-999.5
										VDNE_FLOAT32_FILL	-999.3

SCAttitude — 4byte(s)

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	5	5
GRFCoordinate	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	
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	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		
								ELLIPSOID_INT16_FILL	-994		
								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		
								ELLIPSOID_INT16_FILL	-994		
								VDNE_INT16_FILL	-993		

OMPS NP SDR Geolocation Product Profile - Quality Flags

Fields

QF1_OMPSNPGEO — 1byte(s)

Dimensions

Name	Granule Boundary	Dynamic	Min Array Size	Max Array Size
Swath	Yes	No	5	5

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 NP SDR Geolocation HDF5 Details

The OMPS NP 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 NP SDR Geolocation UML Diagram, provides details on the contents and data types of the OMPS NP SDR geolocation.

OMPS-NP-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_OMPSNPGEO : H5T_NATIVE_UCHAR

Figure: 6.2.1.7-1 OMPS NP SDR Geolocation UML Diagram

6.2.1.8 OMPS NP SDR Geolocation Metadata Details

The HDF5 metadata elements associated with the OMPS NP SDR Geolocation are listed in the JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms (474-00448-02-01). 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 Nadir Profile RDR/SDR LUTs

OMPS Nadir Profile RDR/SDR Data production currently uses 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 Coefficients

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.

7.2.1.1 Reserved

7.2.1.2 Reserved

7.2.1.3 Reserved

7.2.1.4 Reserved

7.2.1.5 Reserved

7.2.1.6 Reserved

7.2.1.7 Reserved

7.2.1.8 Reserved

7.2.1.9 OMPS NP Straylight PC

Data Mnemonic	**NP_NU-LM0240-137**
Description/ Purpose	The OMPS Nadir Profiler Straylight LUT are stray light coefficients used in corrections by the OMPS NP Earthview SDR algorithm
File-Naming Construct	See the File Naming Convention for Auxiliary Data Formats, JPSS CDFCB - X- Vol. l, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the tables - See the JPSS CDFCB X Vol. l for the applicable Collection Short Names.
File Size	See Table 7.2.1.9-1 OMPS Nadir Profiler 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 7.2.1.9-1 OMPS Nadir Profiler Straylight PC Data Format

Table: 7.2.1.9-1 OMPS NP Straylight PC

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
nblock	4	32-bit integer	1-200	unitless	Number of regions
nfov	4	32-bit integer	1-5	unitless	Number of spatial macropixels
nchan	4	32-bit integer	1-200	unitless	Number of spectral channels
indx_blck	112	32-bit integer	1-200	unitless	Spectral block boundaries: nchan is divided into nblock regions 2 Dimensional Array: 2 x np::SLC_NBLOCK Size of Dimension(s): 2 x 14
indx_oor	16	32-bit integer	1-200	unitless	Gives the super channels used in the OOR calculation 1 Dimensional Array: 4 Size of Dimension(s): 4
c300	4	32-bit floating point	0-200	unitless	
C290	4	32-bit floating point	0-200	unitless	
c_power	4	32-bit floating point	MIN_VAL - MAX_VAL	unitless	
sl_cor_oor	4000	32-bit floating point	MIN_VAL - MAX_VAL	unitless	2 Dimensional Array: np::MAX_SPEC_ALLOCATION x np::MAXCTPX Size of Dimension(s): 200 x 5
sl_cor_coef	280000	32-bit floating point	MIN_VAL - MAX_VAL	unitless	4 Dimensional Array: np::SLC_NBLOCK x np::MAXCTPX x np::no_spec_pix x np::MAXCTPX Size of Dimension(s): 14 x 5 x 200 x 5
isIbSlCor	4	32-bit integer	0-1	unitless	Flag to enable correction
ibsl_wlen	24	32-bit floating point	MIN_VAL - MAX_VAL	nanometers	Table node values
ibsl_avgscl	24	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Per channel scale factor
ibsl_dscldt	24	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Time dependent correction

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
ibsl_y18m2	8	64-bit floating point	MIN_VAL - MAX_VAL	unitless	Reference time
ibsl_coe_solaz	8	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Solar azimuthal dependent factor
ibsl_scsaa0	4	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Azimuthal reference value
ibsl_scseaprf	244	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Solar elevation angle nodes
ibsl_avgprf	244	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Solar zenith dependent correction factor
File Size	284,736 Bytes				

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 Nadir Profile RDR/SDR Initialization PCTs

7.2.2.1.1 OMPS NP Calibration Constant PC

Data Mnemonic	NP_NU-LM0240-108
Description/ Purpose	The OMPS NP Calibration Constant PC contains radiance calibration constant (from pre-launch calibration). This file is used in the OMPS NP 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 NP 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 NP Calibration Constant PC Data Format

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

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
radevresp	1135680	32-bit floating point	2.89661 - 3299.13	counts/W/cm^3/sterad	3 Dimensional Array: np::NUM_ELECTRONICS x np::MAX_NSPEC_CCD x np::NO_SPAT_CCD Size of Dimension(s): 2 x 364 x 390
File Size	1,135,680 Bytes				

7.2.2.1.2 OMPS NP Field Angles Map PC

Data Mnemonic	NP_NU-LM0240-109
Description/ Purpose	The OMPS NP Field Angles Map PC contains the detector map of pixel optical angles This file is used in the OMPS NP 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 NP Field Angles Map PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.2-1, OMPS NP Field Angles Map PC Data Format

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

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
angles	6240	64-bit floating point	-1 - 8.6044729E	radians	Note: OPTICAL_ANGLE_TYPE refers to the azimuth angle (0) and elevation angle (1) 2 Dimensional Array: np::NO_SPAT_CCD x np::OPTICAL_ANGLE_TYPE Size of Dimension(s): 390 x 2
File Size	6,240 Bytes				

7.2.2.1.3 OMPS NP Observed Solar PC

Data Mnemonic	NP_NU-LM0240-110
Description/ Purpose	The OMPS NP Observed Solar PC contains observed reference solar irradiances. This file is used in the OMPS NP 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 NP Observed Solar PC Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.3-1, OMPS NP Observed Solar PC Data Format

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

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
osol_data	567840	32-bit floating point	0 - ~656	W/cm^3/sterad	2 Dimensional Array: np::MAX_NSPEC_CCD x np::NO_SPAT_CCD Size of Dimension(s): 364 x 390
osol_count	567840	32-bit floating point	9520.00 - 485757.0	counts	2 Dimensional Array: np::MAX_NSPEC_CCD x np::NO_SPAT_CCD Size of Dimension(s): 364 x 390
File Size	1,135,680 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 NP Timing Pattern Ground Table

Data Mnemonic	NP_NU-LM0240-119
Description/ Purpose	The OMPS NP Timing Pattern Ground Table contains integration times and offsets for Earth View, Solar, LED and Dark. This file is used in the OMPS NP 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 7.2.2.1.12-1, OMPS NP 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 NP Timing Pattern Ground Table Data Format

Table: 7.2.2.1.12-1 OMPS NP Timing Pattern Ground Table Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
TPev_num	4	32-bit integer	1 - np::NO_SCANS_PER_GRANULE	unitless	
TPsol_num	4	32-bit integer	1 - np::NO_SOLAR_IMAGES	unitless	
TPdark_num	4	32-bit integer	1 - np::NO_DARK_IMAGES	unitless	
TPled_num	4	32-bit integer	1 - np::NO_LAMP_IMAGES	unitless	
TPev_conum	4	32-bit integer	1 - np::NO_COADDS_E	unitless	
TPsol_conum	4	32-bit integer	1 - np::NO_COADDS_S	unitless	
TPdark_conum	4	32-bit integer	1 - np::NO_COADDS_D	unitless	
TPled_conum	4	32-bit integer	1 - np::NO_COADDS_L	unitless	
TPev_time	40	64-bit floating point	1 - MAX_VAL	second	1 Dimensional Array: np::NO_SCANS_PER_GRANULE Size of Dimension(s): 5
TPsol_time	216	64-bit floating point	MIN_VAL - MAX_VAL	second	1 Dimensional Array: np::NO_SOLAR_IMAGES Size of Dimension(s): 27
TPdark_time	40	64-bit floating point	1 - MAX_VAL	second	1 Dimensional Array: np::NO_DARK_IMAGES Size of Dimension(s): 5
TPled_time	1200	64-bit floating point	0.1 - MAX_VAL	second	1 Dimensional Array: np::NO_LAMP_IMAGES Size of Dimension(s): 150
ev_time_offset	8	64-bit integer	MIN_VAL - MAX_VAL	microsecond	
sol_time_offset	8	64-bit integer	MIN_VAL - MAX_VAL	microsecond	
dark_time_offset	8	64-bit integer	MIN_VAL - MAX_VAL	microsecond	
led_time_offset	1200	64-bit integer	MIN_VAL - MAX_VAL	microsecond	1 Dimensional Array: NO_LAMP_IMAGES Size of Dimension(s): 150
File Size	2,752 Bytes				

7.2.2.1.13 Reserved

7.2.2.1.14 OMPS NP Earth View Sample Ground Table

Data Mnemonic	NP_NU-LM0240-121
Description/ Purpose	The OMPS NP Earth View Sample Ground Table contains the BATC generated database of utilized pixels. This file is used in the OMPS NP 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 7.2.2.1.14-1, OMPS NP Earth View Sample Ground Table Data Format for size
File Format Type	Little Endian Binary
Production Frequency	As needed
Data Content and Data Format	See Table 7.2.2.1.14-1, OMPS NP Earth View Sample Ground Table Data Format for size

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

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
macrot	567840	32-bit integer	0 - 3 0 = unused pixel 1 = macropixel A 2 = macropixel B 3 = bad pixel	unitless	2 Dimensional Array: np::MAX_NSPEC_CCD x np::NO_SPAT_CCD Size of Dimension(s): 364 x 390
File Size	567,840 Bytes				

7.2.2.1.15 OMPS NP Macropixel Ground Table

Data Mnemonic	NP_NU-LM0240-122
Description/ Purpose	The OMPS NP Macropixel Ground Table contains the ccd map of EV macropixels. This file is used in the OMPS NP 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 7.2.2.1.15-1, OMPS NP 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 NP Macropixel Ground Table Data Format

Table: 7.2.2.1.15-1 OMPS NP Macropixel Ground Table Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
macrot	567840	32-bit integer	MIN_VAL - MAX_VAL	unitless	2 Dimensional Array: np::MAX_NSPEC_CCD x np::NO_SPAT_CCD Size of Dimension(s): 364 x 390
File Size	567,840 Bytes				

7.2.2.1.16 Reserved

7.2.2.1.17 Reserved

7.2.2.1.18 OMPS NP Wavelengths Ground Table

Data Mnemonic	NP_NU-LM0240-125
Description/ Purpose	The OMPS NP Wavelengths Ground Table contains band center wavelengths of each macropixel for the current day. This file is used in the OMPS NP 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: 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 NP Wavelengths 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 7.2.2.1.18-1, OMPS NP Wavelengths Ground PC Data Format

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

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
obs_year	290	16-bit integer	2000 - 2050	years	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
obs_day	290	16-bit integer	1 - 366	days	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
resolution	580	32-bit floating point	0 - MAX_VAL	nanometers	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
spatial	290	16-bit integer	1 - MAX_VAL	unitless	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
intercept	1160	64-bit floating point	MIN_VAL - MAX_VAL	nanometers	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
slope	1160	64-bit floating point	MIN_VAL - MAX_VAL	unitless	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
straight	1160	64-bit floating point	>= 0 Only valid if nmonitor > 0	unitless	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
nmonitor	580	32-bit integer	0 - MAX_VAL	unitless	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
year	290	16-bit integer	2000 - 2050	years	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
day	290	16-bit integer	1 - 366	days	2 Dimensional Array: np::NP_CAL_DAYS x np::MAXCTPX Size of Dimension(s): 29 x 5
wbands	422240	64-bit floating point	230 - 380	nanometers	3 Dimensional Array: np::NP_CAL_DAYS x np::MAX_NSPEC_CCD x np::MAXCTPX Size of Dimension(s): 29 x 364 x 5
File Size	428,330 Bytes				

7.2.2.1.19 OMPS NP CF Earth Ground Table

Data Mnemonic	NP_NU-LM0240-127
Description/ Purpose	The OMPS NP 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 NP CF Earth 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 7.2.2.1.19-1, OMPS NP CF Earth Ground PC Data Format

Table: 7.2.2.1.19-1 OMPS NP 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 1 Dimensional Array: np::NP_CAL_DAYS Size of Dimension(s): 29
obs_day	116	32-bit integer	1 - 366	days	Day 1 Dimensional Array: np::NP_CAL_DAYS Size of Dimension(s): 29
old_nmonitor	116	32-bit integer	0 - MAX_VAL	unitless	1 Dimensional Array: np::NP_CAL_DAYS Size of Dimension(s): 29
monitor_year	116	32-bit integer	2000 - 2050	years	1 Dimensional Array: np::NP_CAL_DAYS Size of Dimension(s): 29
monitor_day	116	32-bit integer	1 - 366	days	1 Dimensional Array: np::NP_CAL_DAYS Size of Dimension(s): 29
cfearth	211120	32-bit floating point	0 - MAX_VAL	unitless	3 Dimensional Array: np::NP_CAL_DAYS x np::MAX_NSPEC_CCD x np::MAXCTPX Size of Dimension(s): 29 x 364 x 5
File Size	211,700 Bytes				

7.2.2.1.20 OMPS NP Table Version Ground Table

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 NP tables: OMPS NP Solar Sample Table OMPS NP Timing Pattern Table OMPS NP Linearity Table versions OMPS NP Lamp Sample Table OMPS NP 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 7.2.2.1.20-1, 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 7.2.2.1.20-1, OMPS Table Version Ground PC Data Format

Table: 7.2.2.1.20-1 OMPS NP 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: OMPS_NUM_VER_ENTRIES Size of Dimension(s): 30

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
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				

7.2.2.1.21 OMPS NP Darks Manual PC

Data Mnemonic	NP_NU-LM0240-134
Description/ Purpose	The OMPS NP Darks PC table contains averaged detector dark signal in linearity corrected counts This file is used in the OMPS NP 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, 474-0001-01, for the applicable Collection Short Names.
File Size	See Table 7.2.2.1.21-1, OMPS NP Darks Manual PC 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 NP Darks Manual PC Data Format

Table: 7.2.2.1.21-1 OMPS NP 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: np::NO_COADDS_D Size of Dimension(s): 5
profile_id	20	32-bit integer	0 - MAX_VAL	unitless	Profile ID Number 1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
iyear_dark	20	32-bit integer	2000 - 2050	years	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
iday_dark	20	32-bit integer	1 - 366	days	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
time_start_dark	40	64-bit floating point	0 - MAX_VAL	second	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
time_end_dark	40	64-bit floating point	0 - MAX_VAL	second	1 Dimensional Array: np::NO_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 (expose_dark)
good_darks	4	32-bit integer	0 - MAX_VAL	unitless	Number of good dark frames that made up the average dark data
qual_dark	10	16-bit integer	-13 - MAX_VAL	unitless	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
istat_dark	10	16-bit integer	MIN_VAL - MAX_VAL	unitless	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
analog_dark	20	32-bit floating point	MIN_VAL - MAX_VAL	unitless	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
saa_dark	20	32-bit floating point	0 - 100	percent	Spacecraft within South Atlantic Anomaly during dark calibration (extent in percent based on a Gaussian Distribution Model) 1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
dark_data	567840	32-bit floating point	0 - MAX_VAL	Counts	Average linearity corrected dark counts - 2 Dimensional Array: np::MAX_NSPEC_CCD x np::NO_SPAT_CCD Size of Dimension(s): 364 x 390
File Size	568,072 Bytes				

7.2.2.1.22 OMPS NP SAA Darks Manual PC

Data Mnemonic	NP_NU-LM0240-135
Description/ Purpose	The OMPS NP SAA Darks PC table contains detected average linearity corrected dark signal in counts during South Atlantic Anomaly This file is used in the OMPS NP 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 NP 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 7.2.2.1.22-1, OMPS NP SAA Darks Manual PC Data Format

Table: 7.2.2.1.22-1 OMPS NP 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: np::NO_COADDS_D Size of Dimension(s): 5
profile_idsaa	20	32-bit integer	0 - MAX_VAL	unitless	Profile ID Number 1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
iyear_darksaa	20	32-bit integer	2000 - 2050	years	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
iday_darksaa	20	32-bit integer	1 - 366	days	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
time_start_darksaa	40	64-bit floating point	0 - MAX_VAL	second	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
time_end_darksaa	40	64-bit floating point	0 - MAX_VAL	second	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
delta_time_darksaa	40	64-bit floating point	0 - MAX_VAL	second	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
SAA_darksaa	20	32-bit floating point	0 - 100	percent	Spacecraft within South Atlantic Anomaly during dark calibration (on a Gaussian Distribution Model) 1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
istat_darksaa	10	16-bit integer	MIN_VAL - MAX_VAL	unitless	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5
analog_darksaa	20	32-bit floating point	MIN_VAL - MAX_VAL	unitless	1 Dimensional Array: np::NO_COADDS_D Size of Dimension(s): 5

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
darksaa_array	567840	32-bit floating point	0 - MAX_VAL	Counts	Average linearity corrected dark counts 2 Dimensional Array: np::MAX_NSPEC_CCD x np::NO_SPAT_CCD Size of Dimension(s): 364 x 390
File Size	568,090 Bytes				

7.2.2.1.23 OMPS NP Bias Manual PC

Data Mnemonic	NP_NU-LM0240-136
Description/ Purpose	The OMPS NP Bias PC table contains detector electronic offset in counts. This file is used in the OMPS NP 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 NP 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 7.2.2.1.23-1, OMPS NP Bias Manual PC Data Format

Table: 7.2.2.1.23-1 OMPS NP Bias Manual PC Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
bias1	4	32-bit floating point	0 - 1.00E+05	counts	bias electronics 2nd CCD
File Size	4 Bytes				

7.2.2.1.24 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 7.2.2.1.24-1, OMPS Surface Type Ground PC Data Format for size
File Format Type	Little Endian Binary

Table: 7.2.2.1.24-1 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 NP Ephemeral PCT

Data Mnemonic	DP_NU-LM2020-004
Description/ Purpose	The OMPS NP 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 NP 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 NP SDR PC Data Format

Table: 7.2.2.2-1 OMPS NP SDR Ephemeral PC

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
deviate	8	64-bit floating point	0 - 1000	unitless	Correlation threshold for identifying deviations
deviateWidth	8	64-bit floating point	0 - 1000	unitless	Correlation threshold for identifying deviations
qUpPrimaryElec	8	64-bit floating point	0 - 12050	unitless	Upper tie point for primary electronics (for Linearity use)
qUpRedundantElec	8	64-bit floating point	0 - 12050	unitless	Upper tie point for redundant electronics (for Linearity use)
mountMatrix	72	64-bit floating point	-1 - 1	unitless	Matrix of mounting errors describing the rotation from sensor frame to spacecraft frame. 2 Dimensional Array: MOUNT_MATRIX_DIM x MOUNT_MATRIX_DIM Size of Dimension(s):3 x 3
flopdownAngle	8	64-bit floating point	0 - 1000	unitless	Flopdown angle used in goniometric corrections. Y rotation in addition to orbital motion in degrees.
xAngle	8	64-bit floating point	-70 - 1000	unitless	X rotation takes into account diffuser rotation in the rotor plane. Its sign corresponds to counterclockwise direction if viewed from motor side of assembly.
chiTol	4	32-bit floating point	0 - 1000	unitless	Threshold reduced Chi-square for line wavelength use.
fullWidth	4	32-bit floating point	0 - 1000	unitless	The expected nominal spectral FWHM (Full Width at Half Maximum).
Edge	4	32-bit floating point	0 - 1000	unitless	Extra bandpass in nm around wave min and max
motorRate	4	32-bit floating point	0 - 1000	unitless	Motor counts/degree
diffusersOffset	4	32-bit floating point	0 - 1000	unitless	Angle between reference diffuser stowed position and mid position.
diffuserSep	4	32-bit floating point	0 - 1000	unitless	Separation angle between nominal diffuser positions.
radHigh	4	32-bit floating point	0 - 3.00000064E8	unitless	Maximum expected radiance.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
badSaa	4	32-bit floating point	0 - 1000	unitless	Bad SAA range
waveStdTol	4	32-bit floating point	0 - 1000	unitless	Threshold wavelength precision to adjust calibration fluxes
biasDefault	4	32-bit floating point	0 - 1000	unitless	Default electronics bias value in counts.
solarSize	4	32-bit floating point	0 - 1000	unitless	Sun disk diameter
diffEdgeAngle	4	32-bit floating point	0 - 1000	unitless	Tolerance angle from diffuser edge (degrees)
wmonInterval	4	32-bit integer	0 - 1000	unitless	Number of solar calibrations to trend wavelengths.
cfInterval	4	32-bit integer	0 - 1000	unitless	Calibration Factor Interval: number of days between calibration events
badPixLowerThreshold	4	32-bit integer	0 - 1000	unitless	The lower threshold for bad pixels. Values below this number are considered bad.
badPixUpperThreshold	4	32-bit integer	0 - 1000	unitless	The upper threshold for bad pixels. Values above this number are considered bad.
biasIndex	16	32-bit integer	0 - 1000	unitless	The lower and upper bounds of the serial overclock pixels to be used in the bias estimate. 1 Dimensional Array: Size of Dimension(s):4
smearSpatCcdIndex	8	32-bit integer	0 - 1000	unitless	Beginning and Ending spatial pixel index in the Smear Region of the CCD 1 Dimensional Array: Size of Dimension(s):2
viewSpatCcdIndex	8	32-bit integer	0 - 1000	unitless	Beginning and Ending spatial pixel index in the View Region of the CCD 1 Dimensional Array: Size of Dimension(s):2
specCcdIndex	8	32-bit integer	0 - 1000	unitless	Beginning and Ending spectral pixel index of the CCD. To account for the spectral bias region, the no_bias_pix value needs to be added and subtracted from these indices 1 Dimensional Array: Size of Dimension(s):2

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
Offset	2	16-bit integer	0 - 1000	unitless	The number of pixels on both sides of a line to monitor
trendGapMax	2	16-bit integer	0 - 1000	unitless	How many days are tolerated between cal events before you cannot do trending.
goniometryOn	1	unsigned 8-bit char	MIN_VAL - MAX_VAL	unitless	Switch for processing goniometry during execution.
cfSolarCorrect	1	unsigned 8-bit char	MIN_VAL - MAX_VAL	unitless	Switch determining if CF solar correction should be performed
Padbytes	2	16-bit integer	MIN_VAL - MAX_VAL	unitless	Pad bytes added by the compiler to memory align the structure.
File Size	232 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 list pre-defined unique values for the fields from the static header for each of the RDRs defined.

RDR Name	Sensor	TypeID	numAPIDS
OMPS NP Science	OMPS-NP	SCIENCE	1
OMPS NP Calibration	OMPS-NP	CALIBRATION	1
OMPS NP Diagnostic Earth View	OMPS-NP	DIAG-SCI	1
OMPS NP Diagnostic Calibration	OMPS-NP	DIA-CAL	1
OMPS Dwell	OMPS	DWELL	1
OMPS Telemetry	OMPS	TELEMETRY	1
OMPS Memory Dump	OMPS	DUMP	1
OMPS Flight Software Boot-up	OMPS	FSW BOOTUP	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 NP SDR	OMPS-NP-SDR	1700	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	474-00448-02-05_JPSS-OMPS-NP-SDR-DD-Part-5_M_OMPS-NP-SDR-PP.xml
2	Reserved
3	Reserved
4	474-00448-02-05_JPSS-OMPS-NP-SDR-DD-Part-5_M_OMPS-NP-GEO-PP.xml