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Joint Polar Satellite System (JPSS) Common Data Format Control Book – External Volume V - Metadata

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Goddard Space Flight Center
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JPSS Common Data Format Control Book – External
Volume V - Metadata

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Preface

This document is under JPSS Ground 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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Change History Log

Revision	Effective Date	Description of Changes (Reference the CCR & CCB/ERB Approve Date)
Original	July 5, 2011	This version incorporates the following CCRs: **ECR1084A (**Addresses interpretation issues found in the definitions of a few metadata attributes in Table 4.4.4) and **474-CCR-11-0122** (ECR-CGS-0049: This ECR provides NASA-approved PRE-LAUNCH updates to the CDFCB-X volumes I, V, & VI in support of the NPP pre-launch baseline documentation. V1- These changes are technical corrections to the documentation to match the IDPS Mx5 Baseline Release in support of NCT4 and Launch: Drivers: PCR026682 - Technical changes approved at DEWG 6/7/11 – The Format of the Operational_Mode Metadata is incorrect in the CDFCB for CrIMMS, where products are fused. The code has a comma separating the products but the CDFCB does not. (vol. V); NCT3 Pt2 questions - Technical changes approved at DEWG 6/7/11 (Additional changes to be made post launch) - Update to describe use of 993 value for N_Beginning_Orbit_Number(Vol. V); V1 Updates: Update to D34862-01_H7 CDFCB-X Volume_I_Ch Pg and truth –V1 files; V2 Changes: Update to D34862-01_H7 CDFCB-X_Volume_I_Ch Pg and truth files – V2 files typographical updates, update list of OMPS Tables; The following lists the updates to the affected documents for the changes listed above: D34862-05_G2 CDFCB-X Volume_V_Ch Pg_ECR-CGS-0049; The CDFCB format for Operational_Mode given is <SC> <SC Mode>, <Sensor1> <Sensor Mode1> <Sensor2> <Sensor Mode2>. This is updated to <SC> <SC Mode>, <Sensor1> <Sensor Mode1>, <Sensor2> <Sensor Mode2> in Table 4.4-4. (Driver 1); The CDFCB update for N_Beginning_Orbit_Number describes the use of default Metadata fill value 993 before build I1.5.06 and the change to the default Metadata value from 993 to 0 starting with build I1.5.06 in Table 4.4-4. (Driver 2)) to create JPSS CDFCB, External, Volume 5, Metadata, Rev -. This was approved at the JPSS Ground ERB July 5, 2011.

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A	08/11/2006	Incorporation of the following ECRs: • D34862-05 CDFCB-X Vol. V ECR 503A – Rev A, This revision contains updates to all sections based on the metadata: • XML User Block and HDF5 Metadata classifications • Product Profile migration to the CDFCB-X Volume I for overview of Product Profiles • XML Schema and DTD for the Product Profiles • Examples at the end of the volume • Product Profile XML Style Sheet used for the rendering of the Product Profiles in the CDFCB-X • Traceability	All

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C	06/27/2008	Incorporation of the following DCOs and ECRs: • 783 A Updates to the CDFCB-X Volume V • DCO C1 CDFCB-X Vol. V ECR 691A – Product Profiles Update • DCO C2 CDFCB-X Vol. V ECR 704 – Metadata Update • DCO C3 CDFCB-X Vol. V ECR 712A – N_Algorithm_Version • DCO C4 CDFCB-X Vol. V ECR 749 – Distributor Metadata	All
D	01/16/2009	Incorporation of ECR 899A	29, 30, 32, 36, 38, 47-78

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E	05/14/2009	Incorporation of ECR 960A • Added effectivity to GEO datasets and updated definition for West_Bounding_Coordinate, East_Bounding_Coordinate, North_Bounding_Coordinate, and Sout_Bounding_Coordinate • Instrument_Short_Name - updated HDF5 Hierarchy to include S (Spacecraft Diary) • Time_of_Day, N_GEO_Ref, N_Anc_Filename, and N_Aux_Filename - corrected typo in example • N_Software_Version and N_Granule_Status - updated HDF5 Hierarchy to include E (Spacecraft Diary) • Updated CrIS SDR GEO example XML Product Profile • Updated CrIS SDR GEO example XML Product Profile • Added the following text to N_Satellite/Local* and N_Solar* angles, G-Ring-* values, and East_, West_, North_, and South_ Bounding_Coordinate attributes: "N_Satellite/Local* and N_Solar* angles, G-Ring-* values, and East_, West_, North_, and South_ Bounding_Coordinate" • 2. Updated N_GEO_Ref example: GIGTO_npp_d20030311_t1400000_e1430000_b12345_c20030311153000000000_navo_dev.h5 • 3. Added the following text to N_Percent_Erroneous_Data, N_Percent_Missing_Data, N_Percent_Not-Applicable_Data: "VIIRS Bright Pixel IP (VIIRS-Bright-Pixel-Mod-IP)"	42, 53, 55-59, 62, 64, 70-72, 74-79, 81, 84, 92-137, 143

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F	12/09/2009	ECR 1015A incorporates the following changes: • ECR 989A DCO F1 – N_Anc_Filename – N_Aux_Filename Update • Section 3.2 – Added Geolocation applicability to the XML User Block for consistent representation in the delivered HDF5 files as requested by both the users and IDPS, vetted at the DFWG. Also updated example titles in Appendix A • Incorporates ECR 1012 - Updated Appendix A, DATA MNEMONIC TO INTERFACE MAPPING to reference D34862-01, CDFCB-X Volume I for the mapping. This was done based on user feedback on use of the mappings as well as eliminates duplication and precedence issues across the various volumes of the CDFCB-X • Table 4.4-4, Metadata Delivered in NPOESS Data Products – East_Bounding_Coordinate, North_Bounding_Coordinate, South_Bounding_Coordinate, and West_Bounding_Coordinate – updated definition to call out that: o "The longitude of the point is based on the exit vectors which are assumed to be the center of a pixel." As requested by IDPS to eliminate any ambiguity o For products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value) • Appendix B, NPOESS Delivered Documentation o Created separate listings for the CDFCB-X Volume VII calling it out by its parts and not by a single entry o Corrected typo in document number for the NPOESS CIS ICD Volume I o Add C++ to indicate the material covered in the document for the NPOESS API User's Guide Volume I o Removed NPOESS System Operations Concepts from listing since most of the OpsCons are not publicly releasable and do not provide any requirements, specifications, or interfaces • Operation_Mode (typographical): Updated OMPS example to provide proper Instrument Short Name (OMPS-TC in lieu of OMPS)	32, 33, 36, 51, 74, 76, 85, 86, 116, 117, 118

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Table of Contents

1.0 INTRODUCTION 1
1.1 Document Purpose and Scope 1
1.2 Document Overview 1
2.0 NPOESS DATA PRODUCT PROFILES 3
2.1 NPOESS Data Product Profile XML Schema and DTD 12
2.2 NPOESS Data Product Profile XML Style Sheet 16
3.0 HDF5 XML User Block for NPOESS Data Products 25
3.1 Raw Data Records (RDR) HDF5 XML User Block 26
3.1.1 RDR HDF5 XML User Block Schema 30
3.2 Sensor, Temperature, and Environmental Data Records, Application Related Products, Geolocation, and Intermediate Products HDF5 XML User Block 32
3.2.1 HDF5 SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Schema 37
4.0 NPOESS Data Product Metadata 39
4.1 Metadata Introduction 39
4.2 Metadata-Naming Conventions 39
4.3 Metadata Angles 39
4.3.1 Zenith Angles 39
4.3.2 Azimuth Angles 40
4.4 Metadata Associated with NPOESS Data Products 41
4.4.1 Metadata Defaults 79
4.5 NPOESS Data Product Traceability 80
APPENDIX A – EXAMPLES 85
APPENDIX B – NPOESS Delivered Documentation 113
APPENDIX C – DATA MNEMONIC TO INTERFACE MAPPING 119

This document has been identified per the NPOESS Common Data Format Control Book – External Volume 5 Metadata, D34862-05, Appendix B as a document to be provided to the NOAA Comprehensive Large Array-data Stewardship System (CLASS) via the delivery of NPOESS Document Release Packages to CLASS.

List of Figures

Figure 4.3.1-1, Zenith Angles 40
Figure 4.3.2-1, Azimuth Angles 41
Figure 4.5-1, NPOESS Data Product Notional Processing 81

This document has been identified per the NPOESS Common Data Format Control Book – External Volume 5 Metadata, D34862-05, Appendix B as a document to be provided to the NOAA Comprehensive Large Array-data Stewardship System (CLASS) via the delivery of NPOESS Document Release Packages to CLASS.

List of Tables

Table 2.0-1, NPOESS Data Product Profile Format 4
Table 3.1-1, RDR HDF5 XML User Block Format 27
Table 3.2-1, SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Format 33
Table 4.4-1, HDF5 Generalized UML Diagrams 42
Table 4.4-2, Metadata Presentation Example 43
Table 4.4-3, Legend for the NPOESS Data Product Metadata Table 44
Table 4.4-4, Metadata Delivered in NPOESS Data Products 46
Table 4.4.1-1, Metadata Default Values 79
Table B-1, NPOESS Delivered Documentation 113

List of Examples

Example A-1, RDR HDF5 XML User Block Example 85
Example A-2, Single SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Example 86
Example A-3, Multiple SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Example 87
Example A-4, NPOESS Data Product Profile XML Example..... 89

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1.0 INTRODUCTION

Metadata describes the content, quality, condition, and other characteristics of the data it is associated with. This document describes the metadata associated with the National Polar-orbiting Operational Environmental Satellite System (NPOESS) Data Products delivered to external users.

1.1 Document Purpose and Scope

This document provides definitions, structures, and examples of the metadata delivered within the NPOESS Data Product HDF5 files and its organization. This document is meant as a reference document for the Common Data Format Control Book – External (CDFCB-X) Volumes describing NPOESS data that are delivered as HDF5 files, Volume II, D34862-02 (RDRs), Volume III, D34862-03 (SDR/TDRs) Volume IV, D34862-04 (EDR/IP/ARPs), and Volume VI, D34862-06 (Ancillary Data, Auxiliary Data, Reports, and Messages). The metadata structure will evolve and be refined as the NPOESS design progresses from the initial NPOESS Preparatory Project (NPP) implementation to the final NPOESS era. The metadata described herein applies generally to both the NPP and the NPOESS stages. Unless specifically identified as NPP Only or NPOESS Only, all references to NPOESS will imply both NPOESS and NPP.

For an overview of the CDFCB-X and the list of reference documents, see the CDFCB-X Volume I-Overview, D34862-01.

1.2 Document Overview

Section 1: Introduction – Provides a brief overview of the CDFCB-X, Volume V Metadata, D34862-05, for the NPOESS program, the document's purpose, and its scope.

Section 2: NPOESS Data Product Profiles – Provides the NPOESS Data Product Profile Extensible Markup Language (XML) Schema, Data Type Definition (DTD), and Style Sheet.

Section 3: HDF5 XML User Block for NPOESS Data Products – Provides the data format definitions for the XML User Blocks provided within the delivered Hierarchical Data Format Release 5 (HDF5) NPOESS Data Product files.

Section 4: NPOESS Data Product Metadata – Provides an overview and definitions of the metadata elements provided with the NPOESS Data Products.

Appendix A: Examples – Provides examples of the HDF5 metadata, as delivered within the XML User Block of the delivered NPOESS Data Products and examples of the NPOESS Data Product Profiles.

Appendix B: NPOESS Delivered Documentation – Provides the listing of the various NPOESS documentation which are delivered to the Centrals and the Comprehensive Large Array-data Stewardship System (CLASS).

2.0 NPOESS DATA PRODUCT PROFILES

Data Mnemonic	DP_NU-L41000-000
Description/ Purpose	NPOESS Data Product Profiles provide an XML rendering of the structure of a granule in the NPOESS Data Products. See the CDFCB-X Volume I, D34862-01, for an overview and in-depth explanation of the NPOESS Data Product Profiles. The following section provides the NPOESS Data Product Profile XML Schema, DTD, and Style Sheet. The XML and DTD provide the specifics, required as per XML 1.0, for how the XML hierarchy is implemented. The Style Sheet is the same as that used to render the Product Profiles in the CDFCB-X. In order to utilize the XML Schema or Style Sheet, the user will need to make modifications relevant to their intended use. For more information on XML and its usage, see http://www.w3.org/XML/. The style sheet provided is an example style sheet for rendering the product profiles. This style sheet is used to render the tables for NPOESS Data Product Profiles in the CDFCB-X. The renderings in the CDFCB-X are formatted for readability for the user and are separated into three common groups: Science Data Quality Flags Scale Factors
File-Naming Construct	See the File-Naming Convention for NPOESS Data Product Profiles, CDFCB-X Volume I, D34862-01, Section 3.4
File Size	Varies by product based on number of dataset arrays
File Format Type	XML
Production Frequency	Produced for each NPOESS Data Product. Update frequency based on modifications made to the structure of a given NPOESS Data Product
Data Content and Data Format	See Table 2.0-1, NPOESS Data Product Profile Format, for details. Section 2.1, NPOESS Data Product Profile XML Schema and DTD, provides the XML Schema and DTD. Section 2.2, NPOESS Data Product Profile XML Style Sheet, provides an XML Style Sheet that can be used for rendering the NPOESS Data Products Profiles. See the CDFCB-X Volume I, D34862-01, for an overview of the NPOESS Product Profiles.

Table 2.0-1, NPOESS Data Product Profile Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
NPOESSDataProduct	N/A	Complex Type	Subfields: ProductName CollectionShortName DataProductID ProductData	N/A	Required A single NPOESS Data Product describes all of the DataProduct elements associated with a single “ProductData” Group and NPOESS HDF5 file.
ProductName	N/A	String	See the CDFCB-X Volume I, Appendix A, for a list of the Collection Long Names	N/A	Required The ProductName is the Collection Long Name of the data product represented in the Product Profile. This field is used for rendering purposes.
CollectionShortName	N/A	String	See the CDFCB-X Volume I, Appendix A for a list of the Collection Short Names	N/A	Required Provides the Collection Short Name as defined by the CDFCB-X Volume I. This value is used in the HDF5 file for the various Group labels.
DataProductID	N/A	String	See the CDFCB-X Volume I, Appendix A for a list of DataProduct IDs.	N/A	Required. Provides the Data Product ID as defined in the CDFCB-X Volume I. This value is also used in the NPP/NPOESS Data Products HDF5 filename construct.
ProductData	N/A	Complex Type	Subfields: DataName Field	N/A	Required, repeating The ProductData element describes the various groupings of data included within the HDF5 ProductData set.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
DataName	N/A	String	Free Text	N/A	Required The DataName element provides a description of a dataset found within an NPOESS HDF5 file. This field is used for rendering purposes.
Field	N/A	Complex Type	Subfields: Name Dimension DataSize Datum	N/A	Required, repeating A ProductData element must contain at least one Field. A Field must contain at least one Datum element. Field elements may contain Dimension elements. Multiple Field elements are complex arrays that contain multi-dimension sub-arrays. For simple types, a ProductData element contains a single Field that may contain multiple Datum elements of different sized types.
Name	N/A	String	Free Text	N/A	Optional (depends on parent element) Names apply to distinct information units for comparison, data handling, and reference.
Dimension	N/A	Complex Type	Subfields: Name GranuleBoundary Dynamic MaxIndex MinIndex	N/A	Optional, repeating The Dimension element defines the rank characteristics of multi-dimensional array products within Field elements and ProductData elements.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
DataSize	N/A	Complex Type	Subfields: Count Type	N/A	Required The DataSize element is the size of a particular Field in a ProductData definition.
Datum	N/A	Complex Type	Subfields: Description DatumOffset Scaled ScaleFactorName MeasurementUnits RangeMin RangeMax DataType FillValue LegendEntry	N/A	Required, repeating The Datum element is the most primitive type occurring within a Field of a ProductData element. A data record may contain one or more individual Datum elements.
Count	N/A	Integer	Valid Integer > 0	N/A	Required The Count element is the number of units for the type indicated. Generally the Data Size is provided in 8 bit bytes.
Type	N/A	String	bit(s) byte(s)	N/A	Required The Type field specifies the unit of measure, or data type, for DataSize.
Description	N/A	String	Free Text	N/A	Required Provides a description of, or elaborates on, the name of a data field or datum.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
DatumOffset	N/A	Integer	Valid Integer >= 0	N/A	Required The Offset element identifies the index for the start of the Datum element within a field.
Scaled	N/A	Boolean	0 or 1	N/A	Required Indicates whether or not a field has been scaled. If the dataset is scaled, then the ScaleFactorName is provided. “1” is scaled “0” is not scaled
ScaleFactorName	N/A	String	<Dataset Name>Factors <CommonName>Factors	N/A	Optional The name of the dataset that contains the scale and offset information for the scaled dataset. In general, the scale factor name is generated by appending “Factors” to the name of the parameter that is scaled. If more than one parameter is scaled in a granule, and the parameters share the same scale and offset factors, the names of the parameters use the common element in the parameter name.
MeasurementUnits	N/A	String	Represented using as the SI Units Conventions as defined by the National Institute of Standards and Technology (NIST)	N/A	Optional The MeasurementUnits are the engineering values determined for the individual Datum element. Note: the measurement unit applies to the unscaled value rather than the scaled value.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
RangeMin	N/A	Float	Valid Float	N/A	Optional The RangeMin value applies to the measurement value after application of the scale factor(s). Value will match the type of the field it is describing These values are only provided in those instances where the NPOESS System Specification calls for a validated range over which performance of the NPP/NPOESS Data Products are guaranteed.
RangeMax	N/A	Float	Valid Float	N/A	Optional The RangeMax value applies to the measurement value after application of the scale factor(s). Value will match the type of the field it is describing\ These values are only provided in those instances where the NPOESS System Specification calls for a validated range over which performance of the NPP/NPOESS Data Products are guaranteed.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
DataType	N/A	String	See the CDFCB-X Volume I, D34862-01. Appendix I, HDF5 Data Type Crosswalk, for a list of the possible Non-Language Specific Types	N/A	Required The DataType is the bit width and computer representation of the HDF5 dataset elements. If no representation is provided, for example "2-bit", then the representation is bitwise. When a data field is represented as a scaled HDF dataset, the DataType is the type of the scaled dataset; the type of the scale factor dataset is the type of the data field.
FillValue	N/A	Complex Type	Subfields: Name Value	N/A	Optional, repeating The FillValue is the value of the Datum element which has special meaning. The label for the fill value is provided. Note that the fill values need to be converted to the appropriate data type and fill value when performing unscaling – where applicable.
LegendEntry	N/A	Complex Type	Subfields: Name Value	N/A	Optional, repeating Legends associated name/value pairs.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
GranuleBoundary	N/A	Boolean	0 or 1	N/A	Optional The GranuleBoundary element indicates that the dimension is contiguous over granule boundaries. For scanning sensors, i.e. Visible/Infrared Imager/Radiometer Suite (VIIRS), the AlongTrack dimension is the dimension which is contiguous across granules, as related to aggregations of granules in a single HDF5 file. “1” is a granule boundary “0” is not a granule boundary
Dynamic	N/A	Boolean	0 or 1	N/A	Required The Dimension(s) may be either static or dynamic “1” is a dynamic element “0” is a static element.
MaxIndex	N/A	Integer	Valid Integer > 0	N/A	Required The MaxIndex element is the maximum expected value for a dimension. For static arrays, the MaxIndex is equal to the MinIndex. For Dynamic dimensions, the MaxIndex is the maximum number of values expected for the named index value. This element occurs only once for each Dimension element.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
MinIndex	N/A	Integer	Valid Integer > 0	N/A	Required The MinIndex element is the minimum expected value for a dimension. For static arrays, the MaxIndex is equal to the MinIndex. For Dynamic dimensions, the MinIndex is the minimum number of values expected for the named index value. This element occurs only once for each Dimension element.
Value	N/A	Double	Valid real number	N/A	Required This element is the value – the meaning of this attribute is dependent on its use. For Legend Entries – this attribute provides information relative to the datum that the legend applies to (for example, for quality flags – this provides the bit value). For Fill Values, this attribute is the value associated with a specific fill condition. This element may contain any number in the range of the specified data type.

2.1 NPOESS Data Product Profile XML Schema and DTD

```
<?xml version="1.0" encoding="ISO-8859-1"?>

<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">

<!-- == Product Profile XML Schema == -->

<!-- == Annotation for this schema == -->
<xs:annotation>
 <xs:documentation xml:lang="en">
  NPP/NPOESS Data Products XML Schema
 </xs:documentation>
</xs:annotation>


<!-- == NPP/NPOESS Data Product Primary Element == -->
<xs:element name="NPOESSDataProduct"
type="NPOESSDataProductType" />


<!-- == NPP/NPOESS Data Products Profile == -->
<xs:complexType name="NPOESSDataProductType">
 <xs:sequence>
  <xs:element name="ProductName" type="xs:string" minOccurs="1"
maxOccurs="1" />
  <xs:element name="CollectionShortName" type="xs:string"
minOccurs="1" maxOccurs="1" />
<xs:element name="DataProductID" type="xsdxs:string"
minOccurs="1" maxOccurs="1" />
  <xs:element name="ProductData" type="ProductDataType"
minOccurs="1" maxOccurs="3" />
 </xs:sequence>
</xs:complexType>


<!-- == Product Data Types == -->
<xs:complexType name="ProductDataType">
<xs:sequence>
<xs:element name="DataName" type="xs:string" minOccurs="1"
maxOccurs="1" />
<xs:element name="Field" type="FieldType" minOccurs="1"
maxOccurs="unbounded" />
</xs:sequence>
</xs:complexType>
```

```
<!-- == Field Type == -->
<xs:complexType name="FieldType">
<xs:sequence>
<xs:element name="Name" type="xs:string" minOccurs="0"
maxOccurs="1" />
<xs:element name="Dimension" type="DimType" minOccurs="0"
maxOccurs="unbounded" />
<xs:element name="DataSize" type="DataSizeType" minOccurs="1"
maxOccurs="1" />
<xs:element name="Datum" type="DatumType" minOccurs="1"
maxOccurs="unbounded" />
</xs:sequence>
</xs:complexType>


<!-- == Data Size Type == -->
<xs:complexType name="DataSizeType">
<xs:sequence>
<xs:element name="Count" type="xs:integer" minOccurs="1"
maxOccurs="1" />
<xs:element name="Type" type="xs:string" minOccurs="1"
maxOccurs="1" />
</xs:sequence>
</xs:complexType>


<!-- == Dim Type == -->
<xs:complexType name="DimType">
<xs:sequence>
<xs:element name="Name" type="xs:string" minOccurs="0"
maxOccurs="1" />
<xs:element name="GranuleBoundary" type="xs:boolean"
minOccurs="0" maxOccurs="1" />
<xs:element name="Dynamic" type="xs:boolean" minOccurs="1"
maxOccurs="1" />
<xs:element name="MinIndex" type="xs:integer" minOccurs="1"
maxOccurs="1" />
<xs:element name="MaxIndex" type="xs:integer" minOccurs="1"
maxOccurs="1" />
</xs:sequence>
</xs:complexType>


<!-- == Datum Type == -->
<xs:complexType name="DatumType">
<xs:sequence>
<xs:element name="Description" type="xs:string" minOccurs="1"
```

```
maxOccurs="1" />
<xs:element name="DatumOffset" type="xs:integer" minOccurs="1"
maxOccurs="1" />
<xs:element name="Scaled" type="xs:boolean" minOccurs="1"
maxOccurs="1" />
<xs:element name="ScaleFactorName" type="xs:string"
minOccurs="0" maxOccurs="1" />
<xs:element name="MeasurementUnits" type="xs:string"
minOccurs="0" maxOccurs="1" />
<xs:element name="RangeMin" type="xs:string" minOccurs="0"
maxOccurs="1" />
<xs:element name="RangeMax" type="xs:string" minOccurs="0"
maxOccurs="1" />
<xs:element name="DataType" type="xs:string" minOccurs="1"
maxOccurs="1" />
<xs:element name="FillValue" type="FillValueType" minOccurs="0"
maxOccurs="unbounded" />
<xs:element name="LegendEntry" type="LegendEntryType"
minOccurs="0" maxOccurs="unbounded" />
</xs:sequence>
</xs:complexType>


<!-- == Fill Value Type == -->
<xs:complexType name="FillValueType">
<xs:sequence>
<xs:element name="Name" type="xs:string" minOccurs="1"
maxOccurs="1" />
<xs:element name="Value" type="xs:double" minOccurs="1"
maxOccurs="1" />
</xs:sequence>
</xs:complexType>


<!-- == Legend Entry Type == -->
<xs:complexType name="LegendEntryType">
<xs:sequence>
<xs:element name="Name" type="xs:string" minOccurs="1"
maxOccurs="1" />
<xs:element name="Value" type="xs:double" minOccurs="1"
maxOccurs="1" />
</xs:sequence>
</xs:complexType>

</xs:schema>
```

```
<?xml version="1.0"?>

<!ELEMENT NPOESSDataProduct (ProductName, CollectionShortName,
DataProductID, ProductData+)>
<!ELEMENT ProductData (DataName, Dimension*, Field*)>
<!ELEMENT Field (Name?, FieldOffset?, Dimension*, DataSize,
Datum+)>
<!ELEMENT DataSize (Count, Type)>
<!ELEMENT Dimension (Name, AttributeName, GranuleBoundary?,
Dynamic, MinIndex, MaxIndex)>
<!ELEMENT Datum (Description, DatumOffset?, Scaled,
ScaleFactorName, MeasurementUnits?, RangeMin?, RangeMax?,
DataType, FillValue*, LegendEntry*)>
<!ELEMENT FillValue (Name, Value)>
<!ELEMENT LegendEntry (Name, Value)>
<!ELEMENT ProductName (#PCDATA)>
<!ELEMENT CollectionShortName (#PCDATA)>
<!ELEMENT DataProductID (#PCDATA)>
<!ELEMENT DataName (#PCDATA)>
<!ELEMENT Name (#PCDATA)>
<!ELEMENT FieldOffset (#PCDATA)>
<!ELEMENT Count (#PCDATA)>
<!ELEMENT Type (#PCDATA)>
<!ELEMENT AttributeName (#PCDATA)>
<!ELEMENT GranuleBoundary (#PCDATA)>
<!ELEMENT Dynamic (#PCDATA)>
<!ELEMENT MinIndex (#PCDATA)>
<!ELEMENT MaxIndex (#PCDATA)>
<!ELEMENT Description (#PCDATA)>
<!ELEMENT DatumOffset (#PCDATA)>
<!ELEMENT Scaled (#PCDATA)>
<!ELEMENT ScaleFactorName (#PCDATA)>
<!ELEMENT MeasurementUnits (#PCDATA)>
<!ELEMENT RangeMin (#PCDATA)>
<!ELEMENT RangeMax (#PCDATA)>
<!ELEMENT DataType (#PCDATA)>
<!ELEMENT Value (#PCDATA)>
```

2.2 NPOESS Data Product Profile XML Style Sheet

```
<?xml version='1.0' encoding='utf-8'?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:output method="html"/>
<xsl:template match="/">
<html>
 <head>

  <xsl:for-each select="NPOESSDataProduct">
   <title>Summary of <xsl:value-of
select="ProductName"/></title>
  </xsl:for-each>

  <style type="text/css" media="screen">
   body {
    margin: 0;
    padding: 0;
    background: #fff;
    font-size: 8pt;
    font-weight: normal;
   }

   td {
    margin: 0;
    padding: 0;
    background: #fff;
    font-size: 8pt;
    font-weight: normal;
   }
  </style>
 </head>

 <body>

  <!-- The Granule Content Summary -->

  <xsl:for-each select="NPOESSDataProduct">
   <h3 align="center">  <xsl:value-of
select="ProductName"/></h3>

   <xsl:if test="not(NumberOfProductData = 0)">
       <xsl:for-each select="ProductData">
     <h4 align="center">
      <xsl:value-of select="DataName"/>
     </h4>
```

```
     <table cellspacing="0" cellpadding ="4" border="1">
      <tr>
       <td valign="top" align="left"><b>Name</b></td>
       <td valign="top" align="left"><b>Description</b></td>
       <td valign="top" align="left"><b>Data Type</b></td>
       <td valign="top" align="left"><b>Aggregate
Dimension</b></td>
       <td valign="top" align="left"><b>Granule
Dimension</b></td>
       <td valign="top" align="left"><b>Units</b></td>
      </tr>

      <xsl:for-each select="Field">
       <tr>
        <td valign="top" align="left">
         <xsl:value-of select="Name"/>
        </td>
        <td valign="top" align="left">
         <xsl:value-of select="Datum/Description"/>
        </td>

        <td valign="top" align="left">
         <xsl:value-of select="Datum/DataType"/>
        </td>
        <td valign="top" align="left">
         [<xsl:for-each select="Dimension">
          <xsl:call-template name="WriteAggDimSize"/>
         </xsl:for-each>]
        </td>

        <td valign="top" align="left">
         [<xsl:for-each select="Dimension">
          <xsl:call-template name="WriteGranDimSize"/>
         </xsl:for-each>]
        </td>
        <td valign="top" align="left">
         <xsl:value-of select="Datum/MeasurementUnits"/>
        </td>
       </tr>
      </xsl:for-each>
     </table>
    </xsl:for-each>
   </xsl:if>
  </xsl:for-each>

  <!-- The NPOESS Data Product Profile -->
```

```
  <h2 align="center">
   Summary of <xsl:value-of
select="NPOESSDataProduct/ProductName"/>
  </h2>

  <!-- For Each Data Product - Science, Quality Flags, Factors -
->
  <xsl:for-each select="NPOESSDataProduct/ProductData">
   <h3 align="center">
    <xsl:value-of select="DataName"/>
   </h3>

   <br/>

   <!-- Field Information -->

   <table cellSpacing="0" cellPadding="0" border="1">
    <tr>
     <td colSpan="5" vAlign="top"
align="center"><b>Fields</b></td>
    </tr>
    <tr>
     <td vAlign="top" align="left"><b>Name</b></td>
     <td vAlign="top" align="left"><b>Data Size</b></td>
     <td vAlign="top" align="left"><b>Dimensions</b></td>
    </tr>

    <xsl:for-each select="Field">
     <tr>

      <!-- Product Data/Name Information -->

      <td vAlign="top" align="left">
       <xsl:value-of select="Name"/>
      </td>

      <!-- Product Data/Data Size Information -->

      <td vAlign="top" align="left">
       <xsl:value-of select="DataSize/Count"/>
       <xsl:value-of select="DataSize/Type"/>
      </td>
      <td vAlign="top" align="left">

       <!-- Product Data/Dimension Information -->

       <table cellSpacing="0" cellPadding="0" border="1">
```

```
        <tr>
         <td vAlign="top" align="left"><b>Name</b></td>
         <td vAlign="top" align="left"><b>Granule
Boundary</b></td>
         <td vAlign="top" align="left"><b>Dynamic</b></td>
         <td vAlign="top" align="left"><b>Min Array
Size</b></td>
         <td vAlign="top" align="left"><b>Max Array
Size</b></td>
        </tr>

        <xsl:for-each select="Dimension">
         <tr>
          <td vAlign="top" align="left">
           <xsl:value-of select="Name"/>
          </td>

          <td vAlign="top" align="left">
           <xsl:if test="GranuleBoundary = 1">
            Yes
           </xsl:if>
           <xsl:if test="GranuleBoundary = 0">
            No
           </xsl:if>
          </td>

          <td valign="top" align="left">
           <xsl:if test="Dynamic = 1">
            Yes
           </xsl:if>
           <xsl:if test="Dynamic = 0">
            No
           </xsl:if>
          </td>

          <td vAlign="top" align="left">
           <xsl:value-of select="MinIndex"/>
          </td>

          <td vAlign="top" align="left">
           <xsl:value-of select="MaxIndex"/>
          </td>
         </tr>
        </xsl:for-each>
       </table>

       <!-- Datum Information -->
```

```
       <table cellSpacing="0" cellPadding="0" border="1">
        <tr>
         <td colSpan="10" vAlign="top"
align="left"><b>Datum</b></td>
        </tr>
        <tr>
         <td vAlign="top" align="left"><b>Description</b></td>
         <td vAlign="top" align="left"><b>Datum Offset</b></td>
         <td vAlign="top" align="left"><b>Unscaled Valid Range
Min</b></td>
         <td vAlign="top" align="left"><b>Unscaled Valid Range
Max</b></td>
         <td vAlign="top" align="left"><b>Measurement
Units</b></td>
         <td vAlign="top" align="left"><b>Scaled</b></td>
         <td vAlign="top" align="left"><b>Scale Factor
Name</b></td>
         <td vAlign="top" align="left"><b>Data Type</b></td>
         <td vAlign="top" align="left"><b>Fill Values</b></td>
         <td vAlign="top" align="left"><b>Legend
Entries</b></td>
        </tr>

        <xsl:for-each select="Datum">
         <tr>

          <!-- Datum/Description -->

          <td vAlign="top" align="left">
           <xsl:value-of select="Description"/>
          </td>

          <!-- Datum/Offset -->

          <td vAlign="top" align="left">
           <xsl:value-of select="DatumOffset"/>
          </td>

          <!-- Datum/Ranges -->

          <td vAlign="top" align="left">
           <xsl:if test="RangeMin">
            <xsl:value-of select="RangeMin"/>
           </xsl:if>
           <xsl:if test="not(RangeMin)">
            <br/>
```

```
 </xsl:if>
</td>
<td vAlign="top" align="left">
 <xsl:if test="RangeMax">
  <xsl:value-of select="RangeMax"/>
 </xsl:if>
 <xsl:if test="not(RangeMax)">
  <br/>
 </xsl:if>
</td>

<!-- Datum/Units -->

<td vAlign="top" align="left">
 <xsl:if test="MeasurementUnits">
  <xsl:value-of select="MeasurementUnits"/>
 </xsl:if>
 <xsl:if test="not(MeasurementUnits)">
  <br/>
 </xsl:if>
</td>

<!-- Datum/Scaling -->

<td vAlign="top" align="left">
 <xsl:if test="Scaled = 1">
  Yes
 </xsl:if>
 <xsl:if test="Scaled = 0">
  No
 </xsl:if>
</td>
<td vAlign="top" align="left">
 <xsl:if test="ScaleFactorName">
  <xsl:value-of select="ScaleFactorName"/>
 </xsl:if>
 <xsl:if test="not(ScaleFactorName)">
  <br/>
 </xsl:if>
</td>

<!-- Datum/Data Type -->

<td vAlign="top" align="left">
 <xsl:value-of select="DataType"/>
</td>
<td vAlign="top" align="left">
```

```
        <!-- Datum/Fill Values -->
        <table cellSpacing="0" cellPadding="0" border="1">
         <tr>
          <td vAlign="top" align="left"><b>Name</b></td>
          <td vAlign="top" align="left"><b>Value</b></td>
         </tr>

         <xsl:for-each select="FillValue">
          <tr>
           <td vAlign="top" align="left">
            <xsl:value-of select="Name"/>
           </td>
           <td vAlign="top" align="left">
            <xsl:value-of select="Value"/>
           </td>
          </tr>
         </xsl:for-each>
        </table>
       </td>

       <td vAlign="top" align="left">

        <!-- Datum/Legend -->
        <table cellSpacing="0" cellPadding="0" border="1">
         <tr>
          <td vAlign="top" align="left"><b>Name</b></td>
          <td vAlign="top" align="left"><b>Value</b></td>
         </tr>

         <xsl:for-each select="LegendEntry">
          <tr>
           <td valign="top" align="left">
            <xsl:value-of select="Name"/>
           </td>
           <td valign="top" align="left">
            <xsl:value-of select="Value"/>
           </td>
          </tr>
         </xsl:for-each>
        </table>
       </td>
      </tr>
     </xsl:for-each> <!-- END Datum -->
    </table>
   </td>
  </tr>
```

```
    </xsl:for-each> <!-- END Field -->
   </table>
  </xsl:for-each> <!-- END Product Data -->
 </body>
</html>
</xsl:template>

<!-- Write Aggregation Dimension Size Function -->

<xsl:template name="WriteAggDimSize">
 <xsl:variable name="num" select="last()"/>
 <xsl:variable name="cur" select="position()"/>
 <xsl:variable name="bnd" select="GranuleBoundary"/>

 <xsl:choose>
  <xsl:when test="MaxIndex !=1">
   <xsl:if test="$bnd=1">
    <xsl:text>N*</xsl:text>
   </xsl:if>

   <xsl:choose>
    <xsl:when test="$cur=1 and $num=1">
     <xsl:value-of select="MaxIndex"/>
    </xsl:when>

    <xsl:when test="$cur=$num">
     <xsl:value-of select="MaxIndex"/>
    </xsl:when>
    <xsl:otherwise>
     <xsl:value-of select="MaxIndex"/>,
    </xsl:otherwise>
   </xsl:choose>
  </xsl:when>
  <xsl:otherwise>
   <xsl:if test="$bnd=1">
    <xsl:text>N</xsl:text>
   </xsl:if>
  </xsl:otherwise>
 </xsl:choose>
</xsl:template>

<!-- Write Granule Dimension Size -->

<xsl:template name="WriteGranDimSize">
 <xsl:variable name="num" select="last()"/>
 <xsl:variable name="cur" select="position()"/>
```

```
 <xsl:choose>
  <xsl:when test="$cur=1 and $num=1">
   <xsl:value-of select="MaxIndex"/>
  </xsl:when>

  <xsl:when test="$cur=$num">
   <xsl:value-of select="MaxIndex"/>
  </xsl:when>
  <xsl:otherwise>
   <xsl:value-of select="MaxIndex"/>,
  </xsl:otherwise>
 </xsl:choose>
</xsl:template>

</xsl:stylesheet>
```

3.0 HDF5 XML USER BLOCK FOR NPOESS DATA PRODUCTS

The HDF5 XML User Block provides a subset of the metadata elements available in the HDF5 file via a header that can be accessed without any HDF5 tools; this header is attached to the beginning of all delivered NPOESS Data Products. This information provides a quick-look into the metadata attributes contained in an HDF5 file.

There are three elements used in the HDF5 XML User Block that do not come directly from the metadata attributes used in the HDF5 file:

- HDF_UserBlock
- Data_Product
- Number_of_Data_Products

These elements are part of the XML schema in order to describe parent elements that are derived from the groups in the HDF5 file

3.1 Raw Data Records (RDR) HDF5 XML User Block

Description/ Purpose	Provides a metadata quick-look into the associated NPOESS Data Product, via the HDF5 header. This information details what is provided in the HDF5 file, specifying general information about the product(s); including the type(s) of product(s) included, the aggregation overview(s), etc. This data format is specific to the Raw Data Records (RDRs).
File Size	1536 bytes for each NPOESS Data Product included in the file.
File Format Type	XML header included in an HDF5 file
Data Content and Data Format	See Table 3.1-1, RDR HDF5 XML User Block Format, for details. Section 3.1.1 RDR HDF5 XML User Block Schema, provides the XML schema used for the delivered RDRs.

Table 3.1-1, RDR HDF5 XML User Block Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
HDF_UserBlock	N/A	Complex Type	Subfields: Mission_Name Platform_Shortname Number_of_Data_Products Data_Product	N/A	
Mission_Name	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element.
Platform_Short_Name	N/A	String	See Section 4.4 for the details of this element.	N/A	See section 4.4 for the details of this element.
Number_of_Data_Products	N/A	Integer	01 – 20	N/A	Identifies the number of data products included in the HDF5 file
Data_Product	N/A	Complex Type	Subfields: N_Collection_Short_Name Instrument_Shortname N_Dataset_Type_Tag N_Processing_Domain AggregateBeginningDate AggregateBeginningOrbitNumber AggregateBeginningTime AggregateEndingDate AggregateEndingOrbitNumber AggregateEndingTime AggregateBeginningGranuleID AggregateEndingGranuleID	N/A	

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
N_Collection_Short_Name	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element.
Instrument_Short_Name	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element.
N_Dataset_Type_Tag	N/A	String	RDR	N/A	See Section 4.4 for the details of this element
N_Processing_Domain	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element.
AggregateBeginningDate	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element
AggregateBeginningOrbitNumber	N/A	Integer	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element
AggregateBeginningTime	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element
AggregateEndingDate	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element
AggregateEndingOrbitNumber	N/A	Integer	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element
AggregateEndingTime	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
AggregateBeginningGranuleID	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element.
AggregateEndingGranuleID	N/A	String	See Section 4.4 for the details of this element.	N/A	See Section 4.4 for the details of this element

3.1.1 RDR HDF5 XML User Block Schema

```
<?xml version="1.0"?>

<xsd:schema xmlns:xsd=http://www.w3.org/2001/XMLSchema
targetNamespace=”http://NPOESS RDR XML User Block” xmlns="http://NPOESS RDR
XML User Block">

<!-- == NPP/NPOESS HDF5 XML User Block XML Schema == -->

<!-- == NPP/NPOESS HDF5 User Block – Primary Element== -->
<xsd:element name=”HDF_UserBlock” type=”HDF_UserBlockType” />

<!-- == Annotation for this schema == -->
<xsd:annotation>
  <xsd:documentation xml:lang=”en”>
    NPP/NPOESS HDF5 User Block XML Schema
  </xsd:documentation>
</xsd:annotation>

<!-- == NPP/NPOESS HDF5 User Block == -->
<xsd:complexType name=”HDF_UserBlockType”>
  <xsd:sequence>

    <xsd:element name=”Mission_Name” type=”xsd:string” minOccurs=”1”
maxOccurs=”1” />
    <xsd:element name=”Platform_Short_Name” type=”xsd:string”
minOccurs=”1” maxOccurs=”1” />
    <xsd:element name="Number_Of_Data_Products" type="xsd:integer"
minOccurs="1" maxOccurs="1" />
    <xsd:element name=”Data_Product” type=”Data_ProductType”
minOccurs=”1” maxOccurs=”unbounded” />
  </xsd:sequence>
</xsd:complexType>

<!-- == Data Product Type == -->
<xsd:complexType name=”Data_ProductType”>
  <xsd:sequence>
    <xsd:element name=”N_Collection_Short_Name” type=”xsd:string”
minOccurs=”1” maxOccurs=”1” />
    <xsd:element name=”Instrument_Short_Name” type=”xsd:string”
minOccurs=”1” maxOccurs=”1” />
    <xsd:element name=”N_Dataset_Type_Tag” type=”xsd:string”
minOccurs=”1” maxOccurs=”1” />
<xsd:element name=”N_Processing_Domain” type=”xsd:string”
minOccurs=”1” maxOccurs=”1” />
<xsd:element name=”AggregateBeginningDate” type=”xsd:string” minOccurs=”1”
```

```
maxOccurs="1" /><xsd:element name="AggregateBeginningOrbitNumber"
type="xsd:integer" minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateBeginningTime" type="xsd:string"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateEndingDate" type="xsd:string"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateEndingOrbitNumber" type="xsd:integer"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateEndingTime" type="xsd:string"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateBeginningGranuleID" type="xsd:string"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateEndingGranuleID" type="xsd:string"
minOccurs="1" maxOccurs="1" />
  </xsd:sequence>
</xsd:complexType>
</xsd:schema>

<!-- == Data Type Definition == -->

<!ELEMENT HDF_UserBlock (Mission_Name, Platform_Short_Name,
Number_Of_Data_Products, Data_Product+)>
<!ELEMENT Mission_Name (#PCDATA)>
<!ELEMENT Platform_Short_Name (#PCDATA)>
<!ELEMENT Number_Of_Data_Products (#PCDATA)>
<!ELEMENT Data_Product (N_Collection_Short_Name, Instrument_Short_Name,
N_Dataset_Type_Tag, N_Processing_Domain, AggregateBeginningDate,
AggregateBeginningOrbitNumber, AggregateBeginningTime, AggregateEndingDate,
AggregateEndingOrbitNumber, AggregateEndingTime, AggregateBeginningGranuleID,
AggregateEndingGranuleID>
<!ELEMENT N_Collection_Short_Name (#PCDATA)>
<!ELEMENT Instrument_Short_Name (#PCDATA)>
<!ELEMENT N_Dataset_Type_Tag (#PCDATA)>
<!ELEMENT N_Processing_Domain (#PCDATA)>
<!ELEMENT AggregateBeginningDate (#PCDATA)>
<!ELEMENT AggregateBeginningOrbitNumber (#PCDATA)>
<!ELEMENT AggregateBeginningTime (#PCDATA)>
<!ELEMENT AggregateEndingDate (#PCDATA)>
<!ELEMENT AggregateEndingOrbitNumber (#PCDATA)>
<!ELEMENT AggregateEndingTime (#PCDATA)>
<!ELEMENT AggregateBeginningGranuleID (#PCDATA)>
<!ELEMENT AggregateEndingGranuleID (#PCDATA)>
```

3.2 Sensor, Temperature, and Environmental Data Records, Application Related Products, Geolocation, and Intermediate Products HDF5 XML User Block

Description/ Purpose	Provides a metadata quick-look into the associated NPOESS Data Product, via the HDF5 header. This information details what is provided in the HDF5 file, specifying general information about the product(s); including the type(s) of product(s) included, the aggregation overview(s), etc. This data format is specific to the SDRs, TDRs, EDRs, ARPs, GEOs, and IPs.
File Size	1536 bytes for each NPOESS Data Product included in the file.
File Format Type	XML header included in an HDF5 file
Data Content and Data Format	See Table 3.2-1, SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Format, for details. Section 3.2.1, HDF5 SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Schema, provides the XML schema used for the NPOESS Data Products excluding the RDRs.

Table 3.2-1, SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
HDF_UserBlock	N/A	Complex Type	Subfields: Mission_Name Platform_Short_Name N_GEO_Ref Number_of_Data_Products Data_Product	N/A	
Mission_Name	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
Platform_Short_Name	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
N_GEO_Ref	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
Number_of_Data_Products	N/A	Integer	1 - 20	N/A	Identifies the number of data products included in the HDF5 file

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
Data_Product	N/A	Complex Type	Subfields: N_Collection_Short_Name Instrument_Short_Name N_Dataset_Type_Tag N_Processing_Domain AggregateBeginningDate AggregateBeginningOrbitNumber AggregateBeginningTime AggregateEndingDate AggregateEndingOrbitNumber AggregateEndingTime AggregateBeginningGranuleID AggregateEndingGranuleID	N/A	
N_Collection_Short_Name	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
Instrument_Short_Name	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
N_Dataset_Type_Tag	N/A	String	SDR TDR IP ARP EDR GEO	N/A	See Section 4.4 for the details of this element

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
N_Processing_Domain	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element.
AggregateBeginningDate	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
AggregateBeginningOrbitNumber	N/A	Integer	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
AggregateBeginningTime	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
AggregateEndingDate	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
AggregateEndingOrbitNumber	N/A	Integer	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
AggregateEndingTime	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element
AggregateBeginningGranuleID	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
AggregateEndingGranuleID	N/A	String	See Section 4.4 for the details of this element	N/A	See Section 4.4 for the details of this element

3.2.1 HDF5 SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Schema

```
<?xml version="1.0"?>

<xsd:schema xmlns:xsd=http://www.w3.org/2001/XMLSchema targetNamespace=http://
“NPOESS SDR, TDR, EDR, ARP, and IP XML User Block” xmlns="http://NPOESS
SDR, TDR, EDR, ARP, and IP XML User Block">

<!-- == NPP/NPOESS HDF5 XML User Block XML Schema == -->

<!-- == NPP/NPOESS HDF5 User Block – Primary Element== -->
<xsd:element name=”HDF_UserBlock” type=”HDF_UserBlockType” />

<!-- == Annotation for this schema == -->
<xsd:annotation>
  <xsd:documentation xml:lang=”en”>
    NPP/NPOESS HDF5 User Block XML Schema
  </xsd:documentation>
</xsd:annotation>

<!-- == NPP/NPOESS HDF5 User Block == -->
<xsd:complexType name=”HDF_UserBlockType”>
  <xsd:sequence>

    <xsd:element name=”Mission_Name” type=”xsd:string” minOccurs=”1”
maxOccurs=”1” />
    <xsd:element name=”Platform_Short_Name” type=”xsd:string”
minOccurs=”1” maxOccurs=”1” />
    <xsd:element name=”N_GEO_Ref” type=”xsd:string”
minOccurs=”0” maxOccurs=”1” />
    <xsd:element name="Number_Of_Data_Products" type="xsd:integer"
minOccurs="1" maxOccurs="1" />
    <xsd:element name=”Data_Product” type=”Data_ProductType”
minOccurs=”1” maxOccurs=”unbounded” />
  </xsd:sequence>
</xsd:complexType>

<!-- == Data Product Type == -->
<xsd:complexType name=”Data_ProductType”>
  <xsd:sequence>
    <xsd:element name=”N_Collection_Short_Name” type=”xsd:string”
minOccurs=”1” maxOccurs=”1” />
    <xsd:element name=”Instrument_Short_Name” type=”xsd:string”
minOccurs=”1” maxOccurs=”1” />
<xsd:element name=”N_Dataset_Type_Tag” type=”xsd:string”
minOccurs=”1” maxOccurs=”1” />
    <xsd:element name=”N_Processing_Domain” type=”xsd:string”
```

```
minOccurs="1" maxOccurs="1" />
<xsd:element name="AggregateBeginningDate" type="xsd:string" minOccurs="1"
maxOccurs="1" />
<xsd:element name="AggregateBeginningOrbitNumber"
type="xsd:integer" minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateBeginningTime" type="xsd:string"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateEndingDate" type="xsd:string"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateEndingOrbitNumber" type="xsd:integer"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateEndingTime" type="xsd:string"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateBeginningGranuleID" type="xsd:string"
minOccurs="1" maxOccurs="1" />
   <xsd:element name="AggregateEndingGranuleID" type="xsd:string"
minOccurs="1" maxOccurs="1" />
  </xsd:sequence>
</xsd:complexType>
</xsd:schema>

<!-- == Data Type Definition == -->

<!ELEMENT HDF_UserBlock (N_Processing_Domain, Mission_Name,
Platform_Short_Name, N_GEO_Ref, Number_Of_Data_Products, Data_Product+)>
<!ELEMENT Mission_Name (#PCDATA)>
<!ELEMENT Platform_Short_Name (#PCDATA)>
<!ELEMENT N_GEO_Ref (#PCDATA)>
<!ELEMENT Number_Of_Data_Products (#PCDATA)>
<!ELEMENT Data_Product (N_Collection_Short_Name, Instrument_Short_Name,
N_Dataset_Type_Tag, N_Processing_Domain, AggregateBeginningDate,
AggregateBeginningOrbitNumber, AggregateBeginningTime, AggregateEndingDate,
AggregateEndingOrbitNumber, AggregateEndingTime, AggregateBeginningGranuleID,
AggregateEndingGranuleID)>
<!ELEMENT N_Collection_Short_Name (#PCDATA)>
<!ELEMENT Instrument_Short_Name (#PCDATA)>
<!ELEMENT N_Dataset_Type_Tag (#PCDATA)>
<!ELEMENT N_Processing_Domain (#PCDATA)>
<!ELEMENT AggregateBeginningDate (#PCDATA)>
<!ELEMENT AggregateBeginningOrbitNumber (#PCDATA)>
<!ELEMENT AggregateBeginningTime (#PCDATA)>
<!ELEMENT AggregateEndingDate (#PCDATA)>
<!ELEMENT AggregateEndingOrbitNumber (#PCDATA)>
<!ELEMENT AggregateEndingTime (#PCDATA)>
<!ELEMENT AggregateBeginningGranuleID (#PCDATA)>
<!ELEMENT AggregateEndingGranuleID (#PCDATA)>
```

4.0 NPOESS DATA PRODUCT METADATA

NPOESS Data Products are delivered as HDF5 files. Data within an HDF5 file is described by its metadata. Some of the metadata is used to describe the specifics of the data contained in the granule and is specific to a particular data set, while other metadata is more generic and is applicable to all data sets in the given file. In HDF5 terms, the metadata that is included in the HDF5 files are attributes of the objects in the file. For an overview of the NPOESS implementation of HDF5, see the CDFCB-X Volume I, D34862-01.

4.1 Metadata Introduction

The elements included in the metadata are guided by the Federal Geographic Data Committee (FGDC), the Content Standard for Digital Geospatial Metadata (CSDGM), and the FGDC Extensions for Remote Sensing Metadata. For more information, see http://www.fgdc.gov.

The metadata contained herein applies to both NPP and NPOESS, unless specified otherwise.

4.2 Metadata-Naming Conventions

The following metadata-naming conventions are used:

- NPOESS metadata elements that are found in the FGDC metadata specification follow the FGDC-naming convention that separates most words with underscores (e.g., Instrument_Short_Name). In some cases, a hyphen is used for a delimiter.
- NPOESS metadata elements that are aggregate elements (see Table 4.4-4, Metadata Delivered in NPOESS Data Products HDF5 Files, for further description) are concatenated together with no delimiters (e.g., AggregateEndingDate).
- NPOESS metadata elements that have no FGDC metadata counterparts begin with ‘N_’ and follow the FGDC-naming conventions (e.g., N_Processing_Domain).

4.3 Metadata Angles

In order to help illustrate the various angles provided in the metadata, illustrations are provided in the following paragraphs.

4.3.1 Zenith Angles

Satellite and Solar Zenith Angles are defined as the angle between the local zenith (the

local vertical direction pointing away from the center of the earth) and the line of sight to the sat/sun respectively. Figure 4.3.1-1, Zenith Angles, provides a depiction of the angles used for the following metadata elements:

- N_Satellite/Local_Zenith_Angle_Min
- N_Satellite/Local_Zenith_Angle_Max
- N_Solar_Zenith_Angle_Min
- N_Solar_Zenith_Angle_Max

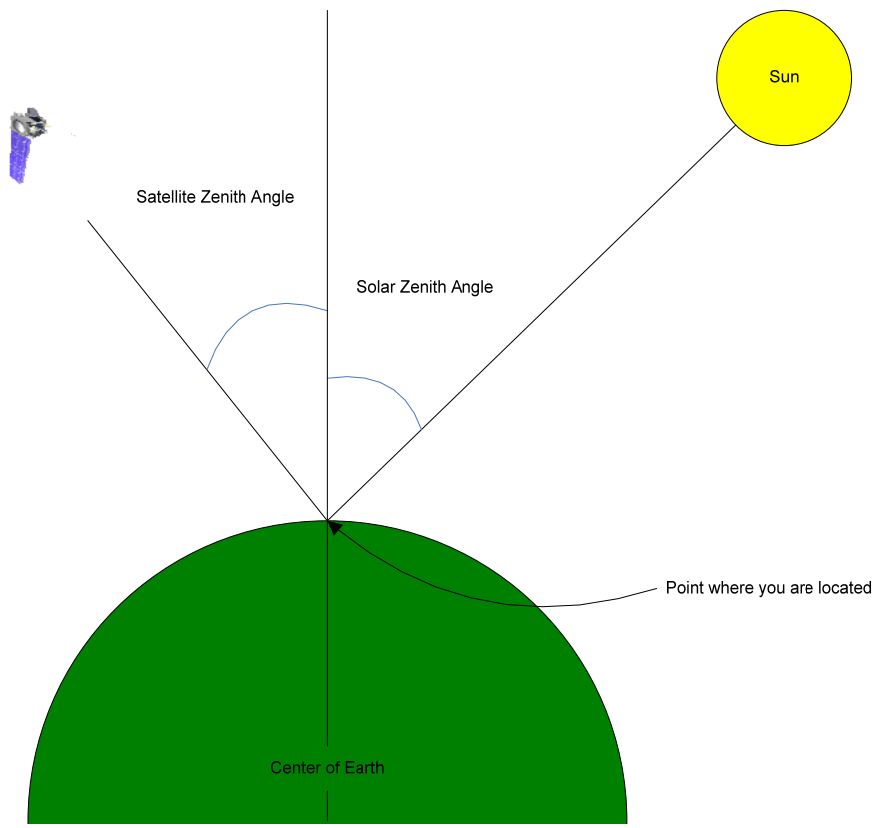

Figure 4.3.1-1, Zenith Angles

4.3.2 Azimuth Angles

Satellite and Solar Azimuth Angles are defined as the angle between the local azimuth (the direction measured around the horizon with positive from north to east) and north. Figure 4.3.2-1, Azimuth Angles, provides a depiction of the angles used for the following metadata elements:

- N_Satellite/Local_Azimuth_Angle_Min
- N_Satellite/Local_Azimuth_Angle_Max
- N_Solar_Azimuth_Angle_Min
- N_Solar_Azimuth_Angle_Max

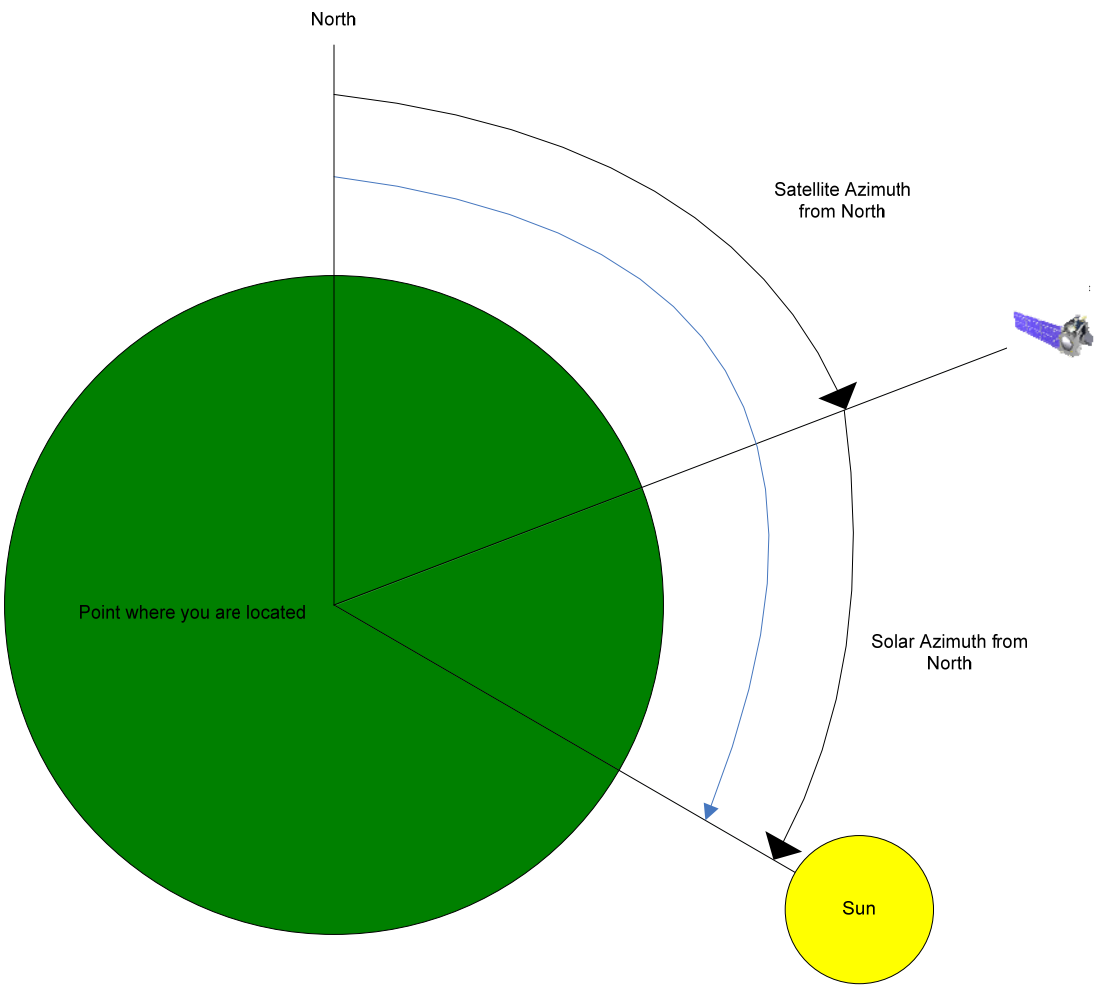

Figure 4.3.2-1, Azimuth Angles

4.4 Metadata Associated with NPOESS Data Products

This section provides information to be used with the NPP/NPOESS Data Products, Ancillary Data, and Auxiliary Data HDF5 descriptions. Table 4.4-1, HDF5 Generalized

UML Diagrams, contains a listing of the volumes within the CDFCB-X where the generalized HDF5 Unified Modeling Language (UML) Diagrams can be found

Table 4.4-1, HDF5 Generalized UML Diagrams

Product Model	CDFCB-X Volume
RDR	CDFCB-X Volume II, D34862-02
SDR/TDR	CDFCB-X Volume III, D34862-03
EDR/IP/ARP	CDFCB-X Volume IV, Part I, D34862-04 (Parts 1 thru 4)
Geolocation	CDFCB-X Volume I, D34862-01
Ancillary Data	CDFCB-X Volume VI, D34862-06
Auxiliary Data	CDFCB-X Volume VI, D34862-06

Table 4.4-4, Metadata Delivered in NPOESS Data Products, lists HDF5 metadata items that are used to describe NPOESS Data Products, Auxiliary Data, and Ancillary Data. IPs and ARPs are treated as EDRs with respect to product descriptions. Rows that are marked as being an Exception are unique metadata items which are repeated for each granule or reference file contained within the HDF5 file. The table is ordered alphabetically. The legend for Table 4.4-4, Metadata Delivered in NPOESS Data Products, is found in Table 4.4-3, NPOESS Data Product Metadata Table Legend. Some examples are provided in Table 4.4-2, Metadata Presentation Example.

For example, consider the metadata item, N_Dataset_Source. Table 4.4-4, Metadata Delivered in NPOESS Data Products, indicates that this element is located in the HDF5_File_RootGroup.The row for this element from Table 4.4-4, Metadata Delivered in NPOESS Data Products, is provided as an example in Table 4.4-2, Metadata Presentation Example. It is a character string, does not repeat, and is not part of the request criteria.

The second item in the example table, N_Number_Of_Scans, is an integer and can only be found in some SDR, TDR, EDR, IP, ARP, and GEO products. It is not found in RDRs of any kind, Ancillary Data or Auxiliary Data. The comment in the “Applicable Values” column indicates that the integer must be greater than or equal to zero.

Table 4.4-2, Metadata Presentation Example

Name		RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
N_Dataset_Source		X	X	X	X	X	X		H5T_C_S1 (String)			For xDRs this indicates the producer/originator of the dataset. In the case of Ancillary and Auxiliary data files – this indicates the originator of the products using these datasets. Note: The originator of the HDF5 files	See the CDFCB-X Volume I, D34862-01 Section 3.4 for the applicable Origin Identifiers	R
N_Number_Of_Scans			X	X	X				H5T_NATIVE_INT (32-bit Integer)			This element indicates the actual number of scans that will be found in the data product.	Integer >= 0	G

Table 4.4-3, Legend for the NPOESS Data Product Metadata Table

Column Name	Description	Comments
Name	The name of the metadata element	Element names pre-pended with a 'N_' are NPOESS specific metadata elements. Elements without the prefix are derived from the FDGC Base Standard with Remote Sensing Extensions. For elements that are found in the FGDC specification which are not unique, the parent element within the FGDC hierarchy is pre-pended to the name using a dot (.) as the delimiter.
RDR	"X" indicates that the element is used in relation to an RDR.	
SDR/TDR	"X" indicates that the element is used in relation to an SDR and/or TDR. These are treated as having the same associated metadata.	
EDR/IP/ARP	"X" indicates that the element is used in relation to an EDR/IP/ARP. These are treated as having the same associated metadata.	
GEO	"X" indicates that the element is associated with a geolocation granule. These granules provide the latitude and longitude of pixel elements of a corresponding sensor granule.	
AUX	"X" indicates that the element is used in relation to an auxiliary data element.	
ANC	"X" indicates that the element is used in relation to an ancillary data element.	
Exception	"X" indicates an element that is not present in all products – a notification to the reader to review the Definition and Applicable Values columns.	
HDF5 Data Type	This column indicates the HDF5 data type of the element.	For information about HDF5 and the HDF5 data types, see: http://hdf.ncsa.uiuc.edu
Repeating	"X" indicates an element may occur more than once.	Elements which are repeated in the HDF5 file are given as dataspaces, typed according to the element's specification. For those elements rendered via XML file, the elements are provided as comma-separated lists (strings), or as repeating element (as specified by the schema).
Request Criteria	"X" indicates an element that is part of the request criteria for data products.	

Column Name	Description	Comments
Definition	The definition, or explanation, of the metadata element	
Applicable Values	The domain, or expected values, of the metadata element. The information annotated in the Applicable Values column includes information that is applicable to NPP and NPOESS. In some instances, there are possible values that are NPP or NPOESS only.	
HDF5 Hierarchy	Indicates the location that the metadata element may be located in the HDF5 NPOESS Data Products. This field may contain more than one designation due to the various file constructs and meaning. Applicable Value: R – File Root Group P – Product Group G – Product Granule Group A – Product Aggregation Group S – Spacecraft Diary Group (and Non-Science/Diagnostic RDRs) D – Spacecraft Diary Aggregation Group (and Non-Science/Diagnostic RDRs) E – Spacecraft Diary Granule Group (and Non-Science/Diagnostic RDRs) U – Included in XML User Block	

Table 4.4-4, Metadata Delivered in NPOESS Data Products

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
AggregateBeginningDate	X	X	X	X				H5T_C_S1 (String)			The date of the beginning of the temporal range coverage of the data contained in the product file. This element is used in conjunction with AggregateBeginningTime. Beginning date of the aggregation in an HDF file. This time is based on the earliest date found in the aggregation – based on the BeginningDate of the individual granules that are included in the aggregation The word 'aggregate' refers to the aggregation of granules contained in an HDF5 file. For the QST IP, this attribute is the date of the first day of the quarter for which the data applies.	Expressed as YYYYMMDD, where YYYY is the year, MM is the month and DD is the day. Example: 20131205	A, D, U
AggregateBeginningGranuleID	X	X	X	X				H5T_C_S1 (String)			GranuleID value at start of granule sequence in the HDF file. For the QST IP, this attribute is not applicable (= Default Value)	A valid GranuleID, per the N_Granule_ID definition. Example: NPP001212126373	A, D, U
AggregateBeginningOrbitNumber	X	X	X	X				H5T_NATIVE_ULLONG (Unsigned 64-bit Integer)			Beginning orbit number of an aggregate in an HDF5 file. The orbit number is incremented at each ascending node equatorial crossing. Based on the N_Beginning_Orbit_Number of the earliest (first) granule included in the aggregation. For the QST IP, this attribute is not applicable (= Default Value)	Integer >= 0. AggregateBeginningOrbitNumber <= AggregateEndingOrbitNumber Example: 9	A, D, U

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
AggregateBeginningTime	X	X	X	X				H5T_C_S1 (String)			The time of the beginning of the temporal range coverage of the data contained in the product file. This element is used in conjunction with AggregateBeginningDate. Beginning time of an aggregation in an HDF file. This time is based on the earliest time found in the aggregation – based on the BeginningTime of the individual granules that are included in the aggregation For the QST IP, this attribute is not applicable (= Default Value)	Expressed as HHMMSS.SSSSSSZ, where HH is hour, MM is minutes and SS.SSSSSS is seconds and decimal fractions of a second (with precision to one microsecond). This is Universal Time (UTC). Example: 101038.325248Z	A, D, U
AggregateEndingDate	X	X	X	X				H5T_C_S1 (String)			The date of the ending of the temporal range coverage of the data contained in the product file. This element is used in conjunction with AggregatedEndingTime. Ending date for an aggregate in an HDF file. This time is based on the latest date found in the aggregation – based on the EndingDate of the individual granules that are included in the aggregation. For the QST IP, this attribute is the date of the last day of the quarter for which the data applies.	Expressed as YYYYMMDD, where YYYY is the year, MM is the month and DD is the day. Example: 20131205	A, D, U
AggregateEndingGranuleID	X	X	X	X				H5T_C_S1 (String)			GranuleID value at the end of the granule sequence in the HDF file. This is an aggregate metadata element used in an HDF5 file. For the QST IP, this attribute is not applicable (= Default Value)	A valid GranuleID, per the N_Granule_ID definition. AggregateEndingGranuleID >= AggregateBeginningGranuleID. Example: NPP001212126373	A, D, U
AggregateEndingOrbitNumber	X	X	X	X				H5T_NATIVE_ULLONG			Ending orbit number of an aggregate in an HDF5 file.	Integer >= 0. AggregateEndingOrbitNumber >=	A, D, U

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
								(Unsigned 64-bit Integer)			The word 'aggregate' refers to the aggregation of granules contained in an HDF5 file. The orbit number is assigned to a granule at the beginning of a granule. The orbit number is incremented at each ascending node equatorial crossing. If a granule applies to more than one orbit, the first orbit number associated to the last granule (temporal) in the aggregation is provided based on the N_Beginning_Orbit_Number of the latest (nth) granule included in the aggregation. For the QST IP, this attribute is not applicable (= Default Value)	AggregateBeginningOrbitNumber Example: 9	
AggregateEndingTime	X	X	X	X				H5T_C_S1 (String)			The time of the ending of the temporal range coverage of the product data contained in the HDF5 file. Ending time for the aggregation in an HDF file. This time is based on the latest time found in the aggregation – based on the EndingTime of the individual granules that are included in the aggregation. For the QST IP, this attribute is not applicable (= Default Value)	Expressed as HHMMSS.SSSSSSZ, where HH is hour, MM is minutes and SS.SSSSSS is seconds and decimal fractions of a second (with precision to one microsecond). This is UTC. Example: 010116.809536Z	A, D, U
AggregateNumberGranules	X	X	X	X				H5T_NATIVE_ULLONG (Unsigned 64-bit Integer)			Number of granules containing valid data (either partial data or complete data). Provides a count of the valid granules in the HDF5 file. For the QST IP, this attribute is not	Integer > 0 Example: 20	A, D

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											applicable (= Default Value)		
Ascending/Descending_Indicator		X	X	X				H5T_NATIVE_UCHAR (Unsigned 8-bit Character)			Flag indicating whether satellite is moving northward or southward. The center time of the granule is used for the determination of this value. For the QST IP, this attribute is not applicable (= Default Value)	0 = Ascending or northward, 1 = Descending or southward. Example: 0	G
Band_ID		X	X				X	H5T_C_S1 (String)			Designation for an individual measurement band This attribute is only applicable to the following products: SDRs: VIIRS I1-Band Imagery SDR (VIIRS-I1-SDR) VIIRS I2-Band Imagery SDR (VIIRS-I2-SDR) VIIRS I3-Band Imagery SDR (VIIRS-I3-SDR) VIIRS I4-Band Imagery SDR (VIIRS-I4-SDR) VIIRS I5-Band Imagery SDR (VIIRS-I5-SDR) VIIRS M1-Band Imagery SDR (VIIRS-M1-SDR) VIIRS M2-Band Imagery SDR (VIIRS-M2-SDR) VIIRS M3-Band Imagery SDR (VIIRS-M3-SDR) VIIRS M4-Band Imagery SDR (VIIRS-M4-SDR) VIIRS M5-Band Imagery SDR (VIIRS-M5-SDR) VIIRS M6-Band Imagery SDR (VIIRS-M6-SDR) VIIRS M7-Band Imagery SDR (VIIRS-M7-SDR) VIIRS M8-Band Imagery SDR (VIIRS-M8-	M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M11, M12, M13, M14, M15, M16, I1, I2, I3, I4, I5. Example: M2	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											SDR) VIIRS M9-Band Imagery SDR (VIIRS-M9-SDR) VIIRS M10-Band Imagery SDR (VIIRS-M10-SDR) VIIRS M11-Band Imagery SDR (VIIRS-M11-SDR) VIIRS M12-Band Imagery SDR (VIIRS-M12-SDR) VIIRS M13-Band Imagery SDR (VIIRS-M13-SDR) VIIRS M14-Band Imagery SDR (VIIRS-M14-SDR) VIIRS M15-Band Imagery SDR (VIIRS-M15-SDR) VIIRS M16-Band Imagery SDR (VIIRS-M16-SDR) EDRs: VIIRS I1-Band Imagery EDR (VIIRS-I1-IMG-EDR) VIIRS I2-Band Imagery EDR (VIIRS-I2-IMG-EDR) VIIRS I3-Band Imagery EDR (VIIRS-I3-IMG-EDR) VIIRS I4-Band Imagery EDR (VIIRS-I4-IMG-EDR) VIIRS I5-Band Imagery EDR (VIIRS-I5-IMG-EDR) VIIRS 1st Moderate Band Imagery EDR (VIIRS-M1ST-EDR) VIIRS 2nd Moderate Band Imagery EDR (VIIRS-M2ND-EDR) VIIRS 3rd Moderate Band Imagery EDR (VIIRS-M3RD-EDR) VIIRS 4th Moderate Band Imagery EDR (VIIRS-M4TH-EDR) VIIRS 5th Moderate Band Imagery EDR (VIIRS-M5TH-EDR) VIIRS 6th Moderate Band Imagery EDR		

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											(VIIRS-M6TH-EDR)		
Beginning_Date	X	X	X	X	X			H5T_C_S1 (String)		X	Beginning date of the temporal range (observation date) for a granule. The corresponding metadata item, expressed in IET, is given by N_Beginning_Time_IET. For RDRs, the date provided is a predetermined value based on the granule collection. For the QST IP, this attribute is the date of the first day of the quarter for which the data applies. An overview of timestamps is provided in the CDFCB-X Volume I, Section 3.5	Expressed as YYYYMMDD, YYYYMM, or YYYY – where YYYY is the year, MM is the month and DD is the day. Example: 20131205	G, E
Beginning_Time	X	X	X	X	X			H5T_C_S1 (String)		X	Beginning time of the temporal range (observation time) for a granule. The corresponding metadata item, expressed in IET, is given by N_Beginning_Time_IET. For RDRs, the time provided is a predetermined value based on the granule collection. For the QST IP, this attribute is not applicable (= Default Value) An overview of timestamps is provided in the CDFCB-X Volume I, Section 3.5	Expressed as HHMMSS.SSSSSSZ, HHMM, or HH - where HH is hour, MM is minutes and SS.SSSSSS is seconds and decimal fractions of a second (with precision to one microsecond). This is UTC. Example: 101038.325248Z	G, E
Calendar_Date					X	X		H5T_C_S1 (String)			The date that the dataset was made available by its producer. Single date for AUX and ANC datasets.	Expressed as YYYYMMDD, where YYYY is the year, MM is the month, and DD is the day, all relative to UTC. Example: 20131205	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
Cloud_Cover			X				X	H5T_NATIVE_FLOAT (32-bit Floating Point)			Area of a dataset obstructed by clouds, expressed as a percentage of the number of clouds versus the total number of pixels. The information to create this value is obtained from the Parallax Corrected Cloud Mask RIP. Applied only to these VIIRS EDRs: Cloud Base Height (VIIRS-CBH-EDR) Cloud Cover/Layers (VIIRS-CCL-EDR) Cloud Effective Particle Size (VIIRS-CEP-EDR) Cloud Optical Thickness (VIIRS-COT-EDR) Cloud Top Height (VIIRS-CTH-EDR) Cloud Top Pressure (VIIRS-CTP-EDR) Cloud Top Temperature (VIIRS-CTT-EDR)	0.0% <= Cloud_Cover <= 100.0% Example: 24.0	G
Distributor	X	X	X	X	X	X		H5T_C_S1 (String)			This element designates the distributor of the data.	See the CDFCB-X Volume I, D34862-01 Section 3.4 for the applicable Origin Identifiers Additional values: arch – distributed by the NPOESS Data Archive, the Comprehensive Large Array-data Stewardship System (CLASS) Note: CLASS will change the value to 'arch' only if the file is manipulated by CLASS in some manner. Example: noaa	R
East_Bounding_Coordinate		X	X	X				H5T_NATIVE_FLOAT (32-bit Floating Point)			The longitude of the point (in decimal degrees) in the coverage area furthest along an easterly direction from the center point of the granule. The North, South, East, and West bounding coordinates together form a tight bounding box around the coverage area with borders along the latitude and longitude lines. When the coverage area includes the north or south pole, the value will be 180°.	-180.0 <= EastBounding Coordinate <= 180.0 Example: 123.2	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											The longitude of the point is based on the exit vectors which are assumed to be the center of a pixel. For the QST IP, this attribute is not applicable (= Default Value) For products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.		
Ending_Date	X	X	X	X	X			H5T_C_S1 (String)		X	Ending date of the temporal range (observation date) for a granule. The corresponding metadata item, expressed in IET, is given by N_Ending_Time_IET. This is for individual granules only. For RDRs, the date provided is a predetermined value based on the granule collection. For the QST IP, this attribute is the date of the last day of the quarter. An overview of timestamps is provided in the CDFCB-X Volume I, Section 3.5	Expressed as YYYYMMDD, YYYYMM, or YYYY – where YYYY is the year, MM is the month and DD is the day. Example: 20131205	G, E
Ending_Time	X	X	X	X	X			H5T_C_S1 (String)		X	Ending time of the temporal range (observation time) for a granule. The corresponding metadata item, expressed in IET, is given by N_Ending_Time_IET.	Expressed as HHMMSS.SSSSSSZ, HHMM, or HH - where HH is hour, MM is minutes and SS.SSSSSS is seconds and decimal fractions of a second (with precision to one microsecond). This is UTC. Example: 010116.809536Z	G, E

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											This is for individual granules only. For RDRs, the time provided is a predetermined value based on the granule collection. For the QST IP, this attribute is not applicable (= Default Value) An overview of timestamps is provided in the CDFCB-X Volume I, Section 3.5		
G-Ring_Latitude		X	X	X				H5T_NATIVE_FLOAT (32-bit Floating Point)	X	X	The latitude(s), in decimal degrees, of a G-Ring Point. A granule is described by four or more G-Ring Points describing the boundary of a granule. G-Ring points corresponding to granule boundaries are sequenced in a clockwise direction, starting with the first pixel of the last scan of a granule. The latitude of a G-Ring point that defines one point on the geographic boundary of a granule. Multiple G-Ring points are used to define the boundary. These values are numbered and connected in a clockwise fashion. Also, the connection is always the shortest distance between two points, whether that crosses the equator or not. Zero is the equator; positive is north of the equator. Note: the word 'Ring' denotes a closed boundary. The area bounded is any area defined by a polygon connecting multiple G-Ring points. For the QST IP, this attribute is not applicable (= Default Value)	-90.0 <= G-Ring_Latitude <= 90.0 Number of G-Ring Points by Sensor: VIIRS – 8 points CrIS – 8 points ATMS – 8 points CrIMSS – 8 points OMPS Nadir Profile – 8 points OMPS Total Column – 8 points Example: -38.017227	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											For products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.		

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
G-Ring_Longitude		X	X	X				H5T_NATIVE_FLOAT (32-bit Floating Point)	X	X	The longitude(s), in decimal degrees, of a G-Ring Point. A granule is described by four or more G-Ring Points describing the boundary of a granule. G-Ring points corresponding to granule boundaries are sequenced in a clockwise direction, starting with the first pixel of the last scan of a granule. The longitude of a G-Ring point that defines one point on the geographic boundary of a granule. Multiple G-Ring points are used to define the boundary. These values are numbered and connected in a clockwise fashion. Also, the connection is always the shortest distance between two points, whether that crosses the dateline or not. Zero is the Greenwich meridian and is measured positive to the east. Note: The word 'Ring' denotes a closed boundary. The area bounded is any area defined by a polygon connecting multiple G-Ring points. For the QST IP, this attribute is not applicable (= Default Value) For products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.	-180.0 <= G-Ring_Longitude <= 180.0 Number of G-Ring Points by Sensor: VIIRS – 8 points CrIS – 8 points ATMS – 8 points CrIMSS – 8 points OMPS Nadir Profile – 8 points OMPS Total Column – 8 points Example: 75.37696	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
Instrument_Short_Name	X	X	X	X				H5T_C_S1 (String)			The short name, acronym, or other identifier by which the instrument is known.	See the CDFCB-X Volume I, D34862-01, Appendix D: For CrIMSS products (products created using CrIS and/or ATMS data), the following identifieris used: CrIMSS For spacecraft telemetry RDRs, the value is: SPACECRAFT Example: VIIRS	P, U, S
Mission_Name	X	X	X	X	X	X		H5T_C_S1 (String)			The character string by which the mission is known – identifies the name of the state of the mission.	NPP, NPOESS, NPP/NPOESS Example: NPP	R, U
N_Algorithm_Version		X	X	X	X			H5T_C_S1 (String)			Indicates the version number of the algorithm that occurs as the result of an update to the code based on a PCR. The Algorithm Version also is updated in the VDD when the software release package is delivered. The Algorithm Version is further described in D34862-01_B_CDFCB-X Volume I Algorithm Version Convention. For the QST IP, this attribute is not applicable (= Default Value) For AUX data not created by the IDP, this element is populated with the default valued (“N/A”). For AUX data created by the IDP, this version indicates the software version produced the auxiliary product.	**<Phase_ID>.<Category_ID>.<Science Baseline ID>.<Software ID>** **<Phase_ID>**: Numeric sequence represents a particular phase of sustainment. Represented as an integer > 0. Example: 1 **<Category ID>**: Identifies what algorithm state or source this version applies to and where the full definition is found O: Official Interface Data Processing Segment (IDPS)/Data Processor Element (DPE) Operational Software (defined in config guides) D: Development or Prototype modifications of the IDPS/DPE operational code which may include Cal/Val prototype versions N: Non-DPE (off-line) software (which may include Algorithm Support Functions (ASF)). F: May add Category ID if Field Terminal Segment (FTS) has unique algorithms **<Science ID>**: Reference to changes in	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
												science basis documentation (e.g. Algorithm Theoretical Basis Document (ATBD), Operational Algorithm Document (OAD), Tech Memos) as approved by Algorithm Configuration Control Board (ACCB). **<Software ID>:** Reference to full definition of IDPS Code Variations. Intended to reference computer science changes of algorithms. Example: 1.O.001.002	
N_Anc_Filename		X	X	X				H5T_C_S1 (String)	X		Filename of the Ancillary data files used in the processing of an EDR. Filename is the ancillary filename without an extension	File name is created using the NPOESS file naming convention for Ancillary data – see the CDFCB-X Volume I, D34862-01, for the file-naming convention. Example: off_ NCEP-GFS-06HR-ANC_GFS_NCEP_006f_20100304_201003041315Z_20100305140000Z_ee20100321000000Z_np	G
N_Anc_Type_Tasked			X	X				H5T_C_S1 (String)			The designation of the type of Ancillary data (official vs. substitute) used in an EDR computation.	Official, or Substitute Example: Official	P
N_Aux_Filename		X	X	X				H5T_C_S1 (String)	X		File name of the Auxiliary data used in the processing of an SDR, TDR, EDR, Deliverable IP, or ARP. Filename is the auxiliary filename without an extension	File name is created using the NPOESS file naming convention for Auxiliary data – see the CDFCB-X Volume I, D34862-01, for the file-naming convention. Example: Mission-Schedule-AUX_npp_20100305131533Z_2010030614000 0Z_ee20100307140002Z_1000323_noaa_ops_afwa_ops	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
N_Beginning_Orbit_Number	X	X	X	X				H5T_NATIVE_ULLONG (Unsigned 64-bit Integer)		X	The number of the orbit at the start of the data collection for a data granule. The orbit number is incremented at each ascending node equatorial crossing If the Revolution Table information is not available (or if this attribute is not applicable to the product), 0 will be used. For Fill granules in an aggregation, the default metadata value of 993 will be used for SW versions prior to I1.5.06. A default metadata value of 0 will be used for SW versions I1.5.06 and later. For the QST IP, this attribute is not applicable (= 0)	Integer >= 0 Examples: 0 9 993 1024	G, E
N_Beginning_Time_IET	X	X	X	X	X			H5T_NATIVE_ULLONG (Unsigned 64-bit Integer)			The time of the beginning of the temporal range of the data contained in the granule, expressed in IET. The corresponding time in UTC time is given by the pair, Beginning_Date, Beginning_Time. For RDRs, the date provided is a predetermined value based on the granule collection. For the QST IP, this attribute is not applicable (= Default Value) An overview of timestamps is provided in the CDFCB-X Volume I, Section 3.5	A count of the integer number of microseconds since Epoch date/time of 1/1/58, 12:00 AM. Example: 1422180670325248	G, E
N_Collection_Short_Name	X	X	X	X	X	X		H5T_C_S1 (String)		X	The reference name of the collection of data sets. Datasets include NPOESS Data Products, Official Dynamic Ancillary Data, Auxiliary Data, and IDP/FT datasets	See the CDFCB-X Volume I, D34862-01, Appendix A for the applicable Collection Short Names Example: VIIRS-I2-IMG-EDR	P, G, S, U
N_Creation_Date	X	X	X	X				H5T_C_S1 (String)			The date when a specific dataset was produced.	CreationDate > 20050101 Expressed in as YYYYMMDD, where YYYY is	G, E

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											Paired with N_Creation_Time	the year, MM is the month and DD is the day. Example: 20050320	
N_Creation_Time	X	X	X	X				H5T_C_S1 (String)			The time when a specific dataset was produced. Paired with N_Creation_Date	0 <= CreationTime < 24 hours Expressed as HHMMSS.SSSSSSZ, where HH is hour, MM is minutes and SS.SSSSSS is seconds and decimal fractions of a second (with precision to one microsecond). This is UTC. Example: 010116.809536Z	G, E
N_Dataset_Source	X	X	X	X	X	X		H5T_C_S1 (String)			The producer of the HDF5 files.	See the CDFCB-X Volume I, D34862-01 Section 3.4 for the applicable Origin Identifiers Example: noaa	R
N_Dataset_Type_Tag	X	X	X	X	X	X		H5T_C_S1 (String)			Identifies the type of dataset.	RDR, SDR, TDR, EDR, ARP, ANC, AUX, IP, GEO, TLM_SDR Example: EDR	P, G, S, U
N_Day_Night_Flag		X	X	X			X	H5T_C_S1 (String)			Identifies if the pixels in a granule were collected during the Operational Day Mode, Night Mode, or both, based on the sensor mode. The value of this element is determined by the VIIRS sensor mode as reported in the Engineering data for each scan within the entire granule. If the scans were collected in different modes, the value will indicate this. VIIRS products are only produced when the sensor is in the Operational Modes. For information on the specific modes of a scan, see the ModeScan data element in the VIIRS SDR products. Exception: This metadata attribute is for VIIRS products only with the exception of the QST IP.	Day, Night, Both Example: Day	G
N_Ending_Time_IET	X	X	X	X	X			H5T_NATIVE_UL			The time of the ending of the temporal range	A count of the integer number of microseconds	G, E

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
								LONG (Unsigned 64-bit Integer)			of data contained in the granule, expressed in IET. The corresponding UTC time is given by the pair, Ending_Date, Ending_Time. For RDRs, the date provided is a predetermined value based on the granule collection. For the QST IP, this attribute is not applicable (= Default Value) An overview of timestamps is provided in the CDFCB-X Volume I, Section 3.5	since Epoch date/time of 1/1/58, 12:00 AM. Example: 1422180698809536	
N_GEO_Ref		X	X				X	H5T_C_S1 (String)			Filename of the HDF5 file containing the related Geolocation information. Exception: This attribute is only used in those cases where the geolocation information for a particular data product is packaged separately.	Filename is created using the NPOESS file naming convention for NPOESS Data Products – see the CDFCB-X Volume I, D34862-01, for the file-naming convention. Example: GIGTO_npp_d20030311_t1400000_e1430000_b12345_c20030311153000000000_navo_dev.h5	R, U
N_Graceful_Degradation		X	X					H5T_C_S1 (String)			Indicates that 1) One or more primary inputs necessary for the computation of the product were not available and an alternate input was used 2) One or more NPOESS/NPP Data Products used as input for the computation of the product were marked as Gracefully Degraded If the Primary input dataset is not available, and an alternate dataset is used, the alternate input dataset used will be listed as part of the N_Anc_Filename and/or N_Input_Prod metadata elements.	Yes = EDR computation is subject to graceful degradation. No = EDR is not subject to graceful degradation (normal computation). Example: No	G
N_Granule_ID	X	X	X	X				H5T_C_S1			The unique identifier for each RDR granule composed of the concatenation of two	A 15 character string, where the first three characters have allowable values of NPP, N01,	G, E

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
								(String)			components: (1) The three character satellite identifier [alias “Platform_Short_Name”], (2) A zero left filled, 12 character number, specifying the number of tenths of a second since the first ascending node after launch). The Granule ID is calculated using the observation time ($Time_O$) found in the header of a given Application Packet, the time of the first ascending node after launch ($Time_F$), and the granule size ($Time_G$). The calculation is: • $Number_G$ = floor[($Time_O$ – $Time_F$) / $Time_G$] • Granule Start Time = $Number_G$ * $Time_G$ + $Time_F$ • Granule End Time = Granule Start Time + $Time_G$ • Granule ID Value = ($Number_G$ * $Time_G$) / 10^5 The same granule identifier that is applied to the RDR granule is also used for the SDR/TDR and EDR/IP/ARP granules that result. The combination of N_Granule_ID, N_Collection_Short_Name, and the N_Granule_Version uniquely identifies each granule in the IDPS. For the QST IP, this attribute is not applicable (= Default Value)	N02, or N03. The next 12 characters have allowable values of 1 through 999999999999, although the maximum number will not be achieved during the life of a spacecraft. Example: NPP001212126658	
N_Granule_Status	X	X	X	X				H5T_C_S1 (String)			Identifies missing granules in an HDF5 file and provides reason. Day Only Products:	Possible Values are: Missing at delivery time 100% night for day only product Variable Granule Length = 0 N/A	G, E

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											VIIRS-M1-SDR VIIRS-M2-SDR VIIRS-M3-SDR VIIRS-M4-SDR VIIRS-M5-SDR VIIRS-M6-SDR VIIRS-M9-SDR VIIRS-M11-SDR VIIRS-I1-SDR VIIRS-I2-SDR VIIRS-I3-SDR VIIRS-I1-IMG-EDR VIIRS-I2-IMG-EDR VIIRS-I3-IMG-EDR VIIRS-APSP-EDR VIIRS-SusMat-EDR VIIRS-VI-EDR VIIRS-OCC-EDR VIIRS-AOT-EDR VIIRS-SCD-BINARY-SNOW-MAP-EDR VIIRS-SCD-BINARY-SNOW-FRAC-EDR Note: Depending upon the configuration of the IDP, some VIIRS-M1ST-EDR through VIIRS-M6TH-EDR may be day only products For additional information on Fill Values and Missing Data – see the CDFCB-X Volume I, D34862-01. For the QST IP, this attribute is not applicable (= Default Value)		
N_Granule_Version	X	X	X	X				H5T_C_S1 (String)			Indicates the version number of the granule that occurs as the result of an automatic repair of a granule, an IDPS operator commanded re-execution of a granule, or a manual execution of a granule. This element provides the state of the	For RDRs: A[1..n] The 1..n value is incremented every time the granule is updated For all other granules: A[1..n][C|M]$^{0..1}$[Identifier]$^{0..1}$[.s]$^{0..1}$	G, E

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											version (Automatic execution, Commanded re-execution, or Manual execution and allowable combinations thereof) along with identification number. For the QST IP, this attribute is not applicable (= Default Value)	M – appended if the granule had to be created, due to the fact that it did not already exist – considered to be a manual execution of a granule that has not been processed C – appended if the granule is recreated (already exists), this value will always be followed by an identifier Identifier – 64-bit integer representing the PID of the granule .s – appended to indicate that single processing chain was instantiated (e.g., ATMS ReMap SDR -> CrIMSS EDR chain, only the ATMS ReMap SDR is produced) Examples: A1, A1M, A1C	
N_HDF_Creation_Date	X	X	X	X	X	X		H5T_C_S1 (String)			The date that the HDF5 file was created. Paired with N_HDF_Creation_Time	CreationDate > 20050101 Expressed as YYYYMMDD, where YYYY is the year, MM is the month and DD is the day. Example: 20050304	R
N_HDF_Creation_Time	X	X	X	X	X	X		H5T_C_S1 (String)			The time that the HDF5 file was created Paired with N_HDF_Creation_Date.	0 <= CreationTime < 24 hours Expressed as HHMMSS.SSSSSSZ, where HH is hour, MM is minutes, and SS.SSSSSS is seconds and decimal fractions of a second (with precision to one microsecond). This is UTC. Example: 010116.809536Z	R
N_Input_Prod		X	X	X				H5T_C_S1 (String)	X		Product input pointer. Provides the list of inputs into the algorithm that produces a particular data product. Uses the N_Reference_ID of the input data products. This element only contains the N_Reference_IDs of the data products, it does not contain references to Ancillary or Auxiliary Data input.	An array of strings containing N_Reference_IDs. Example: ZZZ05567890ABCD01020304VNCD25678	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											QST IP: Contains the N_Reference_ID of the data product files used in the creation of the QST IP HDF5 file.		
N_Instrument_Flight_SW_Version		X	X					H5T_NATIVE_INT (32-bit Integer)	X		Provides the instrument flight software version	An integer value as provided from the spacecraft. Representation is as follows: ATMS - 4 bit integer CrIS - 11 bit integer OMPS - 16 bit integer VIIRS - 16 bit integer For CrIMSS Products, the CrIS and ATMS versions are provided using the following convention: 1. If both exist, the CrIS and ATMS are provided – 11 bit integer for CrIS followed by the 4 bit integer for ATMS (this is a repeating element) 2. If CrIS or ATMS or missing, a default value of -993 is used in place of the version The associated instrument name is provided by the Instrument_Short_Name metadata element. Example: 0	P

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
N_LEOA_Flag	X	X	X	X				H5T_C_S1 (String)			Defines LEOA (Launch, Early Operations, and Activation) state for each applicable NPP/NPOESS Data Product on a product by product basis. Set to " On" during LEOA state for an NPP/NPOESS Data Product. Set to "Off " for each NPOESS Data Product that is operating normally (not in LEO A). For the QST IP, this attribute is not applicable (= Default Value)	For each applicable instrument on each platform: "On" = LEOA state, "Off" = Not LEOA State. Corresponding spacecraft is provided by Platform_Short_Name. Corresponding sensor is provided by Instrument_Short_Name. Corresponding product is provided by N_Collection_Short_Name. Example: Off	G, E
N_Nadir_Latitude_Max		X	X	X				H5T_NATIVE_FLOAT (32-bit Floating Point)			Latitude of Nadir ground point, max over granule, expressed in decimal degrees. For the QST IP, this attribute is not applicable (= Default Value)	-90.0 <= NadirLatitude <= 90.0 Example: -40.42816	G
N_Nadir_Latitude_Min		X	X	X				H5T_NATIVE_FLOAT (32-bit Floating Point)			Latitude of Nadir ground point, min over granule, expressed in decimal degrees For the QST IP, this attribute is not applicable (= Default Value)	-90.0 <= NadirLatitude <= 90.0 Example: -41.982155	G
N_Nadir_Longitude_Max		X	X	X				H5T_NATIVE_FLOAT (32-bit Floating Point)			Longitude of Nadir ground point, max over granule, expressed in decimal degrees For the QST IP, this attribute is not applicable (= Default Value)	-180.0 <= NadirLongitude < 180.0 Example: 58.263794	G
N_Nadir_Longitude_Min		X	X	X				H5T_NATIVE_FLOAT (32-bit Floating Point)			Longitude of Nadir ground point, min over granule, expressed in decimal degrees. For the QST IP, this attribute is not applicable (= Default Value)	-180.0 <= NadirLongitude < 180.0 Example: 57.730972	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
N_NPOESS_Document_Ref	X	X	X	X			X	H5T_C_S1 (String)	X		Provides an array of strings containing the filename of the documentation relevant to the algorithm that produced the particular data product – includes CDFCB-X, NPOESS Data Product Profile XML, and OAD filenames Exception: RDRs do not have XML Product Profiles or OADS associated with them.	Array of file names – see the CDFCB-X Volume I, D34862-01, for the relevant conventions. Example: D34862-01_CDFCB-X-Volume-I-Overview_A_20100415_ I1.5.02.pdf	G, E
N_Number_Of_Scans		X	X	X				H5T_NATIVE_INT (32-bit Integer)			This element indicates the actual number of scans that will be found in the data product. For the QST IP, this attribute is not applicable (= Default Value)	Integer >= 0	G
N_Packet_Type	X							H5T_C_S1 (String)	X		Defines the type of data contained in the packet that is contributing to the RDR granule. There is a PacketType paired (by array index) with each PacketCount. There may be multiple occurrences of this pairing of metadata item per granule.	Each individual Packet has an associated APID Short Name. These short names are provided with the descriptions of the RDRs in the CDFCB-X Volume II-RDRs, D34862-02. Examples: M01, SCI, CAL, ENG	G, E
N_Packet_Type_Count	X							H5T_NATIVE_ULLONG (Unsigned 64-bit Integer)	X		The number of packets with each PacketType contained in the granule. There is a PacketCount paired (by array index) with each PacketType. There are multiple occurrences of this pairing of metadata item per granule.	Integer value >= 0 Example: 22	G, E
N_Percent_Erroneous_Data		X	X				X	H5T_NATIVE_FLOAT (32-bit Floating Point)			Percent of data in the granule where pixels cannot be computed due to errors in the data. In the erroneous data situation, data is present but a computation cannot be performed due to a detectable error. Erroneous data is represented with by the 'Cannot Calculate' Data Fill pattern – see the CDFCB-X Volume I, D34862-01, for applicable Fill Values.	0.0% <= N_Percent_Erroneous_Data <= 100.0% Example: 0.0	G, E

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											This value is calculated across all data arrays included in a granule, excluding quality flags and scale factors Note: this calculation also excludes the following the fill patterns: Does Not Exist Onboard Pixel Trim On-Ground Pixel Trim Computed as: (Number of Erroneous Pixels / Total Number of Pixels) x 100 Exception: Does not apply to those products listed below which contain only bit-level data: VIIRS Cloud Mask (VIIRS-CM-IP) VIIRS Active Fires (VIIRS-AF-EDR) VIIRS Parallax Corrected Cloud Mask IP (VIIRS-Parx-Corr-CM-IP), VIIRS Ice Quality Flags IP (VIIRS-I-Qual-Flags-IP), VIIRS Aerosol Model Information IP (VIIRS-Aeros-Modl-Info-IP), VIIRS Snow Cover/Depth Binary Snow Map EDR (VIIRS-SCD-BINARY-SNOW-MAP-EDR) QST IP (Quarterly-ST-IP) VIIRS Bright Pixel IP (VIIRS-Bright-Pixel-Mod-IP)		
N_Percent_Missing_Data	X	X	X				X	H5T_NATIVE_FLOAT (32-bit Floating Point)			Percentage of missing data in the granule. Missing data is represented by the Missing at Time of Processing Data Fill pattern – see the CDFCB-X Volume I, D34862-01, for applicable Fill Values. For RDRs this value is an approximation that is accurate to approximately 1%. For SDR/TDRs and EDR/IP/ARPs this value is precise and is calculated across all data	0.0 <= N_Percent_Missing_Data <= 100.0% Example: 0.0	G, E

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											arrays included in a granule, excluding quality flags and scale factors Note: this calculation also excludes the following the fill patterns: Does Not Exist Onboard Pixel Trim On-Ground Pixel Trim Computed as: (Number of Missing Pixels / Total Number of Pixels) x 100 Exception: Does not apply to those products listed below which contain only bit-level data: VIIRS Cloud Mask (VIIRS-CM-IP) VIIRS Active Fires (VIIRS-AF-EDR) VIIRS Parallax Corrected Cloud Mask IP (VIIRS-Parx-Corr-CM-IP), VIIRS Ice Quality Flags IP (VIIRS-I-Qual-Flags-IP), VIIRS Aerosol Model Information IP (VIIRS-Aeros-Modl-Info-IP), VIIRS Snow Cover/Depth Binary Snow Map EDR (VIIRS-SCD-BINARY-SNOW-MAP-EDR) Also does not apply to the QST IP (Quarterly-ST-IP) where the data is simply carried forward from the previous QST IP. VIIRS Bright Pixel IP (VIIRS-Bright-Pixel-Mod-IP)		

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
N_Percent_Not-Applicable_Data		X	X				X	H5T_NATIVE_FLOAT (32-bit Floating Point)			Percent of data in the granule where pixels cannot be computed due to non-applicable collection conditions. e.g., VIIRS day channels at night, no snow, no ice, no land, etc. The missing data is represented by the Algorithm Exclusion Data Fill pattern – see the CDFCB-X Volume I, D34862-01, for applicable Fill Values. Note: this calculation also excludes the following the fill patterns: Does Not Exist Onboard Pixel Trim On-Ground Pixel Trim Computed as: (Number of Not-Applicable Pixels / Total Number of Pixels) x 100 Note: Does not apply to those products listed below which contain only bit-level data: VIIRS Cloud Mask (VIIRS-CM-IP) VIIRS Active Fires (VIIRS-AF-EDR) VIIRS Parallax Corrected Cloud Mask IP (VIIRS-Parx-Corr-CM-IP) VIIRS Ice Quality Flags IP (VIIRS-I-Qual-Flags-IP) VIIRS Aerosol Model Information IP (VIIRS-Aeros-Modl-Info-IP) VIIRS Snow Cover/Depth Binary Snow Map EDR (VIIRS-SCD-BINARY-SNOW-MAP-EDR) Also does not apply to the QST IP (Quarterly-ST-IP) where the data is simply carried forward from the previous QST IP. VIIRS Bright Pixel IP (VIIRS-Bright-Pixel-Mod-IP)	0.0% <= N_Percent_Not-Applicable_Data <= 100.0% Example: 75.80124	G
N_Processing_Domain	X	X	X	X	X	X		H5T_C_S1 (String)			Identifier of the Processing Domain that generated the product. This identifier is used internally by the NPOESS Program. For	See the CDFCB-X Volume I, D34862-01, Section 3.4 for applicable domains.	P, G, S, U

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											users of data from the archive, this attribute will be ops	Example: ops	
N_Quality_Summary_Names		X	X	X				H5T_C_S1 (String)	X		Element that provides the name of the granule quality summary flag(s) for a specific granule. This element has a 1:1 correspondence (by array index) to the N_Quality_Summary_Values element, which provides the corresponding value. Each summary quality flag included in this metadata element is specific to a product and is indicated in the data format definition of the relevant product in the CDFCB-X Volume IV- EDR/IP/ARP, D34862-04.	See the relevant data format definition for a given NPOESS Data Product for the elements provided for a specific data product Example: Summary Imagery Quality	G
N_Quality_Summary_Values		X	X	X				H5T_NATIVE_INT (32-bit Integer)	X		Element that provides the value of the granule quality summary flag(s) for a specific granule. This element has a 1:1 correspondence (by array index) to the N_Quality_Summary_Names element, which provides the corresponding name. Each summary quality flag included in this metadata element is specific to a product and is indicated in the data format definition of the relevant product in the CDFCB-X.	See the relevant data format definition for a given NPOESS Data Product for the elements provided for a specific data product Example: 75	G
N_Reference_ID	X	X	X	X	X	X		H5T_C_S1 (String)			The unique identifier for NPOESS Data Product granules, Auxiliary files, and Ancillary files. For the QST IP, this attribute is not applicable (= Default Value)	A unique identifier consisting of a 32-character string. Example: 43132603-11104-9b9dea63-deb2216a	G, E
N_Satellite/Local_Azimuth_Angle_Max		X	X					H5T_NATIVE_FLOAT			The angle at the viewed point, measured in the horizontal plane at the viewed point, between the north direction and the direction	-180.0 <= N_Satellite/Local_Azimuth_Angle_Max <= 180.0	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
								(32-bit Floating Point)			to the satellite, measured in degrees eastward from north. Maximum value over the granule. For the QST IP, this attribute is not applicable (= Default Value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.	N_Satellite/Local_Azimuth_Angle_Min >= N_Satellite/Local_Azimuth_Angle_Max Example: 143.2	
N_Satellite/Local_Azimuth_Angle_Min		X	X					H5T_NATIVE_FLOAT (32-bit Floating Point)			The angle at the viewed point, measured in the horizontal plane at the viewed point, between the north direction and the direction to the satellite, measured in degrees eastward from north. Minimum value over the granule. For the QST IP, this attribute is not applicable (= Default Value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.	-180.0 <= N_Satellite/Local_Azimuth_Angle_Min <= 180.0 N_Satellite/Local_Azimuth_Angle_Min <= N_Satellite/Local_Azimuth_Angle_Max Example: 86.3	G
N_Satellite/Local_Zenith_Angle_Max		X	X					H5T_NATIVE_FLOAT (32-bit Floating Point)			The angle at the viewed point between the zenith at the viewed point and the satellite, in degrees. Maximum value over the granule. For the QST IP, this attribute is not applicable (= Default Value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.	0.0 <= N_Satellite/Local_Zenith_Angle_Max <= 180.0 N_Satellite/Local_Zenith_Angle_Min >= N_Satellite/Local_Zenith_Angle_Max Example: 69.7	G
N_Satellite/Local_Zenith_Angle_Min		X	X					H5T_NATIVE_FLOAT (32-bit Floating Point)			The angle at the viewed point between the zenith at the viewed point and the satellite, in degrees. Minimum value over the granule. For the QST IP, this attribute is not applicable (= Default Value)	0.0 <= N_Satellite/Local_Zenith_Angle_Min <= 180.0 N_Satellite/Local_Zenith_Angle_Min <= N_Satellite/Local_Zenith_Angle_Max Example: -98.2	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.		
N_Software_Version	X	X	X	X	X			H5T_C_S1 (String)			Version of IDPS software that created the Data Product. For the RDR, SDR, TDR, EDR, IP, ARP, and GEO products – this value is provided at the granule level. For Auxiliary files, this element is provided at the root of the HDF5 file. For AUX data not created by the IDP, this version indicates the software version that packaged and delivered the data. QST IP: Version of the software that produced the QST IP.	The IDPS software version is provided as defined in the CDFCB-X Volume I, D34862-01, Section 3.4 Example: I1.5.03.04	R, G, E
N_Solar_Azimuth_Angle_Max		X	X					H5T_NATIVE_FLOAT (32-bit Floating Point)			The angle at the viewed point, measured in the horizontal plane at the viewed point, between the north direction and the direction of the Sun, measured in degrees eastward from north. Maximum value over the granule. For the QST IP, this attribute is not applicable (= Default Value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.	-180.0 degrees <= N_Solar_Azimuth_Angle_Max <= 180.0 degrees N_Solar_Azimuth_Angle_Min <= N_Solar_Azimuth_Angle_Max Example: -24.3	G
N_Solar_Azimuth_Angle_Min		X	X					H5T_NATIVE_FLOAT (32-bit Floating Point)			The angle at the viewed point, measured in the horizontal plane at the viewed point, between the north direction and the direction of the Sun, measured in degrees eastward from north. Minimum value over the granule. For the QST IP, this attribute is not applicable (= Default Value) This attribute does not apply to A-DCS,	-180.0 degrees <= N_Solar_Azimuth_Angle_Min <= 180.0 degrees N_Solar_Azimuth_Angle_Min <= N_Solar_Azimuth_Angle_Max Example: -45.3	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											SARP, or SARR products since there is no associated geolocation.		
N_Solar_Zenith_Angle_Max		X	X					H5T_NATIVE_FLOAT (32-bit Floating Point)			The angle at the viewed point between the zenith at the viewed point and the Sun, in degrees. Maximum value over the granule. For the QST IP, this attribute is not applicable (= Default Value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.	0.0 <= SolarZenithAngle <= 180.0 Solar_Zenith_Angle_Min <= Solar_Zenith_Angle_Max Example: 35.3	G
N_Solar_Zenith_Angle_Min		X	X					H5T_NATIVE_FLOAT (32-bit Floating Point)			The angle at the viewed point between the zenith at the viewed point and the Sun, in degrees. Minimum value over the granule. For the QST IP, this attribute is not applicable (= Default Value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.	0.0 <= SolarZenithAngle <= 180.0 Solar_Zenith_Angle_Min <= Solar_Zenith_Angle_Max Example: 143.2	G
N_Spacecraft_Maneuver		X	X	X				H5T_C_S1 (String)			Defines the status of the Spacecraft maneuver as it applies to the Granule. This only applies to maneuvers (Reaction Wheel or Thruster controlled) that result in significant movement of the Spacecraft and does not include Reaction Wheel based adjustments to maintain nominal attitude. If multiple Maneuvers apply to a granule, the metadata indicates the Maneuver with the most impact to the quality of the data product. For the QST IP, this attribute is not applicable (= Default Value)	Ordered from lowest to highest impact: Normal Operations Orbit Correction Maneuver Calibration Maneuver Unknown Example: Normal Operations	G
North_Bounding_Coordinate		X	X	X				H5T_NATIVE_FLOAT			The latitude of the point (in decimal degrees) in the coverage area furthest along a	-90.0 <= NorthBoundingCoordinate <= 90.0 NorthBoundingCoordinate >=	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
								(32-bit Floating Point)			northerly direction from the center point of the granule. The North, South, East, and West bounding coordinates together form a tight bounding box around the coverage area with borders along the latitude and longitude lines. When the coverage area includes the north pole, the value will be +90° and the bounding box will consist of the top slice of a sphere. The latitude of the point is based on the exit vectors which are assumed to be the center of a pixel. For the QST IP, this attribute is not applicable (= Default Value) For products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.	SouthBoundingCoordinate. Example: 34.2	
Operational_Mode		X	X	X				H5T_C_S1 (String)			The mode in which the spacecraft and instrument is functioning, when mission data is being generated. If multiple modes apply to the data in the product, all modes are listed. Operational_Mode is a combination of Spacecraft, Spacecraft Mode, Sensor, Sensor Mode For fused products (e.g. CrIMSS), the sensor mode of the input sensors (e.g. ATMS and CrIS) are used. For the QST IP, this attribute is not applicable (= Default Value)	Operational modes are provided for Spacecraft-Instrument combinational modes that output mission data. Format: <SC> <SC Mode>, <Sensor> <Sensor Mode> or <SC> <SC Mode>, <Sensor1> <Sensor Mode1>, <Sensor2> <Sensor Mode2> <SC> is based on Platform_Short_Name <SC Mode> is based on N_Spacecraft Maneuver as follows: • If Maneuver = Normal Operations, <SC Mode> = Normal Operations • If Maneuver = Calibration Maneuver, <SC Mode> = Calibration Maneuver • If Maneuver = Orbit Correction Maneuver,	P

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
												<SC Mode> = Orbit Correction Maneuver • If Maneuver = Unknown, <SC Mode> = Unknown <Sensor> is based on Instrument Short Name <Sensor Mode> is based on the Mode Telemetry from the Sensor as follows: • Operational – All sensors • Calibration – OMPS TC and OMPS NP only • Diagnostic – CrIS, ATMS, and "CrIS and ATMS" for CrIMSS only • Operational and Diagnostic - CrIS, ATMS, and "CrIS and ATMS" for CrIMSS only • Unknown – All Sensors Examples: NPP Normal Operations, VIIRS Operational NPP Calibration Maneuver, OMPS-TC Calibration NPP Normal Operations, ATMS Operation and Diagnostic, CrIS Diagnostic	
Platform_Short_Name	X	X	X	X	X			H5T_C_S1 (String)		X	An acronym, or shorter form of the platform name, used to identify the platform.	NPP, N01, N02, SPP, S01, S02 Example: NPP	R, U

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
South_Bounding_Coordinate		X	X	X				H5T_NATIVE_FLOAT (32-bit Floating Point)			The latitude of the point (in decimal degrees) in the coverage area furthest along a southerly direction from the center point of the granule. The North, South, East, and West bounding coordinates together form a tight bounding box around the coverage area with borders along the latitude and longitude lines. When the coverage area includes the south pole, the value will be -90° and the bounding box will consist of the bottom slice of a sphere The latitude of the point is based on the exit vectors which are assumed to be the center of a pixel. For the QST IP, this attribute is not applicable (= Default Value) For products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.	-90.0 <= SouthBoundingCoordinate <=90.0 SouthBoundingCoordinate <= NorthBoundingCoordinate. Example: 23.3	G
Time_of_Day					X	X		H5T_C_S1 (String)			The hour, minute and second of the day that the data entered the processing environment. Single time for AUX and ANC Datasets. Hour, minutes, seconds, and fraction of a second to microsecond resolution.	Expressed as HHMMSS.SSSSSSZ, where HH is hour, MM is minutes, and SS.SSSSSS is seconds and decimal fractions of seconds (with precision to one microsecond), all relative to UTC. Example: 010116.809536Z	G
West_Bounding_Coordinate		X	X	X				H5T_NATIVE_FLOAT (32-bit Floating Point)			The longitude of the point (in decimal degrees) in the coverage area furthest along a westerly direction from the center point of the granule. The North, South, East, and West bounding coordinates together form a tight bounding box around the coverage area with borders along the latitude and longitude	-180.0 <= WestBoundingCoordinate <= 180.0 Degrees Example: 132.2	G

Name	RDR	SDR/TDR	EDR/IP/ARP	GEO	AUX	ANC	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	ApplicableValues	HDF5 Hierarchy
											lines. The longitude of the point is based on the exit vectors which are assumed to be the center of a pixel. When the coverage area includes the north or south pole, the value will be -180°. For the QST IP, this attribute is not applicable (= Default Value) For products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value) This attribute does not apply to A-DCS, SARP, or SARR products since there is no associated geolocation.		

4.4.1 Metadata Defaults

In the event that there is no information available for a specific metadata element, a default value is used. An example is in the event of a missing granule that is delivered in an aggregation of granules – there are not applicable metadata elements and, just like the missing data, the metadata is also missing (See the CDFCB-X Volume I, D34862-01, for more information regarding missing granules). Table 4.4.1-1, Metadata Default Values, provides the default values for the metadata by datatype.

Table 4.4.1-1, Metadata Default Values

Metadata Data Type	Default Value
H5T_NATIVE_INT	-993
H5T_NATIVE_UINT	65529
H5T_NATIVE_ULLONG	993
H5T_NATIVE_FLOAT	-999.3
H5T_NATIVE_UCHAR	249
H5T_C_S1	N/A

4.5 NPOESS Data Product Traceability

In order to support NPOESS anomaly investigation and resolution, the NPOESS Data Products contain metadata attributes that facilitate tracing the direct inputs to the software algorithm which produces that particular product. This information is necessary to understand the lineage of a particular NPOESS Data Product instance in order to investigate system and processing anomalies. The metadata and filenames of the various data elements used in generating NPOESS Data Products can be used to trace and understand the lineage of a given data product. The traceability provided within the NPOESS Data Products is provided via various metadata attributes included in the HDF5 file. These elements provide complete coverage of the exact inputs into the particular software algorithm which produces a specific NPOESS Data Products. Inputs into a software algorithm may include:

- Raw Data Records (RDR)
- Sensor Data Records (SDR)
- Temperature Data Records (TDR)
- Environmental Data Records (EDR)
- Application Related Products (ARP)
- Intermediate Products (IP) [both delivered and not delivered]
- Ancillary Data
- Auxiliary Data

Figure 4.5-1, NPOESS Data Product Notional Processing, provides a notional depiction of a processing chain used to create NPOESS Data Products. The traceability provided by the metadata attributes in the HDF5 file indicates the direct predecessors to the particular algorithm that created a given NPOESS Data Product. In this case, identifiers for the items within the cross-hatched box only will be in the metadata for the EDR at the top of the diagram.

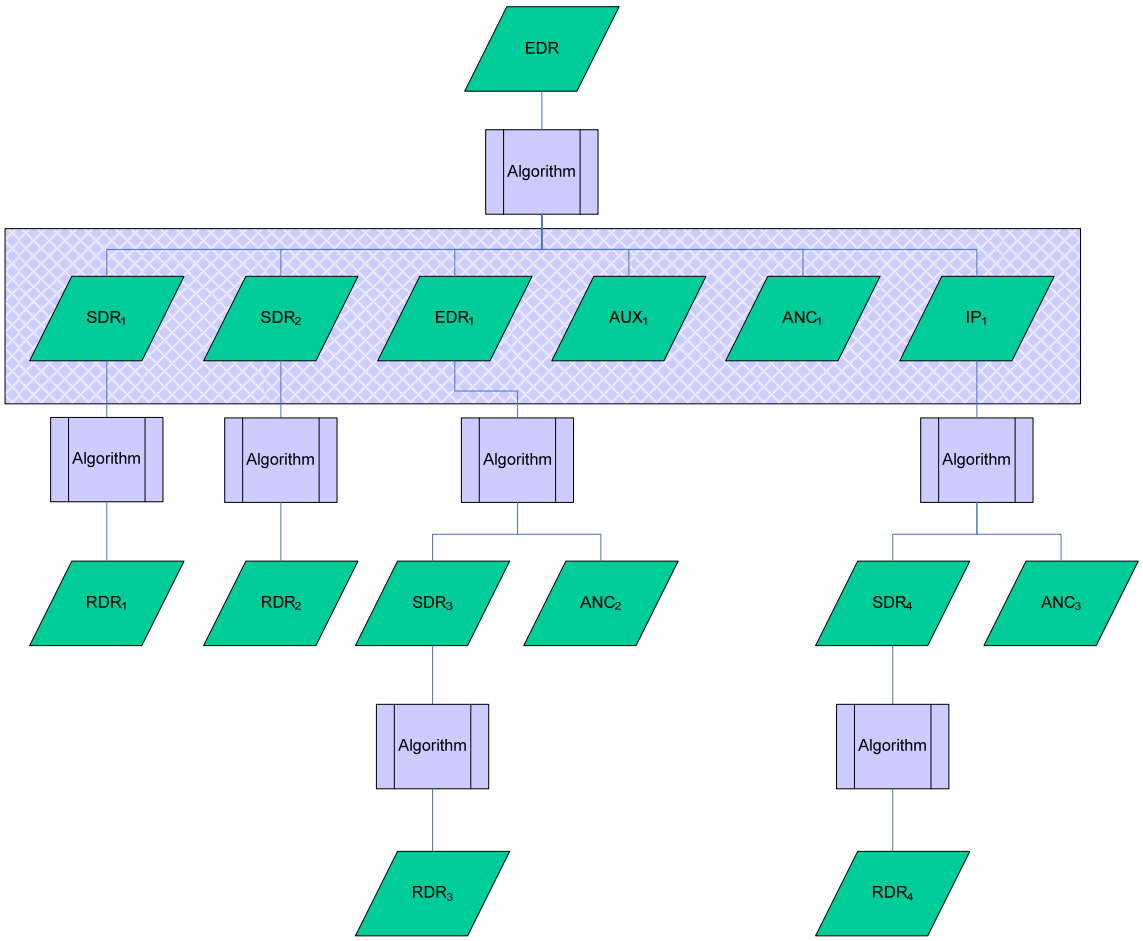

Figure 4.5-1, NPOESS Data Product Notional Processing

The NPOESS Data Products provide metadata that indicates all of the direct predecessors on granule basis (the complete list of inputs into the software algorithm that produces a given granule). The elements used for this are:

- N_Input_Prod – list of input NPOESS Data Products (provides N_Reference_IDs for each data product)
- N_Anc_Filename – list of input ancillary files (provides filenames)
- N_Aux_Filename – list of input auxiliary files (provides filenames)
- N_Software_Version – version of the IDP software used to create the data product

Figure 4.5 -2, Graphical Traceability, provides a conceptual example of how input data

tracing is identified. Assume that an EDR is produced using NPOESS Data Products EDR1, SDR1, and IP1, Ancillary Data ANC1, Auxiliary Data AUX1, and Software SW1. The EDR metadata will contain the following information:

- N_Input_Prod will contain the N_Reference_IDs found in EDR1, SDR1, and IP1.
- N_Anc_Filename will contain the filename of ANC1
- N_Aux_Filename will contain the filename of AUX1
- N_Software_Version will contain the version of SW1

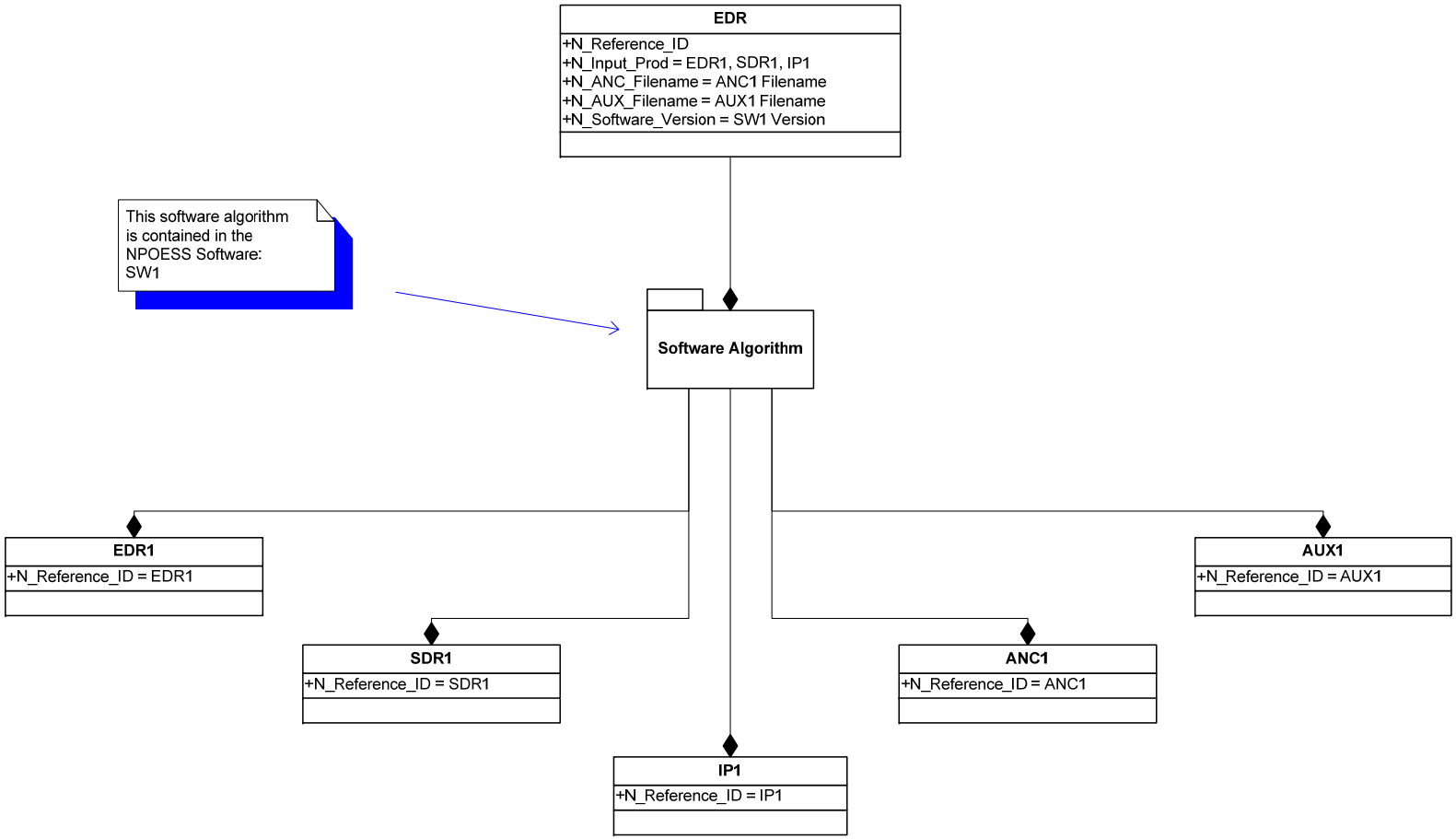

Figure 4.5-2, Graphical of Traceability

During a processing event, from RDR granule to EDR granules, the processing environment creates many temporary inter-module data products that are not delivered and which are passed from one algorithm in the processing chain to the next. These products are overwritten each time the chain is run and are not re-used in the environment. The N_Reference_IDs of these products are included in the N_Input_Prod metadata because these products are used as input into the algorithm, or module, in the processing chain that produced the resulting data product.

There are some gridded IPs in the processing system that are updated during each processing event – these products are delivered to the NPOESS Calibration/Validation team via NSIPS for review and are configurably made available to the users of an IDP. These continuously updated Gridded IPs are also delivered periodically to CLASS via the Supporting Data Release Package as updated seed files. For more information on Release Packages see Section 3.4 of the CDFCB-X Volume I, D34862-01.

APPENDIX A – EXAMPLES

Example A-1, RDR HDF5 XML User Block Example


```
<HDF_UserBlock>
  <Mission_Name>NPP</Mission_Name>
  <Platform_Short_Name>NPP</Platform_Short_Name>
<Number_Of_Data_Products>1</Number_Of_Data_Products>
  <Data_Product>
    <N_Collection_Short_Name>ATMS-RDR</N_Collection_Short_Name>
    <Instrument_Short_Name>ATMS</Instrument_Short_Name>
    <N_Dataset_Type_Tag>EDR</N_Dataset_Type_Tag>
    <N_Processing_Domain>NOAA</N_Processing_Domain>
    <AggregateBeginningDate>20130125</AggregateBeginningDate>
    <AggregateBeginningOrbitNUmber>9</AggregateBeginningOrbitNumber>
    <AggregateBeginningTime>101038.325248Z </AggregateBeginningTime>
    <AggregateEndingDate>20130125</AggregateEndingDate>
    <AggregateEndingOrbitNumber>9</AggregateEndingOrbitNumber>
    <AggregateEndingTime>110116.809536Z </AggregateEndingTime>
    <AggregateBeginningGranuleID>NPP001212126373
       </AggregateBeginningGranuleID>
    <AggregateEndingGranuleID> NPP001212126373
       </AggregateEndingGranuleID>
  </Data_Product>
</HDF_UserBlock>
```

Example A-2, Single SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Example


```
<HDF_UserBlock>
  <Mission_Name>NPP</Mission_Name>
  <Platform_Short_Name>NPP</Platform_Short_Name>
<Number_Of_Data_Products>1</Number_Of_Data_Products>
  <Data_Product>
    <N_Collection_Short_Name>VIIRS-OCC-EDR</N_Collection_Short_Name>
    <Instrument_Short_Name>VIIRS</Instrument_Short_Name>
    <N_Dataset_Type_Tag>EDR</N_Dataset_Type_Tag>
    <N_Processing_Domain>Tst</N_Processing_Domain>
    <AggregateBeginningDate>20130125</AggregateBeginningDate>
   <AggregateBeginningOrbitNumber>9</AggregateBeginningOrbitNumber>
    <AggregateBeginningTime>101038.325248Z</AggregateBeginningTime>
    <AggregateEndingDate>20130125</AggregateEndingDate>
    <AggregateEndingOrbitNumber>9</AggregateEndingOrbitNumber>
    <AggregateEndingTime>110116.809536Z</AggregateEndingTime>
    <AggregateBeginningGranuleID>NPP001212126373
     </AggregateBeginningGranuleID>
    <AggregateEndingGranuleID>NPP001212126373
     </AggregateEndingGranuleID>
  </Data_Product>
</HDF_UserBlock>
```

Example A-3, Multiple SDR, TDR, EDR, ARP, GEO, and IP HDF5 XML User Block Example


```
<HDF_UserBlock>
  <Mission_Name>NPP</Mission_Name>
  <Platform_Short_Name>NPP</Platform_Short_Name>
  <Number_Of_Data_Products>3</Number_Of_Data_Products>
  <Data_Product>
    <N_Collection_Short_Name>VIIRS-I1-IMG-EDR</N_Collection_Short_Name>
    <Instrument_Short_Name>VIIRS</Instrument_Short_Name>
    <N_Dataset_Type_Tag>EDR</N_Dataset_Type_Tag>
    <N_Processing_Domain>Tst</N_Processing_Domain>
    <AggregateBeginningDate>20130125</AggregateBeginningDate>
   <AggregateBeginningOrbitNumber>9</AggregateBeginningOrbitNumber>
    <AggregateBeginningTime>101038.325248Z</AggregateBeginningTime>
    <AggregateEndingDate>20130125</AggregateEndingDate>
    <AggregateEndingOrbitNumber>9</AggregateEndingOrbitNumber>
    <AggregateEndingTime>110116.809536Z</AggregateEndingTime>
    <AggregateBeginningGranuleID>NPP001212126373
     </AggregateBeginningGranuleID>
    <AggregateEndingGranuleID>NPP001212126373
     </AggregateEndingGranuleID>
  </Data_Product>
  <Data_Product>
    <N_Collection_Short_Name>VIIRS-I2-IMG-EDR</N_Collection_Short_Name>
    <Instrument_Short_Name>VIIRS</Instrument_Short_Name>
    <N_Dataset_Type_Tag>EDR</N_Dataset_Type_Tag>
    <N_Processing_Domain>Tst</N_Processing_Domain>
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   <AggregateBeginningOrbitNumber>9</AggregateBeginningOrbitNumber>
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    <AggregateEndingOrbitNumber>9</AggregateEndingOrbitNumber>
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    <AggregateBeginningGranuleID>NPP001212126373
```

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</HDF_UserBlock>
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Example A-4, NPOESS Data Product Profile XML Example


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<?xml version="1.0"?>


<?xml-stylesheet type="text/xsl" href="NPOESS_Product_Profile_StyleSheet.xsl"?>

<!--

<NPOESS_Product_Profile CollectionShortName="CrIS-SDR-GEO" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xsi:noNamespaceSchemaLocation="NPOESS_Product_Profile.xsd">

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   <CollectionShortName>CrIS-SDR-GEO</CollectionShortName>
   <DataProductID>GCRSO</DataProductID>
   <ProductData>
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```

```
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the mid-time of scan</Description>
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        </RangeMax>
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            <Name>ERR_FLOAT32_FILL</Name>
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            <Value>-999.3</Value>
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        <Dynamic>0</Dynamic>
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        <MaxIndex>4</MaxIndex>
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</DataSize>
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   <DatumOffset>0</DatumOffset>
   <Scaled>0</Scaled>
   <MeasurementUnits>unitless</MeasurementUnits>
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      <Value>0</Value>
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   <LegendEntry>
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      <Value>1</Value>
   </LegendEntry>
   <LegendEntry>
      <Name>Small Gap &lt; Missing Data &lt;= Granule Boundary</Name>
      <Value>2</Value>
   </LegendEntry>
   <LegendEntry>
      <Name>Missing Data &gt; Granule Boundary</Name>
      <Value>3</Value>
   </LegendEntry>
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   <DatumOffset>2</DatumOffset>
   <Scaled>0</Scaled>
   <MeasurementUnits>unitless</MeasurementUnits>
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APPENDIX B – NPOESS DELIVERED DOCUMENTATION

The following is a list of the documentation delivered by NPOESS to the external community via the Documentation Release Packages. See the CDFCB-X Volume I, D34862-01, for information regarding Release Packages. This list of documents completes the set of documentation to understand the NPP/NPOESS Data Products.

Table B-1, NPOESS Delivered Documentation

Document Title	Doc Number	Collection Short Name
Science Documents		
ATBD for OMPS Nadir Profile Ozone	D43775	ATBD-NP-Ozone
ATBD for OMPS Total Column Ozone	D43774	ATBD-IR-TC-Ozone
ATBD for VIIRS Sea Surface Temperature	D43311	ATBD-VIIRS-SST
ATBD for VIIRS Aerosol Optical Thickness & Aerosol Particle Size Parameter	D43313	ATBD-VIIRS-AOT-APSP
ATBD for VIIRS Atmospheric Correction Over Ocean	D43314	ATBD-VIIRS-Atm-Correction-Over-Ocean
ATBD for VIIRS Suspended Matter	D43315	ATBD-VIIRS-SusMatter
ATBD for VIIRS Cloud Base Height	D43316	ATBD-VIIRS-CBH
ATBD for VIIRS Cloud Cover/Layers	D43317	ATBD-VIIRS-CCL
ATBD for VIIRS Cloud Effective Particle Size and Cloud Optical Thickness	D43750	ATBD-VIIRS-Cloud-EPS-COT
ATBD for VIIRS Cloud Top Parameters	D43754	ATBD-VIIRS-CTP
ATBD for VIIRS Surface Albedo	D43755	ATBD-VIIRS-Albedo
ATBD for VIIRS Land Surface Temperature	D43756	ATBD-VIIRS-LST
ATBD for VIIRS Vegetation Index	D43757	ATBD-VIIRS-VI
ATBD for VIIRS Snow Cover	D43758	ATBD-VIIRS-SC
ATBD for VIIRS Surface Type	D43759	ATBD-VIIRS-Surface-Type

Document Title	Doc Number	Collection Short Name
ATBD for VIIRS Ice Surface Temperature	D43761	ATBD-VIIRS-IST
ATBD for VIIRS Net Heat Flux	D43762	ATBD-VIIRS-NHF
ATBD for VIIRS Ocean Color/Chlorophyll	D43763	ATBD-VIIRS-OCC
ATBD for VIIRS Surface Reflectance	D43765	ATBD-VIIRS-Surface-Reflectance
ATBD for VIIRS Cloud Mask	D43766	ATBD-VIIRS-Cloud-Mask
ATBD for VIIRS Imagery Products	D43767	ATBD-VIIRS-Imagery
ATBD for VIIRS Active Fires	D43770	ATBD-VIIRS-Active-Fires
ATBD for VIIRS Geolocation	D43776	ATBD-VIIRS-Geolocation
ATBD for VIIRS Radiometric Calibration	D43777	ATBD-VIIRS-Radiometric-Calibration
ATBD for VIIRS Earth Gridding	D43778	ATBD-VIIRS-Earth-Gridding
ATBD for CrIS SDRs	D43773	ATBD-CrIS-SDRs
ATBD for CrIS EDR	D43772	ATBD-CrIS-EDR
ATBD for ATMS SDR Radiometric Calibration	D43751	ATBD-ATMS-CAL-SDR
ATBD for VIIRS Sea Ice Characterization	D41063	ATBD-VIIRS-SeaIceCharacerization
OAD for OMPS Nadir Profile SDR	D39546	OAD-OMPS-NP-SDR
OAD for OMPS Total Column SDR	D39310	OAD-OMPS-TC-SDR
OAD for OMPS Total Column EDR	D37031	OAD-OMPS-TC-EDR
OAD for OMPS Nadir Profile EDR	D38045	OAD-OMPS-NP-EDR
OAD for VIIRS Cloud Mask IP	D36816	OAD-VIIRS-Cloud-Mask-IP
OAD for VIIRS Cloud Perform Parallax Correction Software	D40382	OAD-VIIRS-Perform-Parallax-Correction
OAD for VIIRS Cloud Optical Properties (COP) Software	D39298	OAD-VIIRS-COP
OAD for VIIRS Active Fires ARP Software	D36981	OAD-VIIRS-Fire-ARP
OAD for VIIRS NCC Imagery EDR Software	D36814	OAD-VIIRS-NCC-Imagery-EDRs
OAD for VIIRS Cloud Base Height (CBH) IP Software	D39589	OAD-VIIRS-CBH-IP

Document Title	Doc Number	Collection Short Name
OAD for VIIRS Cloud Cover/Layers and Generate Cloud EDR Software	D39590	OAD-VIIRS-CCL-GCE-EDR
OAD for VIIRS Cloud Top Parameters (CTP) EDR Software	D39568	OAD-VIIRS-CTP-EDR
OAD for VIIRS Land Surface Temperature EDR Software	D38714	OAD-VIIRS-LST-EDR
OAD for VIIRS Snow Cover EDR Software	D39592	OAD-VIIRS-Snow-Cover-EDR
OAD for VIIRS Surface Type EDR Software	D38696	OAD-VIIRS-Surface-Type-EDR
OAD for VIIRS Vegetation Index EDR Software	D36951	OAD-VIIRS-VI-EDR
OAD for VIIRS Sea Surface Temperature EDR	D36815	OAD-VIIRS-SST-EDR
OAD for VIIRS Ice Surface Temperature (IST) EDR Software	D39141	OAD-VIIRS-IST-EDR
OAD for VIIRS Net Heat Flux (NHF) EDR Software	D39552	OAD-VIIRS-NHF-EDR
OAD for Atmospheric Correction Over Ocean (ACO) / Ocean Color Chlorophyll (OCC) Software	D36813	OAD-VIIRS-ACO-OCC
OAD for VIIRS Sea Ice Age EDR Software	D39593	OAD-VIIRS-SeaIceAge-EDR
OAD for VIIRS Land Surface Albedo IP Software	D39539	OAD-VIIRS-LSA-IP
OAD for VIIRS Surface Reflectance IP Software	D38697	OAD-VIIRS-Surface-Reflectance-IP
OAD for VIIRS Gridding and Granulation Software	D39303	OAD-VIIRS-Gridding-Granulation
OAD for the CrIS SDR Software	D39132	OAD-CrIS-SDR
OAD for ATMS SDR Software	D39309	OAD-ATMS-SDR
OAD for VIIRS SDR Software	D41868	OAD-VIIRS-SDR
OAD for ATMS Remap SDR Software	D41883	OAD-ATMS-Remap
OAD for VIIRS Ground Track Mercator (GTM) Imagery Software	D42815	OAD-VIIRS-GTM-Imagery
OAD for VIIRS Sea Ice Concentration IP Software	D42820	OAD-VIIRS-SeaIceConc-IP
OAD for VIIRS SIQ IP and Surface Temperature IP Software	D42821	OAD-VIIRS-SIQ-IP-STemp-IP
OAD for VIIRS Gridded Surface Albedo (GSA) IP Software	D39538	OAD-VIIRS-GSA-IP
OAD for VIIRS Aerosol Optical Thickness (AOT) EDR Software	D39292	OAD-VIIRS-Aerosols-EDRs
OAD for CrIMSS EDR Software	D37021	OAD-CrIMSS-EDR

Document Title	Doc Number	Collection Short Name
OAD for Gridding and Regridding Software	D41854	OAD-Grid-Regrid
OAD for Common Geolocation Software	D41869	OAD-Cmn-Geo
OAD for VIIRS Land Surface Type IP Software	D39537	OAD-VIIRS-LST-IP
NPOESS EDR Production Report (EDR/PR)	D36957	NPOESS-EDRPR
Field Terminal Segment EDR/PR	D45690	NPOESS-FTS-EDRPR
EDR Interdependency Report (EDR/IR)	D36385	NPOESS-EDRIR
Interface Control Documents (ICD)		
NPOESS to Field Terminal ICD	D34651	NPOESS-Field-Terminal-ICD
NPOESS Common Data Format Control Book – External - Volume I (Overview)	D34862-01	NPOESS-CDFCB–X-Vol-I
NPOESS Common Data Format Control Book – External - Volume II (RDR Formats)	D34862-02	NPOESS-CDFCB-X-Vol-II
NPOESS Common Data Format Control Book – External - Volume III (SDR/TDR Formats)	D34862-03	NPOESS-CDFCB-X-Vol-III
NPOESS Common Data Format Control Book – External - Volume IV - Part I (IPs, ARPs, and Geolocation Data)	D34862-04-01	NPOESS-CDFCB-X-Vol-IV-Part-1
NPOESS Common Data Format Control Book – External - Volume IV - Part 2 (Imagery, Atmospheric, and Cloud EDRs)	D34862-04-02	NPOESS-CDFCB-X-Vol-IV-Part-2
NPOESS Common Data Format Control Book – External - Volume IV - Part 3 (Land and Ocean/Water EDRs)	D34862-04-03	NPOESS-CDFCB-X-Vol-IV-Part-3
NPOESS Common Data Format Control Book – External - Volume IV - Part 4 (Earth Radiation Budget and Space EDRs)	D34862-04-04	NPOESS-CDFCB-X-Vol-IV-Part-4
NPOESS Data Product Profiles	Profile Dependent – See the CDFCB-X Volume I for document number and Collection Short Name convention	
NPOESS Common Data Format Control Book – External - Volume V (Metadata)	D34862-05	NPOESS-CDFCB-X-Vol-V
NPOESS Common Data Format Control Book – External - Volume VI (Ancillary Data, Auxiliary Data, Messages, and Reports)	D34862-06	NPOESS-CDFCB-X-Vol-VI

Document Title	Doc Number	Collection Short Name
NPOESS Common Data Format Control Book – External - Volume VII (Downlink Data Formats)	D34862-07-01	NPOESS-CDFCB-X-Vol-VII-Part-1
NPOESS Common Data Format Control Book – External - Volume VII Part 1 (CrIS Downlink Formats)	D34862-07-02	NPOESS-CDFCB-X-Vol-VII-Part-2
NPOESS Common Data Format Control Book – External - Volume VII Part 2 (OMPS Downlink Formats)	D34862-07-03	NPOESS-CDFCB-X-Vol-VII-Part-3
NPOESS Common Data Format Control Book – External - Volume VII Part 3 (ATMSDownlink Formats)	D34862-07-04	NPOESS-CDFCB-X-Vol-VII-Part-4
NPOESS Common Data Format Control Book – External - Volume VII (VIIRS Downlink Formats)	D34862-07-05	NPOESS-CDFCB-X-Vol-VII-Part-5
NPOESS Common Data Format Control Book – External -Volume VIII (LUTs and Processing Coefficients)	D34862-08	NPOESS-CDFCB-X-Vol-VIII
NPOESS Common Interfaces and Services ICD Volume 1: External	D34659-01	NPOESS-CIS-ICD
NPP Mission Data Format Control Book (MDFCB)	GSFC 429-05-02-42	NPP-MDFCB
NPP Spacecraft High Rate Data (HRD) RFICD to the Direct–Broadcast Stations	GSFC 429-03-02-24	NPP-SC-HRD-RF-ICD
NPP X-Band Data Format ICD	GSFC-429-05-02-102	NPP-X-Band-DFCB
NPOESS Data Mapping	D35853	NPOESS-Data-Mapping
Software Documents		
NPOESS Application Program Interface (API) User's Guide - Volume I (C++)	D41044-01	NPOESS-API-User-Guide-Vol-I
NPOESS Application Program Interface (API) User's Guide - Volume II (Java and Java Messaging Service (JMS))	D41044-02	NPOESS-API-User-Guide-Vol-II
Specifications		
NPOESS System Specification	SY15-0007	NPOESS-System-Spec
Field Terminal Segment Specification	SY10-0004	NPOESS-FTS-Spec

Document Title	Doc Number	Collection Short Name
Data Processing Element Specification	SS23-0051	NPOESS-DPE-Spec
Field Terminal Technical Specification	SS23-0022	NPOESS-FTS-Tech-Spec
Field Terminal Element Specification	SS23-0052	NPOESS-FTE-Spec
System Documents		
NPOESS Acronyms	D35838	NPOESS-Acronyms
NPOESS Glossary	D35836	NPOESS-Glossary

APPENDIX C – DATA MNEMONIC TO INTERFACE MAPPING

See D34862-01, CDFCB-X Volume I, Appendix B for the Data Mnemonic to Interface Mapping.