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Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the Common Algorithms

NOAA / NASA

Goddard Space Flight Center Greenbelt, Maryland

Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the Common Algorithms

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Preface

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

Any questions should be addressed to:

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

Change History Log

Revision	Effective Date	Description of Changes (Reference the CCR & CCB/ERB Approve Date)	Sections Affected
0200-	Feb 12, 2014	This version incorporates **474-CCR-13-1453** which was approved by JPSS Ground ERB on the effective date shown.	
0200-1	Oct 23, 2014	This version incorporates **474-CCR-14-2091** which was approved by the JPSS Ground ERB for CO10 on the effective date shown.	All
0200A	Jan 07, 2015	This version incorporates **474-CCR-14-2101, 474-CCR-14-2110** and **474-CCR-14-2189** which was approved by the JPSS Ground ERB on the effective date shown.	All
0200B	Jul 28, 2015	This version incorporates **474-CCR-14-2288 and 474-CCR-15-2506** which was approved by the JPSS Ground ERB on the effective date shown.	All
0200C	Oct 07, 2015	This version incorporates **474-CCR-15-2579** which was approved by the JPSS Ground ERB on the effective date shown.	All
0200D	Jun 07, 2016	This version incorporates **474-CCR-15-2657 and 474-CCR-16-2939** which was approved by the JPSS Ground ERB on the effective date shown.	All
0200E	Jan 11, 2017	This version incorporates **474-CCR-16-3199** which was approved by the JPSS Ground ERB on the effective date shown.	All
0200F	Aug 03, 2017	This version incorporates **474-CCR-17-3459** which was approved by the JPSS Ground ERB on the effective date shown.	All
G	Aug 26, 2021	This version incorporates 474-CCR-21-5534 which was approved by the JPSS Ground ERB on Jul 12, 2021 and by the JPSS Ground Segment CCB on Jul 29, 2021; 474-CCR-21-5445 which was approved by the JPSS Ground ERB on May 07, 2021 and by the JPSS Ground Segment CCB on the effective date shown.	All
H	Mar 31, 2022	This version incorporates 474-CCR-22-5921 which was approved by the JPSS Ground ERB on Mar 23, 2022 and by the JPSS Ground Segment CCB on the effective date shown.	All
I	Oct 19, 2022	This version incorporates 474-CCR-22-6021 which was approved by the JPSS Ground ERB on Jun 30, 2022 and by the JPSS Ground Segment CCB on Jul 28, 2022; 474-CCR-22-6104 which was approved by the JPSS Ground ERB on Oct 17, 2022 and by the	All

		JPSS Ground Segment CCB on the effective date shown	
J	Aug 30, 2023	This version incorporates 474-CCR-23-6541 which was approved by the JPSS Ground ERB on Aug 21, 2023 and by the JPSS Ground Segment CCB on the effective date shown.	All

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1 INTRODUCTION

1.1 Scope

The Joint Polar Satellite System (JPSS) Algorithm Specification for the Common Algorithms - Volume II: Data Dictionary contains the specifications for the format of the metadata for all data products, as well as defining the format for Data Quality Notices (DQN). This specification includes the format of the Hierarchical Data Format Release 5 (HDF5) files, as well as the product definitions. These formats are available to external users of the JPSS. For an overview of the data product formats, see 474-00001-01, JPSS CDFCB-X Vol I.

1.2 Purpose

This document provides format information that applies broadly to JPSS data products. Metadata describes the content, quality, condition, and other characteristics of the data it is associated with. This document describes the metadata associated with the Joint Polar Satellite System (JPSS) Data Products delivered to external users.

1.3 Organization

Section	Contents
Section 1	Provides information regarding the scope, purpose, and organization of this document, as reference material only.
Section 2	Lists parent documents and related documents that were used as sources of information for this document or that provide additional background information to aid understanding of the interface implementations.
Section 3	JPSS Data Product Profiles - Provides the JPSS Data Product Profile Extensible Markup Language (XML) Schema, and Style Sheet.
Section 4	HDF5 XML User Block for JPSS Data Products - Provides the data format definitions for the XML User Blocks provided within the delivered Hierarchical Data Format Release 5 (HDF5) JPSS Data Product files.
Section 5	JPSS Data Product Metadata - Provides an overview and definitions of the metadata elements provided with the JPSS Data Products.
Section 6	Defines the data format definition for Data Quality Notices.
Section 7	PRO Data Product Generation Database Product Data Format Files- Provides the PRO DPGD Product Data Format Files Extensible Markup Language (XML) Schema from an internal product perspective.
Section 8	Defines the data format definition for Data Quality Threshold Tables.
Appendix A	Examples - Provides examples of the HDF5 metadata, as delivered within the XML User Block of the delivered JPSS Data Products and examples of the JPSS Data Product Profiles. Provides example of XML schema for Data Quality Threshold Tables.
Appendix B	JPSS Delivered Documentation - Provides the listing of the various JPSS documentation which are delivered to the Centrals and the Comprehensive Large Array-data Stewardship System (CLASS).
Appendix C	Provides reference to acronyms and glossary of terms found within the JPSS Program Lexicon (470-00041).

2 RELATED DOCUMENTATION

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

2.1 Parent Documents

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

Document Number	Title
474-00448-01-01	Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirements Specification (SRS) for the Common Algorithms

2.2 Applicable Documents

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

Document Number	Title
None	

3 JPSS DATA PRODUCT PROFILES

Data Mnemonic	DP_NU-L41000-000
Description/ Purpose	JPSS Data Product Profiles provide an XML rendering of the structure of a granule in the JPSS Data Products. See the JPSS CDFCB-X Vol. I, 474-00001-01, for an overview and in-depth explanation of the JPSS Data Product Profiles. The following section provides the JPSS Data Product Profile XML Schema, and Style Sheet. The XML Schema provides 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 Data Dictionaries. In order to utilize the XML Schema or Style Sheet, the user will need to make modifications relevant to their intended use. These modifications are provided in Section 2.3. 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 JPSS Data Product Profiles in the Data Dictionaries. The renderings in the Data Dictionaries 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 JPSS Data Product Profiles, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4
File Size	Varies by product based on number of dataset arrays
File Format Type	XML
Production Frequency	Produced for each JPSS Data Product. Update frequency based on modifications made to the structure of a given JPSS Data Product
Data Content and Data Format	See Table 3-1, JPSS Data Product Profile Format, for details. Section 3.1, JPSS Data Product Profile XML Schema, provides the XML Schema. Section 3.2, JPSS Data Product Profile XML Style Sheet, provides an XML Style Sheet that can be used for rendering the JPSS Data Products Profiles. Section 3.3, JPSS Data Product Profile XML Headers, provides the necessary headers for the XMLs to utilize either the Schema or the Stylesheet. See the JPSS CDFCB-X Vol. I, 474-00001-01, for an overview of the JPSS Product Profiles.

Table: 3-1 JPSS Data Product Profile Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
DataProduct	N/A	Complex Type	Subfields: ProductName CollectionShortName DataProductID ProductData	N/A	Required. A single JPSS Data Product describes all of the DataProduct elements associated with a single "ProductData" Group and JPSS HDF5 file.
ProductName	N/A	String	See the JPSS CDFCB-X Vol. I, 474-00001-01, 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 JPSS CDFCB-X Vol. I, 474-00001-01, Appendix A for a list of the Collection Short Names	N/A	Required. Provides the Collection Short Name as defined by the JPSS CDFCB-X Vol. I, 474-00001-01. This value is used in the HDF5 file for the various Group labels.
DataProductID	N/A	String	See the JPSS CDFCB-X Vol. I, 474-00001-01, Appendix A for a list of DataProduct IDs.	N/A	Required. Provides the Data Product ID as defined in the JPSS CDFCB-X Vol. I, 474-00001-01. This value is also used in the S-NPP/JPSS 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.
DataName	N/A	String	Free Text	N/A	Required. The DataName element provides a description of a dataset found within an JPSS 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.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
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.
DataSize	N/A		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.
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

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
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.
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 JPSS System Specification calls for a validated range over which performance of the S-NPP/JPSS 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 JPSS System Specification calls for a validated range over which performance of the S-NPP/JPSS Data Products are guaranteed.
DataType	N/A	String	See the JPSS CDFCB-X Vol. I, 474-00001-01, 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.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					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.
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.
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	String	Free Text	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

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					flags - this provides the bit value). For Fill Values, this attribute is the value associated with a specific fill condition.

3.1 JPSS Data Product Profile XML Schema

To make use of the Schema, the appropriate file must be saved in the same folder as the XML that uses it, and the header of the XML must be modified as described in Section 3.3.

3.1.1 JPSS Data Product Profile XML Schema

To construct the Schema, copy and paste the content below into a new XML file and save it with the following filename and extension, JPSS_Product_Profile.xsd.

```
<?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/JPSS Data Products XML Schema
	</xs:documentation>
</xs:annotation>
<!-- == NPP/JPSS Data Product Primary Element == -->
<xs:element name="JPSSDataProduct" type="JPSSDataProductType" />
<!-- == NPP/JPSS Data Products Profile == -->
<xs:complexType name="JPSSDataProductType">
	<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:string" 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:string" minOccurs="1" maxOccurs="1" />
</xs:sequence>
</xs:complexType>
</xs:schema>
```

3.2 JPSS Data Product Profile XML Style Sheet

To make use of the Style Sheet, the appropriate file must be saved in the same folder as the XML that uses it, and the header of the XML must be modified as described in 474-00001-06, JPSS Common Data Format Control Book, Volume VI. To construct the Style Sheet, copy and paste the content below into a new XML file and save it with the following filename and extension: JPSS_Product_Profile_StyleSheet.xsl.

```
<?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="JPSSDataProduct">
   <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="JPSSDataProduct">
  <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 Data Product Profile -->
  <h2 align="center">
   Summary of <xsl:value-of select="JPSSDataProduct/ProductName"/>
  </h2>
  <!-- For Each Data Product - Science, Quality Flags, Factors -->
  <xsl:for-each select="JPSSDataProduct/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>
```

3.3 JPSS Data Product Profile XML Headers

The first 2 lines of every Product Profile will be as shown in the Standard (Provided) Header. To modify the XML use the Schema or the Style sheet, replace with the following lines based on need.

Standard (Provided) Header

<?xml version="1.0" encoding="UTF-8"?><?xml-stylesheet type="text/xsl" href="JPSS_Product_Profile_StyleSheet.xsl"?>

<JPSSDataProduct xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="JPSS_Product_Profile.xsd">

Style Sheet Only Header

<?xml version="1.0" encoding="UTF-8"?><?xml-stylesheet type="text/xsl" href="JPSS_Product_Profile_StyleSheet.xsl"?>

<!--<DataProduct xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="
JPSS_Product_Profile.xsd">-->

<DataProduct>

Schema Only Header

<?xml version="1.0" encoding="UTF-8?>

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

<DataProduct xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation=" JPSS_Product_Profile.xsd">

Style Sheet & Schema Header

<?xml version="1.0" encoding="UTF-8?>

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

<DataProduct xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation=" JPSS_Product_Profile.xsd">

4 HDF5 XML USER BLOCK FOR JPSS 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 JPSS 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.

4.1 Raw Data Records (RDR) HDF5 XML User Block

Description/ Purpose	Provides a metadata quick-look into the associated JPSS 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 JPSS Data Product included in the file.
File Format Type	XML header included in an HDF5 file
Data Content and Data Format	See Table 4.1-1, RDR HDF5 XML User Block Format, for details. Section 4.1.1 RDR HDF5 XML User Block Schema, provides the XML schema used for the delivered RDRs.

Table: 4.1-1 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_Short_Name Number_of_Data_Products Data_Product	N/A	
Mission_Name	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
Platform_Short_Name	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 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	
N_Collection_Short_Name	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
Instrument_Short_Name	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
N_Dataset_Type_Tag	N/A	String	RDR	N/A	See Section 5.4 for the details of this element.
N_Processing_Domain	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
AggregateBeginningDate	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
AggregateBeginningOrbitNumber	N/A	Integer	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
AggregateBeginningTime	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
AggregateEndingDate	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
AggregateEndingOrbitNumber	N/A	Integer	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
AggregateEndingTime	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
AggregateBeginningGranuleID	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.
AggregateEndingGranuleID	N/A	String	See Section 5.4 for the details of this element.	N/A	See Section 5.4 for the details of this element.

4.1.1 RDR HDF5 XML User Block Schema

```
<?xml version="1.0"?>
<xsd:schema xmlns:xsd=http://www.w3.org/2001/XMLSchema targetNamespace=”http://RDR XML User Block” xmlns="http://RDR XML User Block">
<!-- == NPP/JPSS HDF5 XML User Block XML Schema == -->
<!-- == NPP/JPSS 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/JPSS HDF5 User Block XML Schema
        </xsd:documentation>
</xsd:annotation>
<!-- == NPP/JPSS 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)>

4.2 Sensor, Temperature, and Environmental Data Records, Geolocation, and Intermediate Products HDF5 XML User Block

Description/ Purpose	Provides a metadata quick-look into the associated JPSS 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, GEOs, and IPs.
File Size	1536 bytes for each JPSS Data Product included in the file.
File Format Type	XML header included in an HDF5 file
Data Content and Data Format	See Table 4.2-1, SDR, TDR, EDR, GEO, and IP HDF5 XML User Block Format, for details. Section 4.2.1, HDF5 SDR, TDR, EDR, GEO, and IP HDF5 XML User Block Schema, provides the XML schema used for the JPSS Data Products excluding the RDRs.

Table: 4.2-1 SDR, TDR, EDR, 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 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element
Platform_Short_Name	N/A	String	See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element
N_GEO_Ref	N/A	String	See Section 5.4 for the details of this element	N/A	See Section 5.4 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
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		See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element
Instrument_Short_Name	N/A	String	See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element
N_Dataset_Type_Tag	N/A	String	SDR TDR IP	N/A	See Section 5.4 for the details of this element

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
			EDR GEO		
N_Processing_Domain	N/A	String	See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element.
AggregateBeginningDate	N/A	String		N/A	See Section 5.4 for the details of this element
AggregateBeginningOrbitNumber	N/A	Integer	See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element
AggregateBeginningTime	N/A	String		N/A	
AggregateEndingDate	N/A	String	See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element
AggregateEndingOrbitNumber	N/A	Integer	See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element
AggregateEndingTime	N/A	String	See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element
AggregateBeginningGranuleID	N/A	String	See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element
AggregateEndingGranuleID	N/A	String	See Section 5.4 for the details of this element	N/A	See Section 5.4 for the details of this element

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

```
<?xml version="1.0"?>
<xsd:schema xmlns:xsd=http://www.w3.org/2001/XMLSchema targetNamespace=http://SDR, TDR, EDR, and IP XML User Block">
<!-- == NPP/JPSS HDF5 XML User Block XML Scema == -->
<!-- == NPP/JPSS HDF5 User Block - Primary Element== -->
<xsd:element name=”HDF_UserBlock” type=”HDF_UserBlockType” />
<!-- == Annotation for this schema == -->
<xsd:annotation>
        <xsd:documentation xmllang=”en”>
                NPP/JPSS HDF5 User Block XML Schema
        </xsd:documentation>
</xsd:annotation>
<!-- == NPP/JPSS 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” />
        </xs: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)>

5 JPSS DATA PRODUCT METADATA

JPSS 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 JPSS implementation of HDF5, see the JPSS CDFCB-X Vol. I, 474-00001-01.

5.1 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 S-NPP and JPSS, unless specified otherwise.

5.2 Metadata-Naming Conventions

The following metadata-naming conventions are used:

- JPSS 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.
- JPSS metadata elements that are aggregate elements (see Table 5.4-4, Metadata Delivered in JPSS Data Products HDF5 Files, for further description) are concatenated together with no delimiters (e.g., AggregateEndingDate).
- JPSS metadata elements that have no FGDC metadata counterparts begin with 'N_' and follow the FGDC-naming conventions (e.g., N_Processing_Domain).

5.3 Metadata Angles

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

5.3.1 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 5.3.1-1, 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

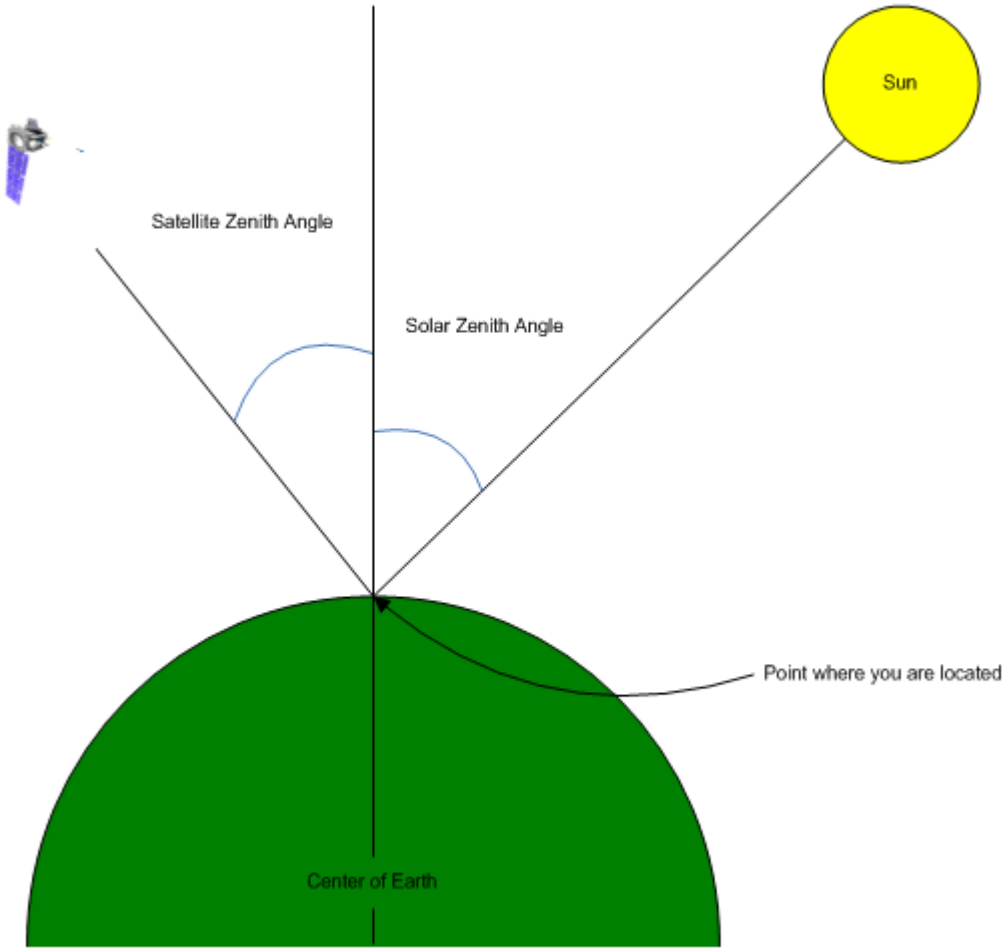

Figure: 5.3.1-1 Zenith Angles

5.3.2 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 5.3.2-1, 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

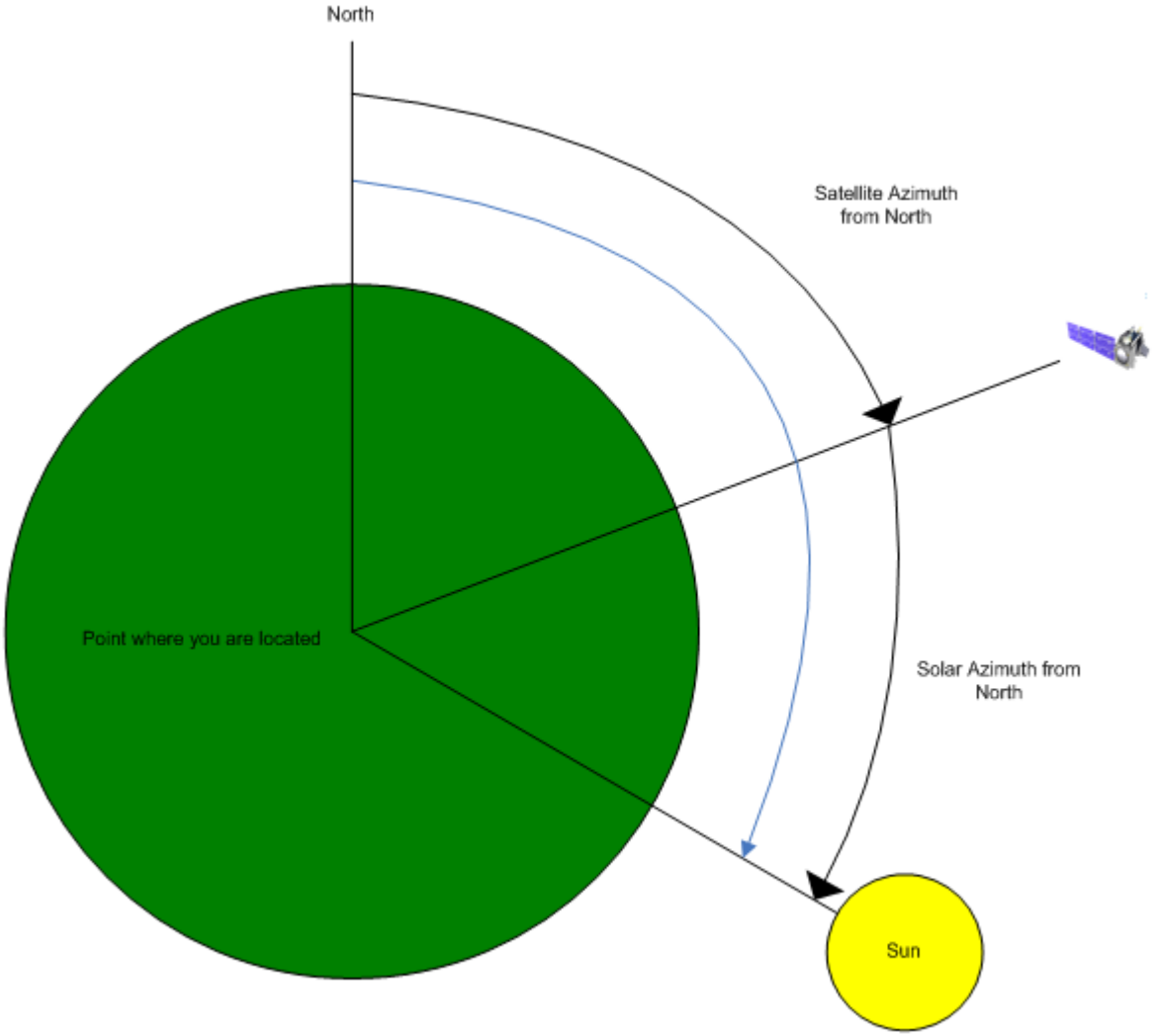

Figure: 5.3.2-1 Azimuth Angles

5.4 Metadata Associated with JPSS Data Products

This section provides information to be used with the S-NPP/ JPSS Data Products, Ancillary Data, and Auxiliary Data HDF5 descriptions. Table 5.4-1, HDF5 Generalized UML Diagrams, contains a listing of the volumes within the SRS and CDFCB-X where the generalized HDF5 Unified Modeling Language (UML) Diagrams can be found.

Table: 5.4-1 HDF5 Generalized UML Diagrams

Product Model	CDFCB-X and SRS Volume
RDR	JPSS Algorithm Specification for ATMS RDR/TDR/SDR Vol. II, 474-00448-02-02 JPSS Algorithm Specification for CrIS RDR/SDR Vol. II, 474-00448-02-03

Product Model	CDFCB-X and SRS Volume
	JPSS Algorithm Specification for OMPS TC RDR/SDR Vol. II, 474-00448-02-04 JPSS Algorithm Specification for OMPS NP RDR/SDR Vol. II, 474-00448-02-05 JPSS Algorithm Specification for VIIRS RDR/SDR Vol. II, 474-00448-02-06 JPSS Algorithm Specification for Common Geolocation and Spacecraft Orientation Vol. II, 474-00448-02-08 JPSS Algorithm Specification for CERES RDR Vol. II, 474-00448-02-09 JPSS Algorithm Specification for OMPS LP RDR Vol. II, 474-00448-02-28 JPSS Algorithm Specification for AMSR-2 RDR Vol. II, 474-00448-02-30 JPSS Algorithm Specification for AMSR-3 RDR Vol. II, 474-00448-02-31
SDR/TDR	JPSS Algorithm Specification for ATMS RDR/TDR/SDR Vol. II, 474-00448-02-02 JPSS Algorithm Specification for CrIS RDR/SDR Vol. II, 474-00448-02-03 JPSS Algorithm Specification for OMPS TC RDR/SDR Vol. II, 474-00448-02-04 JPSS Algorithm Specification for OMPS NP RDR/SDR Vol. II, 474-00448-02-05 JPSS Algorithm Specification for VIIRS RDR/SDR Vol. II, 474-00448-02-06
EDR/IP	JPSS Algorithm Specification for VIIRS Imagery Vol. II, 474-00448-02-26
Geolocation	JPSS CDFCB-X Vol. I, 474-00001-01 JPSS Algorithm Specification for Common Geolocation and Spacecraft Orientation Vol. II, 474-00448-02-08
Ancillary Data	JPSS Algorithm Specification for Ancillary Data Handling, Gridding and Granulation Vol. II, 474-00448-02-01
Auxiliary Data	JPSS CDFCB-X Vol. VI, 474-00001-06 JPSS Algorithm Specification for ATMS RDR/TDR/SDR Vol. II, 474-00448-02-02 JPSS Algorithm Specification for CrIS RDR/SDR Vol. II, 474-00448-02-03 JPSS Algorithm Specification for OMPS TC RDR/SDR Vol. II, 474-00448-02-04 JPSS Algorithm Specification for OMPS NP RDR/SDR Vol. II, 474-00448-02-05 JPSS Algorithm Specification for VIIRS RDR/SDR Vol. II, 474-00448-02-06 JPSS Algorithm Specification for Common Geolocation and Spacecraft Orientation Vol. II, 474-00448-02-08 JPSS Algorithm Specification for VIIRS Imagery Vol. II, 474-00448-02-26

Table 5.4-4, Metadata Delivered in JPSS Data Products, lists HDF5 metadata items that are used to describe JPSS Data Products, Auxiliary Data, and Ancillary Data. IPs 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 5.4-4, Metadata Delivered in JPSS Data Products, is found in Table 5.4-3, Legend for the JPSS Data Product Metadata Table. Some examples are provided in Table 5.4-2, Metadata Presentation Example.

For example, consider the metadata item, N_Dataset_Source. Table 5.4-4, Metadata Delivered in JPSS Data Products, indicates that this element is located in the HDF5_File_RootGroup. The

row for this element from Table 5.4-4, Metadata Delivered in JPSS Data Products, is provided as an example in Table 5.4-2, 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, 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: 5.4-2 Metadata Presentation Example

Name	RDR	SDR/ TDR	EDR/ IP	GEO	AUX	ANC	DQN	Exce ption	HDF5 Data Type	Repe ating	Requ est Crite ria	Definition	Applicable Values	HDF5 Hierarchy
N_Dataset_Source	X	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 JPSS CDFCB-X Vol. I, 474-00001-01, 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: 5.4-3 Legend for the JPSS Data Product Metadata Table

Column Name	Description	Comments
Name	The name of the metadata element.	Element names pre-pended with a 'N_' are JPSS 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	"X" indicates that the element is used in relation to an EDR/IP. 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.	
DQN	"X" indicates that the element is used in relation to a Data Quality Notice.	
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: https://www.hdfgroup.org
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).

Column Name	Description	Comments
Request Criteria	"X" indicates an element that is part of the request criteria for data products.	
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 S-NPP and JPSS. In some instances, there are possible values that are S-NPP or JPSS only.	
HDF5 Hierarchy	Indicates the location that the metadata element may be located in the HDF5 JPSS 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: 5.4-4 Metadata Delivered in JPSS Data Products

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exce ption	HDF5 Data Type	Repe ating	Request Criteria	Definition	Applicable Values	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.	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.	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 JAXA FOC A, the beginning orbit number will be 0 (zero).	Integer >= 0. AggregateBeginningOrbitNumber <= AggregateEndingOrbitNumber Example: 9	A, D, U
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	Expressed as HHMMSS.SSSSSSZ, where HH is hour, MM is minutes and SS.SSSSSS is seconds and decimal fractions of a second (with precision	A, D, U

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													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.	to one microsecond). This is Universal Time (UTC). Example: 101038.325248Z	
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.	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.	A valid GranuleID, per the N_Granule_ID definition. AggregateEndingGranuleID >= AggregateBeginningGranuleID. Example: NPP001212126373	A, D, U
AggregateEndingOrbitNumber	X	X	X	X						H5T_NATIVE_ULLONG (Unsigned 64-bit Integer)			Ending orbit number of an aggregate in an HDF5 file. 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	Integer >= 0. AggregateEndingOrbitNumber >= AggregateBeginningOrbitNumber Example: 9	A, D, U

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													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 JAXA FOC A, the ending orbit number will be 0 (zero).		
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.	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.	Integer > 0 Example: 20	A, D
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.	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 Only populated for VIIRs products. For all	M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M11, M12, M13, M14, M15, M16, I1, I2, I3, I4, I5, NA.	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exce ption	HDF5 Data Type	Repe ating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													other sensor products: N/A Applies only to the following products: All SDR Products 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 M1 Moderate Band Imagery EDR (VIIRS-M1-MOD-EDR) VIIRS M2 Moderate Band Imagery EDR (VIIRS-M2-MOD-EDR) VIIRS M3 Moderate Band Imagery EDR (VIIRS-M3-MOD-EDR) VIIRS M4 Moderate Band Imagery EDR (VIIRS-M4-MOD-EDR) VIIRS M5 Moderate Band Imagery EDR (VIIRS-M5-MOD-EDR) VIIRS M6 Moderate Band Imagery EDR (VIIRS-M6-MOD-EDR) VIIRS M7 Moderate Band Imagery EDR (VIIRS-M7-MOD-EDR) VIIRS M8 Moderate Band Imagery EDR	Example: M2	

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													(VIIRS-M8-MOD-EDR) VIIRS M9 Moderate Band Imagery EDR (VIIRS-M9-MOD-EDR) VIIRS M10 Moderate Band Imagery EDR (VIIRS-M10-MOD-EDR) VIIRS M11 Moderate Band Imagery EDR (VIIRS-M11-MOD-EDR) VIIRS M12 Moderate Band Imagery EDR (VIIRS-M12-MOD-EDR) VIIRS M13 Moderate Band Imagery EDR (VIIRS-M13-MOD-EDR) VIIRS M14 Moderate Band Imagery EDR (VIIRS-M14-MOD-EDR) VIIRS M15 Moderate Band Imagery EDR (VIIRS-M15-MOD-EDR) VIIRS M16 Moderate Band Imagery EDR (VIIRS-M16-MOD-EDR)		
Beginning_Date	X	X	X	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. An overview of timestamps is provided	Expressed as YYYYMMDD, YYYYMM, or YYYY - where YYYY is the year, MM is the month and DD is the day. Example: 20131205	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													in the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.5. Paired with Beginning_Time		
Beginning_Time	X	X	X	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. An overview of timestamps is provided in the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.5. Paired with Beginning_Date	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
Distributor	X	X	X	X	X	X	X	X		H5T_C_S1 (String)			This element designates the distributor of the data.	See the JPSS CDFCB-X Vol. I, 474-00001-01 Section 3.4 for the applicable Origin Identifiers Additional values: arch - distributed by the JPSS Data Archive, the Comprehensive Large Array-data Stewardship System (CLASS) Note: CLASS will change the value to 'arch' only if the file is	R

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
														manipulated by CLASS in some manner. Example: noa-	
East_Bounding_Coordinate		X	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°. The longitude of the point is based on the exit vectors which are assumed to be the center of a pixel. For products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value). The presence of Fill Values are acceptable.	-180.0 <= EastBounding Coordinate <= 180.0 Example: 123.2	G
Ending_Date	X	X	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	Expressed as YYYYMMDD, YYYYMM, or YYYY - where YYYY is the year, MM is the month and DD is the day. Example: 20131205	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													based on the granule collection. An overview of timestamps is provided in the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.5 Paired with Ending_Time		
Ending_Time	X	X	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. This is for individual granules only. For RDRs, the time provided is a predetermined value based on the granule collection. An overview of timestamps is provided in the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.5 Paired with Ending_Date	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
G-Ring_Latitude		X	X	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	-90.0 <= G-Ring_Latitude <= 90.0 Number of G-Ring Points by Sensor: VIIRS - 8 points CrIS - 8 points ATMS - 8 points OMPS Nadir Profile - 8 points OMPS Total Column - 8 points Example: -38.017227	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													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 products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value)		
G-Ring_Longitude		X	X	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	-180.0 <= G-Ring_Longitude <= 180.0 Number of G-Ring Points by Sensor: VIIRS - 8 points CrIS - 8 points ATMS - 8 points OMPS Nadir Profile - 8 points OMPS Total Column - 8 points Example: 75.37696	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													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 products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value)		
Instrument_Short_Name	X	X	X	X	X			X		H5T_C_S1 (String)			The short name, acronym, or other identifier by which the instrument is known.	See the JPSS CDFCB-X Vol. I, 474-00001-01, Appendix D: For spacecraft RDRs (Diary and Telemetry), the value is: SPACECRAFT Example: VIIRS	RDR: P,U,S SDR: P,U,S EDR: P,U,S GEO: P,U,S GridIP: P,U,S DQN: R
Mission_Name	X	X	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. For data products that are not specific to a mission (i.e., ANC and GIPs) these can be marked 'S-NPP/JPSS'.	S-NPP, JPSS, S-NPP/JPSS, GCOM-W, GOSAT-GW Example: S-NPP	R, U

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exce ption	HDF5 Data Type	Repe ating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
N_Algorithm_Version		X	X	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 474-00001-01_B_JPSS CDFCB-X Vol. I Algorithm Version Convention. 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)). **<Science ID>**: Reference to changes in science basis documentation (e.g. Operational Algorithm Document (OAD), Tech Memos) as approved by Algorithm Engineering Review Board (AERB). **<Software ID>:** Reference to full definition of IDPS Code Variations. Intended to reference computer science changes of algorithms.	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
														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 Blank is an acceptable result	File name is created using the JPSS file naming convention for Ancillary data - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the file-naming convention.	G
N_Anc_Type_Tasked			X	X				X		H5T_C_S1 (String)			The designation of the type of Ancillary data (official vs. substitute) used in an EDR computation.	Official Example: Official	P
N_Aux_Filename		X	X	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 AUX. Filename is the auxiliary filename without an extension Note that for VIIRS-RSBAUTOCAL-HISTORY-AUX products, the previous version of the product is not required to be listed in this metadata item. Exception: Non-products AUX files (i.e. Mission Schedule AUX files)	File name is created using the JPSS file naming convention for Auxiliary data - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the file-naming convention. Example: CMNGEO-PARAM-LUT_npp_20111101010000Z_20111101010000Z_ee00000000000000Z_PS-1-N-CCR-11-216-NGAS-002-PE-_noaa_all_all-_all, TLE-AUX_npp_2012110916 2031Z_2012110900001 5Z_ee00000000000000Z_-_c3s-_ops_all-_ops	G
N_Beginning_Orbit_Number	X	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	Integer >= 0 Examples: 0 9 993 1024	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exce ption	HDF5 Data Type	Repe ating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													versions prior to I1.5.06. A default metadata value of 0 will be used for SW versions I1.5.06 and later. For JAXA FOC A, the beginning orbit number will be 0 (zero).		
N_Beginning_Time_IET	X	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. An overview of timestamps is provided in the JPSS CDFCB-X Vol. I, 474-00001-01, 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	X	X		H5T_C_S1 (String)		X	The reference name of the collection of data sets. Datasets include JPSS Data Products, Official Dynamic Ancillary Data, Auxiliary Data, and IDP/FT datasets	See the JPSS CDFCB-X Vol. I, 474-00001-01, Appendix A for the applicable Collection Short Names Example: VIIRS-I2-IMG-EDR	P, G, S, U
N_Creation_Date	X	X	X	X				X		H5T_C_S1 (String)			The date when a specific dataset was produced. Paired with N_Creation_Time	CreationDate > 20050101 Expressed in as YYYYMMDD, where YYYY is the year, MM is the month and DD is the day. Example: 20050320	G, E
N_Creation_Time	X	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	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exce ption	HDF5 Data Type	Repe ating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
														SS.SSSSSS is seconds and decimal fractions of a second (with precision to one microsecond). This is UTC. Example: 010116.809536Z	
N_Dataset_Source	X	X	X	X	X	X	X	X		H5T_C_S1 (String)			The producer of the HDF5 files.	See the JPSS CDFCB-X Vol. I, 474-00001-01 Section 3.4 for the applicable Origin Identifiers Example: noaa	R
N_Dataset_Type_Tag	X	X	X	X	X	X	X	X		H5T_C_S1 (String)			Identifies the type of dataset.	RDR, SDR, TDR, EDR, 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. Applies to all products from this sensor only: SDR --- VIIRS EDR --- VIIRS GEO --- VIIRS	Day, Night, Both Example: Day	G
N_Ending_Time_IET	X	X	X	X		X		X		H5T_NATIVE_ULLONG			The time of the ending of the temporal range of data contained in the	A count of the integer number of microseconds	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
										(Unsigned 64-bit Integer)			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. An overview of timestamps is provided in the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.5	since Epoch date/time of 1/1/58, 12:00 AM. Example: 1422180698809536	
N_GEO_Ref		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 JPSS file naming convention for JPSS Data Products - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the file-naming convention. Example: GIGTO_npp_d20030311_t1400000_e1430000_b12345_c20030311153000000000_navo_dev.h5	R, U
N_Graceful_Degradation		X	X					X		H5T_C_S1 (String)			Indicates that One or more primary inputs necessary for the computation of the product were not available and an alternate input was used One or more S-NPP/JPSS 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	Yes = Product computation is subject to graceful degradation. No = Product is not subject to graceful degradation (normal computation). Example: No	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													and/or N_Input_Prod metadata elements.		
N_Granule_ID	X	X	X	X				X		H5T_C_S1 (String)			The unique identifier for each RDR granule composed of the concatenation of two 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 Spacecraft Base Time, a time near launch. The same granule identifier that is applied to the RDR granule is also used for the SDR/TDR and EDR/IP 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.	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	G, E
N_Granule_Status	X	X	X	X						H5T_C_S1 (String)			Identifies missing granules in an HDF5 file and provides reason. Applicable for Day Only Products: Note: IDP is configured to deliver all 16 Moderate Band EDRs. For additional information on Fill Values and Missing Data - see the CDFCB-X Vol. I, 474-00001-01	Possible Values are: 'Missing at delivery time' '100% night for day only product' 'Variable Granule Length = 0' 'N/A'	G, E
N_Granule_Version	X	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,	For RDRs: A[1..n] The 1..n value is incremented every time the granule is updated For all other granules:	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exce ption	HDF5 Data Type	Repe ating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													or a manual execution of a granule. This element provides the state of the version (Automatic execution, Commanded re-execution, or Manual execution and allowable combinations thereof) along with identification number.	A[1..n][C|M]$^{0..1}$[Identifier]$^{0..1}$[.s]$^{0..1}$ 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 Examples: A1, A1M, A1C	
N_HDF_Creation_Date	X	X	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	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_IDPS_Mode	X	X	X	X				X		H5T_C_S1 (String)			Defines the mode that the system was in at the time the data was produced. Value depends on domain, observation time, and	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for applicable domains. Example: ops	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													any transitions that are defined in the Infrastructure.		
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 for Cross-Granule Implementation: VIIRS-MOD-RGEO:NPP001212022917:A1 Example for Extended Granules Implementation: VIIRS-MOD-RGEO:NPP001212022917:A1(Ext,-NPP001212022063,+NPP001212023770).	G
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 The associated instrument name is provided by the Instrument_Short_Name metadata element. Example: 0	P
N_LEOA_Flag	X	X	X	X	X					H5T_C_S1 (String)			Defines LEOA (Launch, Early Operations, and Activation) state for each applicable S-NPP/JPSS Data Product on a product by product basis. Set to ‘On‘ during LEOA state for an S-NPP/JPSS Data Product. Set to ’Off ‘ for each JPSS Data Product that is operating normally (not in LEOA).	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	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
														N_Collection_Short_Name. Example: Off	
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.	-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.	-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.	-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.	-180.0 <= NadirLongitude < 180.0 Example: 57.730972	G
N_JPSS_Document_Ref	X	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 SRS DD, CDFCB-X, JPSS Data Product Profile XML, and OAD filenames For RDRs: This does not have XML Product Profiles or OADS associated with them. For IPs: This attribute only includes references to the relevant SRS DD and the relevant OADs.	Array of file names - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the relevant conventions. Example: 474-00001-01_JPSS CDFCB-X-Vol.-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.	Integer >= 0	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
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 JPSS Algorithm Specification Vol. II-RDRs, 474-00448-02-02 through -06, -08, -09, -28, -30, -31. 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 JPSS CDFCB-X Vol. I, 474-00001-01, for applicable Fill Values. 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	0.0 <= N_Percent_Erroneous_Data <= 100.0 Example: 0.0	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													Onboard Pixel Trim On-Ground Pixel Trim Computed as: (Number of Erroneous Pixels / Total Number of Pixels) x 100 Note: Does not apply to products which contain only bit-level data. Does not apply to the following product: VIIRS Bright Pixel 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 JPSS CDFCB-X Vol. I, 474-00001-01, for applicable Fill Values. For RDRs, this value is the percentage of packets missing from the expected number for the RDR. For some RDR types, the expected number is static to support worst case timing or asynchronous packet types. The static value is calculated from values in IDPS Configuration Guides. Other RDR types account for dynamic components such as timestamp variability, Day vs Night mode differences, and temporary modes. For these RDRs, the number of expected packets starts with the configuration guide calculation and is	0.0<= N_Percent_Missing_Data <= 100.0 Example: 0.0	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													adjusted as data is received to account for the state of these components. For SDR/TDRs and EDR/IPs this value is precise and 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 Missing Pixels / Total Number of Pixels) x 100 Exception: Does not apply to those products listed below which contain only bit-level data. Does not apply to the following product: VIIRS Bright Pixel IP		
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 JPSS CDFCB-X Vol. I, 474-00001-01, for applicable Fill Values. Note: this calculation also excludes the	0.0 <= N_Percent_Not-Applicable_Data <= 100.0 Example: 75.80124	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													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. Does not apply to the following product: VIIRS Bright Pixel IP		
N_Processing_Domain	X	X	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 JPSS Program. For users of data from the archive, this attribute will be ops.	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for applicable domains. Example: ops	P, G, S, U
N_Primary_Label	X	X	X	X	X	X		X		H5T_C_S1 (String)			Defines the labeling of JPSS Data Products as primary or non-primary. All products delivered are labeled xDR, GEO, DQN, AUX (produced by CGS), and tile products.	Primary, Non-Primary Example: Primary	G
N_Quality_Summary_Names		X	X	X					X	H5T_C_S1 (String)			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	See the relevant data format definition for a given JPSS Data Product for the elements provided for a specific data product Example: Summary Imagery Quality	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													relevant product in the relevant Data Dictionary for the data product, 474-00448-02-xx. Does not apply to the following products: SDR's: OMPS NP SDR(OMPS-NP-SDR) OMPS TC SDR(OMPS-TC-SDR).		
N_Quality_Summary_Values		X	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 SRS DD. Does not apply to the following products: SDR's: OMPS NP SDR(OMPS-NP-SDR) OMPS TC SDR(OMPS-TC-SDR)	See the relevant data format definition for a given JPSS Data Product for the elements provided for a specific data product Example: 75	G
N_Reference_ID	X	X	X	X	X	X	X	X		H5T_C_S1 (String)			The unique identifier for JPSS Data Product granules, Auxiliary files, and Ancillary files: <CSN>:<N_Granule_ID>:<N_Granule_Version> For data types that do not have Granule ID or Granule Version (AUX , ANC) the output is <CSN>:N/A:N/A.	Example: VIIRS-DNB-SDR:NPP001212022917:A1	G, E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
N_RSB_Index		X							X	H5T_NATIVE_INT (32-bit Integer)			This metadata item shows the RSB Auto Cal History Aux file index from which the data was drawn for the SDR. This index is not applicable when RSB Auto Cal processing is disabled. Applies to all products from this sensor only: SDR --- VIIRS	Applicable values are 0 -19, or the NA Fill value when RSB AutoCal processing is disabled This metadata item is only produced for VIIRS SDRs.	G
N_Satellite/Local_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 to the satellite, measured in degrees eastward from north. Maximum value over the granule.	-180.0 <= N_Satellite/Local_Azimuth_Angle_Max <= 180.0 N_Satellite/Local_Azimuth_Angle_Min >= N_Satellite/Local_Azimuth_Angle_Max Example: 143.2	G
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.	-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.	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.	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
N_Software_Version	X	X	X	X	X	X				H5T_C_S1 (String)			Version of IDPS software that created the Data Product.	The IDPS software version is provided as defined in the JPSS	RDR: G,E

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													For the RDR, SDR, TDR, EDR, IP, 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.	CDFCB-X Vol. I, 474-00001-01, Section 3.4 Example: I1.5.03.04	SDR: G,E EDR: G,E GEO: G,E AUX: R
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.	-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.	-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
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.	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.	0.0 <= SolarZenithAngle <= 180.0 Solar_Zenith_Angle_Min <= Solar_Zenith_Angle_Max Example: 143.2	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
N_Spacecraft_Maneuver		X	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.	Ordered from lowest to highest impact: Normal Operations Orbit Correction Maneuver Calibration Maneuver Unknown Example: Normal Operations	G
North_Bounding_Coordinate		X	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 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 products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not	-90.0 <= NorthBoundingCoordinate <= 90.0 NorthBoundingCoordinate >= SouthBoundingCoordinate. Example: 34.2	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
													applicable (= Default value) The presence of Fill Values are acceptable.		
Operational_Mode		X	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.	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, <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	P
Platform_Short_Name	X	X	X	X	X	X		X		H5T_C_S1 (String)		X	An acronym, or shorter form of the platform name, used to identify the platform name.	NPP, J01, J02, GW1, GGW, CMN	R, U

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
South_Bounding_Coordinate		X	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 products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value) The presence of Fill Values are acceptable.	-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	X					H5T_NATIVE_FLOAT			The longitude of the point (in decimal degrees) in the coverage area furthest along a westerly direction from	-180.0 <= WestBoundingCoordinate <= 180.0 Degrees Example: 132.2	G

Name	RDR	SDR/ TDR	EDR/ IP	GEO	Grid IP	AUX	ANC	DQN	Exception	HDF5 Data Type	Repeating	Request Criteria	Definition	Applicable Values	HDF5 Hierarchy
										(32-bit Floating Point)			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. 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 products without earth geolocated observations, (e.g. OMPS Calibration) this attribute is not applicable (= Default value) The presence of Fill Values are acceptable.		

5.4.1 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 JPSS CDFCB-X Vol. I, 474-00001-01, for more information regarding missing granules). Table 5.4.1-1, Metadata Default Values, provides the default values for the metadata by datatype.

Table: 5.4.1-1 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

5.5 JPSS Data Product Traceability

In order to support JPSS anomaly investigation and resolution, the JPSS 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 JPSS Data Product instance in order to investigate system and processing anomalies. The metadata and filenames of the various data elements used in generating JPSS Data Products can be used to trace and understand the lineage of a given data product. The traceability provided within the JPSS 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 JPSS 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)
- Intermediate Products (IP) [both delivered and not delivered]
- Ancillary Data
- Auxiliary Data

Figure 5.5-1, JPSS Data Product Notional Processing, provides a notional depiction of a processing chain used to create JPSS 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 JPSS 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.

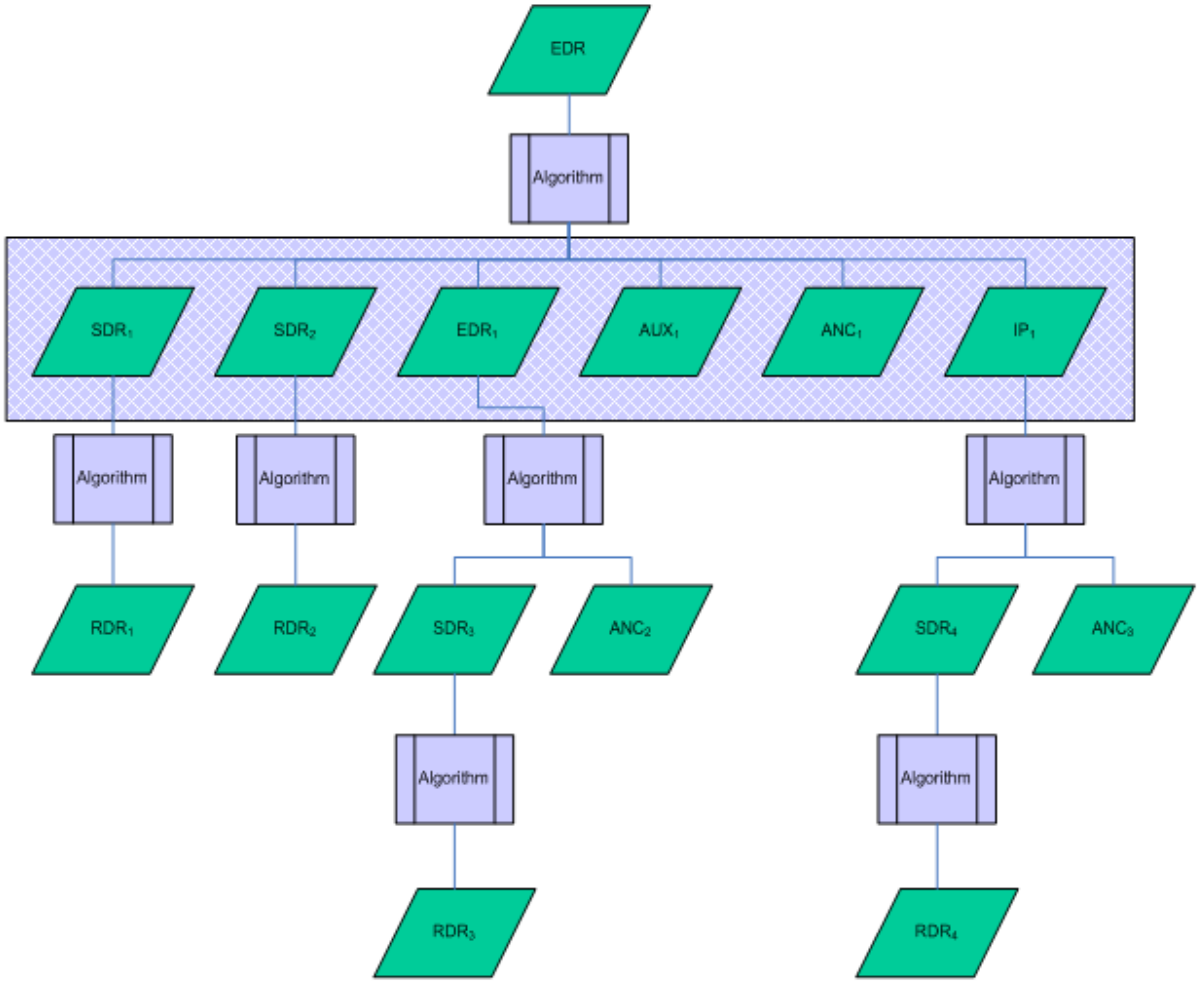

Figure: 5.5-1 JPSS Data Product Notional Processing

The JPSS 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 JPSS 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 5.5-4, Graphical Traceability, provides a conceptual example of how input data tracing is identified. Assume that an EDR is produced using JPSS 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

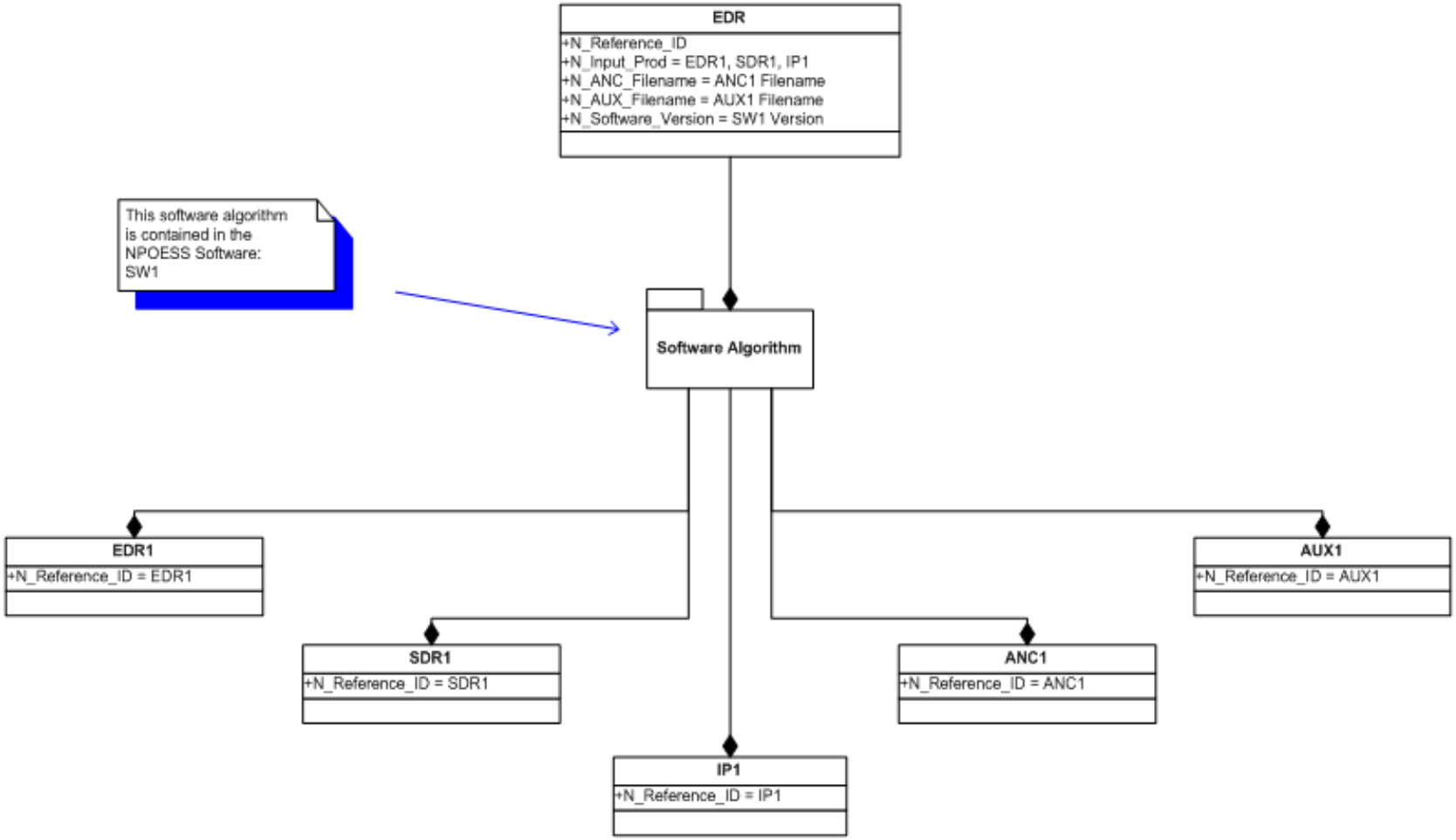

Figure: 5.5-2 Graphical of Traceability

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 JPSS 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 JPSS CDFCB-X Vol. I, 474-00001-01.

6 DATA QUALITY NOTIFICATIONS

6.1 DQN Data Overview

Data Mnemonic	DP_NU-L00510-000
Description/ Purpose	Data Quality Notification (DQN) is a special IDPS data product that is associated with an SDR/TDR, EDR or IP. During IDPS data product processing and product generation, a notification that the quality of a product has exceeded a pre-determined set of data quality thresholds is captured in a DQN. DQNs are only produced if one or more data quality thresholds are violated. A single, unique DQN is produced per granule per product. The N_Reference_ID metadata in each DQN can be used to determine the unique combination of product collection short name (CSN), granule ID, and granule version that generated the DQN. The CSN in the DQN N_Reference_ID metadata contains the CSN of the offending xDR appended with "-DQN" (e.g. a DQN with N_Reference_ID of "VIIRS-CM-EDR-DQN: <GranuleID>:<GranuleVersion>" was generated by VIIRS-CM-EDR with granule ID equal to <GranuleID> and granule version equal to <GranuleVersion>). The following sections define DQNs and describe associated metadata. DQNs have associated metadata as defined in Table 5.4-4. DQNs contain information for real-time notifications (during product generation). A Status Message, PRO_QUAL_NOT, is also sent to the IDP Operator and the IDPS Situational Awareness Health Monitor when a product has one or more DQNs generated. The complete DQN message, known as the DQN dataset, consists of a DQN Header and 25 DQN Records. The DQN Header contains information to identify the DQN as well as the number of test result records or DQN Records that are populated in the DQN. It also contains the version of the DQTT that was used to generate the DQN. If only one test threshold is exceeded then the complete DQN would still have 25 DQN Records, but only one of those records will be populated with the failed test information. If 5 test thresholds are exceeded then 5 records would be populated and so forth. All unpopulated DQN records are initialized with fill values. The Algorithm Specifications define two types of granule level quality flags that may trigger DQNs: single valued quality flags and multiple valued bit-mapped quality flags. The bit-mapped quality flags contain the result of multiple quality tests. Each bit in the quality flag may represent the results of a quality test performed on the granule. However, from a DQN point of view each of these bit-mapped quality flags is a single unit; thus, if a DQN is generated for any part of a bit-mapped flag the entire bit-mapped flag results in populating only a single DQN Record. The number of failed bits required to trigger a DQN is configurable. If the configured number of bits or greater has failed in a bit-mapped quality flag then a DQN is triggered for that quality flag, but the entire flag will populate a single DQN record.
File-Naming Construct	DQN uses the filenaming convention as defined in 474-00001-01_JPSS-CDFCB-X-Vol-I Section 4.4-1 with the exception that the first 5 characters will

	actually be six characters as defined in Table 6.1-4, DQN First 6 Characters of File Naming Convention
File Size	< 100 KB
File Format Type	HDF5
Production Frequency	Varies (based on frequency that thresholds are exceeded)
Data Content and Data Format	See Tables 6,1-1, 6.1-2 and 6.1-3 as well as Section 6.2.

The DQN Header is defined in Table 6.1-1, "DQN Header". The DQN Record is defined in Table 6.1-2, "DQN Record". A complete DQN Dataset is shown in Table 6.1-3, "DQN Dataset".

Table: 6.1-1 DQN Header

Field	Name	Definition	Data Format	Size	Total Size (bytes)
dqttVersion	dqttVersion string	DQTT Version String	char	36 bytes	36
URID	URID string	UR Identifier string of the product that generated this DQN	char	32 bytes	32
testCount	testCount	The number of tests that generated a DQN for this product. Is synonymous with the number of populated DQN Records in this DQN.	UInt32	4 bytes	4
Total Data Size 72					

Table: 6.1-2 DQN Record

Name	Definition	Data Format	Size	Total Size (bytes)
testID	The unique quality test identification number defined in Appendix B/C of the various Data Dictionaries, 474-00448-02-02 through -30).	UInt32	4 bytes	4
valueMax	Maximum value allowed for this test. Matches DQTT threshold maximum value. Null if N/A due to test type.	Float32	4 bytes	4
valueMin	Minimum value allowed for this test. Matches DQTT threshold minimum value. Null if N/A due to test type.	Float32	4 bytes	4
thresholdTestCount	The number of times that a threshold check (max, min or range) must fail before a DQN is generated. Matches DQTT thresholdcount value.	Int32	4 bytes	4
thresholdTestResults	The data value that triggered this DQN if single-valued, ie.	Float32	4 bytes	4

Name	Definition	Data Format	Size	Total Size (bytes)
	thresholdTestCount is equal to 1. Null if thresholdTestCount is greater than 1.			
dqnInfo string	The message string associated with a test containing the algorithm, the type of check, min/max threshold values, and the count of pixels which met the test criteria.	char	256 bytes	256
severityLevel	The severity level of the DQN.	string	12 bytes	12
Total Data Size 288				

Table: 6.1-3 DQN Dataset

Object	Number of Objects	Size Each Object	Total Size (bytes)
DQN Header	1	72 bytes	72
DQN Record	25	288 bytes	7200
Total Data Size 7272			

Table: 6.1-4 DQN First 6 Characters of File Naming Convention

ID	Collection Short Name
DQN002	ATMS-SDR-DQN
DQN003	ATMS-TDR-DQN
DQN012	CrIS-FS-SDR-DQN
DQN044	VIIRS-DNB-SDR-DQN
DQN045	VIIRS-I1-IMG-EDR-DQN
DQN047	VIIRS-I1-SDR-DQN
DQN048	VIIRS-I2-IMG-EDR-DQN
DQN050	VIIRS-I2-SDR-DQN
DQN051	VIIRS-I3-IMG-EDR-DQN
DQN053	VIIRS-I3-SDR-DQN
DQN054	VIIRS-I4-IMG-EDR-DQN
DQN056	VIIRS-I4-SDR-DQN
DQN057	VIIRS-I5-IMG-EDR-DQN
DQN059	VIIRS-I5-SDR-DQN
DQN064	VIIRS-M10-SDR-DQN
DQN065	VIIRS-M11-SDR-DQN
DQN066	VIIRS-M12-SDR-DQN
DQN067	VIIRS-M13-SDR-DQN
DQN068	VIIRS-M14-SDR-DQN
DQN069	VIIRS-M15-SDR-DQN
DQN070	VIIRS-M16-SDR-DQN
DQN071	VIIRS-M1-SDR-DQN
DQN072	VIIRS-M2-SDR-DQN
DQN073	VIIRS-M3-SDR-DQN
DQN074	VIIRS-M4-SDR-DQN
DQN075	VIIRS-M5-SDR-DQN

ID	Collection Short Name
DQN076	VIIRS-M6-SDR-DQN
DQN077	VIIRS-M7-SDR-DQN
DQN078	VIIRS-M8-SDR-DQN
DQN079	VIIRS-M9-SDR-DQN
DQN080	VIIRS-NCC-EDR-DQN

6.2 DQN HDF5 Structure

Note: As delivered, the DQN is in the form of a binary, large object (BLOB), with a single dataset (DataBytes_n), of unsigned char data type.

(Root Group)

/

Attribute	Type
Instrument_Short_Name	H_STR
Mission_Name	H_STR
N_HDF_Creation_Date	H_STR
N_HDF_Creation_Time	H_STR
N_Dataset_Source	H_STR
Platform_Short_Name	H_STR

(All Data Group)

/All_Data
(DQN Collection Short Name_All Group)
/All_Data/<Collection_Short_Name>_All/
(DQN data Dataset)
/All_Data/<Collection_Short_Name>_All/>/ DataBytes_n

(Data Products Group)

/Data_Products

(Product Group)

/Data_Products/<Collection Short Name>: H_G

Attribute	Type
N_Anc_Type_Tasked	H_STR
N_Collection_Short_Name	H_STR
N_Dataset_Type_Tag	H_STR
N_Processing_Domain	H_STR
Operational_Mode	H_STR

(Object Dataset)

/Data_Products/<DQN Collection Short Name>/ObjectRef_n:H_RO

Attribute	Type
Beginning_Date	H_STR
Beginning_Time	H_STR

Attribute	Type
Ending_Date	H_STR
Ending_Time	H_STR
G-Ring_Latitude	H_F (array)
G-Ring_Longitude	H_F (array)
N_Algorithm_Version	H_STR (array)
N_Beginning_Orbit_Number	H_ILLU
N_Beginning_Time_IET	H_ILL
N_Creation_Date	H_STR
N_Creation_Time	H_STR
N_Ending_Time_IET	H_ILL
N_Graceful_Degradation	H_STR
N_Granule_ID	H_STR
N_Granule_Version	H_STR
N_IDPS_Mode	H_STR
N_Primary_Label	H_STR
N_Reference_ID	H_STR
N_Spacecraft_Maneuver	H_STR

7 DATA PRODUCT GENERATION DATABASE PRODUCT FORMAT FILES

Description/ Purpose	Data Product Generation Database (DPGD) Product Format Files provide an XML rendering of the structure of internal PRO Data Products. The following section provides the internal Product definition XML Schema.
File-Naming Construct	See the File-Naming Convention for JPSS Data Product Profiles, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4
File Size	Varies by product based on number of dataset arrays
File Format Type	XML
Production Frequency	Produced for each internal DPGD Product Format File.
Data Content and Data Format	See Table 7-1, DPGD Product Format

Table: 7-1 DPGD Product Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
DataProduct	N/A	Complex Type	Subfields: ProductName Comments CollectionShortName DataProductID ProductProperties ProductData	N/A	Required. A single Data Product describes all of the DataProduct elements associated with a single "ProductData" Group and HDF5 file.
ProductName	N/A	string	See the JPSS CDFCB-X Vol. I, 474-00001-01, 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.
Comments	N/A	string	Free Text.	N/A	Optional. Comments elements stores comment information that will be used in the generated code headers. New lines are preserved in Comments tags.
CollectionShortName	N/A	string	See the JPSS CDFCB-X Vol. I, 474-00001-01, Appendix A for a list of the Collection Short Names	N/A	Required. Provides the Collection Short Name as defined by the JPSS CDFCB-X Vol. I, 474-00001-01. This value is used in the HDF5 file for the various Group labels.
DataProductID	N/A	string	See the JPSS CDFCB-X Vol. I, 474-00001-01, Appendix A for a list of DataProduct IDs.	N/A	Required. Provides the Data Product ID as defined in the JPSS CDFCB-X Vol. I, 474-00001-01. This value is also used in the Data Products HDF5 filename construct.
ProductProperties	N/A	Complex Type	Subfields: ProductGroupName ProductType	N/A	Required. The ProductProperties element describes the various non-format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
			ProductSubType ProductDictionary ExtraScans MemoryAlignment ProductStructName GenerateCppStructures GenerateFortranStructures GenerateDocumentation HdfPackaging ProductScaling ShellStatus AuxTemporalProduct Metadata SubstituteProduct ProvenanceEntryList		related information stored in the Product Definition XML files.
ProductGroupName	N/A	string	Free Text.	N/A	Required. The ProductGroupName element provides the Product Group Name used for this product by the Algorithm Configuration files.
ProductType	N/A	string	ANC, ANC-Int, AUX, AUX-Int, AUX-Ext, DQN, EDR, GEO, IP, RDR, SDR, TDR, or Verified-RDR	N/A	Required. The ProductType element defines the data type of the Product
ProductSubType	N/A	string	None, ANC-Dynamic, ANC-Static, AUX-DQTT, AUX-LUT, AUX-PCT	N/A	Required. The ProductSubType element is used to further classify sub-types of certain data types. "None" - No sub-type. General product of the defined ProductType. "ANC-Dynamic" - This is a dynamic ANC product. "ANC-Static" - This is a static ANC product. "AUX-DQTT" - This is a DQTT product (Used to package binary

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					data for this product in the correct tar file). "AUX-LUT" - This is a Look-Up Table product (Used to package binary data for this product in the correct tar file). "AUX-PCT" - This is a Processing Coefficients product (Used to package binary data for this product in the correct tar file).
ProductDictionary	N/A	string	AMSR2, AMSR3, ANC, CERES, ATMS, OMPS-LP, OMPS-NP, OMPS-TC, SCIENCE, VIIRS, VIIRS-Verified-RDR, or N/A	N/A	Required. The ProductDictionary element defines what PRO dictionary this product should be a part of. Note that ATMS and CrIS products are currently part of the ATMS dictionary.
ExtraScans	N/A	integer	Valid integer > 0	N/A	Required. The ExtraScans element defines the number of extra scans are used by this product for extended granules. Note that this value needs to be kept in sync with the ExtendedScans value in the Algorithm Configuration guide that produce this product.
MemoryAlignment	N/A	string	Natural or Packed	N/A	Required. The MemoryAlignment element defines how the fields in the product are aligned.
ProductStructName	N/A	string	A valid C++ and Fortran structure name conforming to the following pattern: "[a-zA-Z][a-zA-Z0-9_]*"	N/A	Required. The ProductStructName element defines name of the structures generated by this Product Definition if generation of C++ or Fortran structures is turned on.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
GenerateCppStructures	N/A	boolean	False or True	N/A	Required. The GenerateCppStrutures element indicates whether C++ code headers and dictionary entries for this structure should automatically be generated.
GenerateFortranStructures	N/A	boolean	False or True.	N/A	Required. The GenerateFortranStrutures element indicates whether Fortran structures for this structure should automatically be generated.
GenerateDocumentation	N/A	string	Internal or External	N/A	Required. The GenerateDocumentation element defines where documentation for the production should be generated. "Internal" - Documentation tables not needed for official documentation files. "External" - Documentation tables are used in official documentation files.
HdfPackaging	N/A	string	None, BLOB, Formatted, Native	N/A	Required. The HdfPackaging element defines what style of packaging should be done on delievered product. "None" - Product is not delivered "BLOB" - Product is packaged as a binary BLOB "Formatted" - Product is packaged with format information maintained. "Native" - Product is delivered in its native state (not packaged but delivered).
ProductScaling	N/A	string	None, Scaled, Unscaled	N/A	Required.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					The ProductScaling element defines if any scaling or unscaling is done to this product. "None" - This product is not scaled. "Scaled" - This is a scaled version of a produced product. A cooresponding Unscaled version of this product should exist. "Unscaled" - This is an unscaled version of a produced product. A corresponding Scaled version of this product should exist.
ShellStatus	N/A	boolean	False or True.	N/A	Required. The ShellStatus element indicates whether or not Shell versions of this product can be produced.
AuxTemporalProduct	N/A	boolean	False or True.	N/A	Required. The AuxTemporalProduct element indicates whether or not this product is a temporally bound AUX product. This information can be used to package the appropriate data for a given time range.
Metadata	N/A	Complex Type	Subfields: DocumentRefList QualitySummaryList	N/A	Required. The Metadata element defines Metadata information about this product.
DocumentRefList	N/A	Complex Type	Subfields: DocumentRef	N/A	Required. The DocumentRefList element contains a list of documentation files associated with this product. Used for generation of a DDS configuration file.
DocumentRef	N/A	string	Free Text	N/A	Optional, repeating.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					The DocumentRef element contains the name of an official document associated with this product.
QualitySummaryList	N/A	Complex Type	Subfields: QualitySummary	N/A	Required. The QualitySummaryList element contains a list of Quality Summary Metadata elements associated with this product. Used for generation of a documentation table for this product, but is NOT currently tied to software that creates this metadata.
QualitySummary	N/A	Complex Type	Subfields: Name Value Description Comments	N/A	Optional, repeating. The QualitySummary element contains information about a single Quality Summary Metadata item associated with this product.
Name	N/A	string	Free Text	N/A	Required. Name of the Quality Summary Metadata item.
Value	N/A	string	Free Text	N/A	Required. Valid range of values for this Quality Summary Metadata item.
Description	N/A	string	Free Text	N/A	Required. Description of the Quality Summary Metadata item. Note that whitespace is preserved in this element.
Comments	N/A	string	Free Text.	N/A	Required. Comments elements stores comment information that will be used in the generated code headers. New lines are preserved in Comments tags.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
ProvenanceEntryList	N/A	Complex Type	Subfields: ProvenanceEntry	N/A	Optional. The ProvenanceEntryList element contains a list of Provenance Entries for the binary data associated with this product (as applicable).
ProvenanceEntry	N/A	Complex Type	Subfields: RevisionDate Source ProvenanceVersionID BuildIdentifier Spacecraft Md5sum Notes	N/A	Required, repeating. The ProvenanceEntry element contains information about a single Provenance Entry for the binary data associated with this product (as applicable).
RevisionDate	N/A	date	Valid Date (YYYY-MM-DD)	N/A	Required. Date of the update associated with this Provenance Entry.
Source	N/A	Complex Type	Subfields: EcrNumber SourceVersion TechMemo SourceFiles	N/A	Required. Contains information about the source of the data associated with this Provenance Entry.
EcrNumber	N/A	string	Free Text	N/A	Required. Provides the ECR number associated with the update. May be "None".
SourceVersion	N/A	string	Free Text	N/A	Required. Identifies the SCM VOB identifier containing the science drop source data. May be "N/A".
TechMemo	N/A	string	Free Text	N/A	Required. Identifies the technical memo by Identifier. May be "None".
SourceFiles	N/A	Complex Type	Subfields: FileName	N/A	Required.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					Contains a list of source files used to generate the data associated with this Provenance Entry.
FileName	N/A	string	File Name	N/A	Optional, repeating. Name of the source file translated to create the LUT. May be "N/A" if no translation or name change was required.
ProvenanceVersionID	N/A	string	See the Version ID Description of the File-Naming Convention for Auxiliary or Ancillary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 or 3.5.	N/A	Required. Version ID for this Provenance Entry.
BuildIdentifier	N/A	string	Free Text	N/A	Required. Configuration Management Build Identifier of initial version release.
Spacecraft	N/A	string	NPP, J01, J02, GW1, GGW	N/A	Required, repeating. Defines which Spacecraft this Provenance Entry applies to.
Md5sum	N/A	string	Free Text	N/A	Required. MD5SUM of deployed file for the version defined in this section. May be "N/A"
Notes	N/A	string	Free Text	N/A	Required. Description of the source changes and applicability of the version defined in this section.
ProductData	N/A	Complex Type	Subfields: DataName ProductFieldType NumberOfFields Field	N/A	Required, repeating. The ProductData element describes the various groupings of data included within the HDF5 ProductData set.
DataName	N/A	string	Free Text	N/A	Required. The DataName element provides a description of a dataset found within a JPSS HDF5 file. This

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					field is used for rendering purposes.
ProductFieldType	N/A	string	Regular, Quality, or ScaleFactors	N/A	Required. Defines which type of profile information this ProductData contains. "Regular" - Contains product profile information for general fields. "Quality" - Contains product profile information for quality flag fields. "ScaleFactors" - Contains product profile information for Scale Factors fields.
NumberOfFields	N/A	integer	Valid Integer >= 0	N/A	Required. Number of Fields in this ProductData.
Field	N/A	Complex Type	Subfields: Name Symbol Comments FieldOffset PadField NumberOfDimensions Dimension DictionaryMask InitialFill DataType DictionaryDataType DataSize NumberOfData Datum	N/A	Optional, 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	Required. Names apply to distinct information units for comparison, data handling, and reference.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
Symbol	N/A	string	A valid C++ and Fortran variable name conforming to the following pattern: "[a-zA-Z][a-zA-Z0-9_]*"	N/A	Required. Defines the name of the variable used to for this element if generation of C++ or Fortran structures is turned on.
Comments	N/A	string	Free Text.	N/A	Optional. Comments elements stores comment information that will be used in the generated code headers. New lines are preserved in Comments tags.
FieldOffset	N/A	integer	Valid Integer >= 0	N/A	Required. The Offset element identifies the index for the start of this element within its parent.
PadField	N/A	boolean	False or True	N/A	Optional. Defines whether or not this a Pad Field. Used by EBX editor to automatically add or removing padding as needed.
NumberOfDimensions	N/A	integer	Valid Integer >= 0	N/A	Required. Number of Dimensions for this Field.
Dimension	N/A	Complex Type	Subfields: Name Symbol Comments GranuleBoundary Dynamic MinIndex MaxIndex	N/A	Optional, repeating. The Dimension element defines the rank characteristics of multi-dimensional array products within Field elements and ProductData elements.
Name	N/A	string	Free Text	N/A	Required. Names apply to distinct information units for comparison, data handling, and reference.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
Symbol	N/A	string	A valid C++ and Fortran variable name conforming to the following pattern: "[a-zA-Z][a-zA-Z0-9_]*"	N/A	Required. Defines the name of the variable used to for this element if generation of C++ or Fortran structures is turned on.
Comments	N/A	string	Free Text	N/A	Optional. Comments elements stores comment information that will be used in the generated code headers. New lines are preserved in Comments tags.
GranuleBoundary	N/A	boolean	False or True	N/A	Required. 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. "True" is a granule boundary "False" is not a granule boundary
Dynamic	N/A	boolean	False or True	N/A	Required. The Dimension(s) may be either static or dynamic. "True" is a dynamic element "False" is a static element.
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

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					minimum number of values expected for the named index value. This element occurs only once for each Dimension 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.
DictionaryMask	N/A	string	PROCMN_DICT_NO_FILTER_MASK, PROCMN_DICT_DEGTORAD_MASK, PROCMN_DICT_SCALE_F32TOI16_MASK, PROCMN_DICT_SCALE_F32TOI08_MASK, PROCMN_DICT_NOCOPY_FILL_MASK, PROCMN_DICT_MOD_FILL_MASK, PROCMN_DICT_IMG_FILL_MASK, PROCMN_DICT_SCAN_FILL_MASK, PROCMN_DICT_FILL_TEST_MASK, PROCMN_DICT_FATSCANFIELD_MASK, or PROCMN_DICT_FATGRANULEFIELD_MASK	N/A	Optional, repeating. The DictionaryMask elements define what masks are applied to this Field in the Common Dictionary.
InitialFill	N/A	string	Valid value of the appropriate data type for this field.	N/A	Optional. Defines the Initial Fill value for this Field.
DataType	N/A	string	See the JPSS CDFCB-X Vol. I, 474-00001-01, Appendix I, HDF5 Data Type Crosswalk, for a list of the possible Non-Language Specific Types	N/A	Required. DataType elements indicate what Non-Language Specific data type the parent element is.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
DictionaryDataType	N/A	string	See the JPSS CDFCB-X Vol. I, 474-00001-01, Appendix I, HDF5 Data Type Crosswalk, for a list of the possible Non-Language Specific Types	N/A	Required. DataType elements indicate what Non-Language Specific data type the parent element is.
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.
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.
NumberOfData	N/A	integer	Valid Integer > 0	N/A	Required. Number of Datum for this Field.
Datum	N/A	Complex Type	Subfields: Description Offset Scale MeasurementUnits RangeMin RangeMax RangeComments DataType NumberOfFillValues FillValue NumberOfEntriesInLegend 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.
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
Offset	N/A	integer	Valid Integer >= 0	N/A	Required. The Offset element identifies the index for the start of this element within its parent.
Scale	N/A	Complex Type	Subfields: Dynamic ScaleFactorName	N/A	Required. The Scale element contains scaling information about this Datum.
Dynamic	N/A	boolean	False or True	N/A	Required. Indicates whether or not a field has been scaled. If the dataset is scaled, then the ScaleFactorName is provided. "True" is scaled "False" 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	Required. 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.
RangeMin	N/A	string	Valid Float	N/A	Required.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					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 JPSS System Specification calls for a validated range over which performance of the NPP/JPSS Data Products are guaranteed.
RangeMax	N/A	string	Valid Float	N/A	Required. 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 JPSS System Specification calls for a validated range over which performance of the NPP/JPSS Data Products are guaranteed.
RangeComments	N/A	string	Free Text.	N/A	Optional. RangeComments elements stores comment information about the range of values that will be used in the generated documentation. New lines are preserved in Comments tags.
DataType	N/A	string	See the JPSS CDFCB-X Vol. I, 474-00001-01, Appendix I, HDF5 Data Type Crosswalk, for a list of the possible Non-Language Specific Types	N/A	Required. DataType elements indicate what Non-Language Specific data type the parent element is.
NumberOfFillValues	N/A	integer	Valid Integer >= 0	N/A	Required. Number of Fill Values for this Datum.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
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.
Name	N/A	string	Free Text	N/A	Required. Names apply to distinct information units for comparison, data handling, and reference.
Value	N/A	string	Valid real number	N/A	Required. This element is the value - the meaning of this attribute is dependent on its use. 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.
NumberOfEntriesInLegend	N/A	integer	Valid Integer >= 0	N/A	Required. Number of Legend Entries for this Field.
LegendEntry	N/A	Complex Type	Subfields: Name Value	N/A	Optional, repeating. Legends associated name/value pairs.
Name	N/A	string	Free Text	N/A	Required. Names apply to distinct information units for comparison, data handling, and reference.
Value	N/A	string	Valid real number	N/A	Required.

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					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). This element may contain any number in the range of the specified data type.

8 DATA QUALITY THRESHOLD TABLES

8.1 DQTT Data Overview

Data Mnemonic	DP_NU-LM2030-000
Description/ Purpose	Data Quality Threshold Tables (DQTT) provides the threshold values for use as a mechanism to monitor the quality of JPSS Data Products. Nominal production of these files is at National Environmental Satellite, Data, and Information Service (NESDIS) only.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 The Collection Short Name is used in the filename, - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names. Notes: • The Origin field is used as follows: o Baseline DQTTs (OPR & MON type) - “devl” o Local DQTTs - “noaa“ • The Origin Domain is used as follows: o Baseline DQTTs (OPR & MON type) - “dev” o Local DQTTs - “ops“ • The End Effectivity field is nominally displayed as all zeroes for Baseline DQTTs since it cannot be pre-determined for these files • The End effectivity field for LOCAL DQTTs will indicate an actual date for cases where the DQTT is to be used in Operations for limited time period • Version: o “BASELINE-“<type><version> ▪ <type> is 3 chars max - “OPR”,or “MON” ▪ <version> is a 1-4 char version field - nominally numeric, but alphanumeric is allowed o “LOCAL-“<site><details> ▪ <site> is the 4 char Site identifier from the AUX filename convention. ▪ <details> is the 6 character details of why the local version exists (i.e. initials of the originator, person, version number). A Version number may be used for Local versions left in operations for long periods of time. • The Destination field will be used as follows o Operational Baseline DQTTs (OPR type) - “dod-” o Monitoring Baseline DQTTs (MON type) - “noaa” o Local DQTTs - Site name from version.

File Size	Varies and is never zero-length
File Format Type	Little Endian Binary
Production Frequency	Varies
Data Content and Data Format	See Tables 8-1 for Data Quality Threshold Table Format. See Tables 8-2 for Security Level definitions. See Appendix A.5 Example, XML Schema for Data Quality Threshold Tables

The DQTT Format is defined in Table 8-1, “Data Quality Threshold Table Format”. The fields "id", "active", "implicit_pad", "minimum", "maximum", "thresholdsCount", "severity", and "testType" are repeated sequences within DQTTs. The number of times that this sequence is repeated varies depending on the number of tests. The tests are listed in Data Quality Threshold Table Mapping appendix which contains each product quality test mapped to the associated sensor and product. Data Quality Threshold Table Mapping appendix is in either Appendix B or Appendix C depending on the Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary.

Table: 8-1 Data Quality Threshold Table Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
testCount	4	32-bit integer	MIN_VAL - MAX_VAL	Unitless	
version	36	8-bit char	-128 - 127	Unitless	1 Dimensional Array: versionFieldLength Size of Dimension(s): 36
id	4	32-bit integer	MIN_VAL - MAX_VAL	Unitless	
active	1	unsigned 8-bit char	MIN_VAL - MAX_VAL	Unitless	
implicit_pad	3	unsigned 8-bit char	0	Unitless	1 Dimensional Array: PAD_BYTES_3 Size of Dimension(s): 3
minimum	4	32-bit floating point	MIN_VAL - MAX_VAL	Unitless	
maximum	4	32-bit floating point	MIN_VAL - MAX_VAL	Unitless	
thresholdsCount	4	32-bit integer	MIN_VAL - MAX_VAL	Unitless	
severity	4	32-bit integer	MIN_VAL - MAX_VAL	Unitless	

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
testType	24	8-bit char	-128 - 127	Unitless	1 Dimensional Array: testTypeFieldLength Size of Dimension(s): 24

Table: 8-2 Security Levels

Severity	Description
CRITICAL	Emergency level requires immediate Operator action. Only “Alert” Display Flags may be used with this Severity Level.
ALARM	Failure level. Requires Operator attention. All Alarm messages will have Logging Level of “Ops” and default Display Flag of “Acknowledge”.
WARNING	An error or situation that the Operator should know about. All Warning messages will have logging level “Ops”, although they can have default Display Flag of “normal”.
NORMAL	A message indicating Normal activity. For operational code, this typically does not have an “Alert” or “Acknowledge” Display Flag.

9 OFFICIAL ANCILLARY DATA

9.1 Official Dynamic Ancillary Data

Dynamic ancillary data is defined as data that is introduced into JPSS periodically. There is one source for ODAD:

- U.S. Naval Observatory (USNO)

9.1.1 Earth Orientation Finals

Data Mnemonic	AN_NP-L10330-003
Description/ Purpose	The IERS Finals 2000A data within the finals2000A.all file provides an Earth Orientation (a.k.a. Polar wander) with all EOP values since 02 January 1973 with dX & dY nutation series (with 1 year of predictions). The nutation series in dX and dY uses the International Astronomical Union (IAU) 2000A Nutation Theory. This information is used for geolocation. Note: Earth Orientation IERS Finals 2000A data is not a candidate for use in Substitute data processing since it is used in the SDR processing level.
File-Naming Construct	IDPS: See the File-Naming Convention for Ancillary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. C3S: Files are named by provider.
File Size	~2 MiB
File Format Type	ASCII (Structure stored within HDF5 wrapper)
Production Frequency	Weekly
Data Content and Data Format	Data format/content is defined in the following files available at: http://maia.usno.navy.mil/ser7/ readme.finals2000A - Content description An overview of the IERS Earth Orientation products can be found at: http://maia.usno.navy.mil/

Example A-4, External Mission Support Data Server Data List Example

Current:

e:\ftproot\MSDS\ANC\ODAD:

off_USNO-PolarWander-UT1-ANC_Ser7_USNO_000f_20030120_200301200000z_20030120000000z_ee20100101000000z_np.dat

9.2 Official Static Ancilliary Data

9.2.1 IDPS Terrain Database

Data Mnemonic	AN_NP-L10100-003
Description/ Purpose	The IDPS Terrain Database is used to efficiently store several static ancillary data types. The external sources for these data include:

Data Mnemonic	AN_NP-L10100-003
	• Shuttle Radar Topography Mission 30 Plus (SRTM30 Plus) (Depth of ocean/Bathymetry) data from University of California, San Diego. • Terrain height from NASA SRTM30 version 2. • Ellipsoid-Geoid separation from National Imagery and Mapping Agency (NIMA) EGM96 model. The data that are stored in the Terrain Database includes: 1. Mean Sea Level (MSL) Earth Surface height based on Shuttle Radar Topography Mission 30 Plus (SRTM30 Plus) data set. 2. Maximum MSL surface height, within 28 kilometers of each point. 3. Minimum MSL height within 28 kilometers of each point. 4. Bathymetric depth based on the SRTM30 plus 5. Geopotential Height of the Earth's surface as calculated from the MSL height and latitude 6. Ellipsoid - Geoid Separation height based on the NIMA EGM96 model. 7. Initial JPSS Quarterly Surface Type provided by NGAS (Note: the QST data in this database isn't the IDPS operational source). All elevations are in meters referenced to the WGS84/EGM96 geoid as documented at http://www.NGA.mil/GandG/. Elevations can range from -32767 to 32767. These data also contain occasional voids from a number of causes such as shadowing, phase unwrapping anomalies, or other radar-specific causes. Voids have been filled in using linear interpolation. These data are used for general geolocation computations.
File-Naming Construct	See the File-Naming Convention for the IDPS Terrain Database, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. Version Number Field provides Provenance Version Identifier
File Size	A single tile file size is approximately 33 MB.
File Format Type	Little Endian Binary
Production Frequency	Static
Data Content and Data Format	See Table 9.2.1-1, IDPS Terrain Database Format, for details. Figure 9.2.1-1, The Northern Hemisphere Terrain Database, and Figure 9.2.1-2, The Southern Hemisphere Terrain Database, show the database maps and how tiles are laid on the maps. Each tile consists of 1664 rows and columns. There are 32 tiles in each row, and 32 rows of tiles. The tiles in the corners of the database are never created. So there are 48 tiles missing from each corner, but the tiles of the database are numbered as if those tiles existed. This makes the tile number easier to calculate. The grid in the upper left corner of tile 528 is exactly on the pole. This is achieved by establishing the grid with 53,249 rows and columns, instead of 53,248. The last row and column of the grid are outside all tiles and are never used anyway. Each tile is individually initialized. Points that are more than 2 kilometers outside the Equator are initialized with a flag value so that they are never used.

Table: 9.2.1-1 IDPS Terrain Database Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
mslhgt Array	5537792 [1664 x 1664]	short	-500 to 9400	meters	Surface height (NASA SRTM 30 v2 between 60N and 60S; USGS GTOPO30 otherwise)
maxhgt Array	5537792 [1664 x 1664]	short	-500 to 9400	meters	Maximum terrain height within radius of 28 KM MH_RADIUS kilometers
minhgt Array	5537792 [1664 x 1664]	short	-500 to 9400	meters	Minimum terrain height within radius of 28 KM MH_RADIUS kilometers
bathy Array	5537792 [1664 x 1664]	short	1 to -12000	meters	Ocean depth from SRTM30+
sfcgp	5537792 [1664 x 1664]	short	-500 to 9400	meters	Surface Geopotential Height
egSep Array	2768896 [1664x 1664]	char	-126 to 78	meters	NIMA EGM 96 Geoid Ellipsoid separation
sfcType Array	2768896 [1664x 1664]	uInt8	0 to 20	unitless	Initial Quarterly Surface Type (QST) indicator Not used in operations
upIET_mslhgt	8	uint64	Varies	IET microseconds	Time SRTM30 height updated
upIET_mmhgt	8	uint64	Varies	IET microseconds	Time max/min height updated
upIET_bathy	8	uint64	Varies	IET microseconds	Time bathymetric depth of water updated
upIET_sfcgp	8	uint64	Varies	IET microseconds	Time surface geopotential height updated
upIET_egs	8	uint64	Varies	IET microseconds	Time EG separation height updated
upIET_qst	8	uint64	Varies	IET microseconds	Time QST-Land Water Mask (LWM) data updated Not used in operations
upIET_resolv	8	uint64	Varies	IET microseconds	Conflict resolution time
updated_IET	8	uint64	Varies	IET microseconds	Store time
boxfile Array	32	char	Varies	unitless	Box File Name
boxnum	4	Int	11 to 1012	unitless	Box Number
boxrow	4	Int	0 to 32	unitless	Database (DB) Box Row
boxcol	4	Int	0 to 32	unitless	DB Box Column
ulrow_offset	4	Int	Varies	unitless	DB grid row of the upper left corner
ulcol_offset	4	Int	Varies	unitless	DB grid column of the upper left corner

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
num_nofill	4	Int	0 to 1536	unitless	number of points well outside Equator never filled by data
nOrS	1	char	N or S	unitless	North/South Hemisphere
pad Array	7	char	N/A	unitless	pad

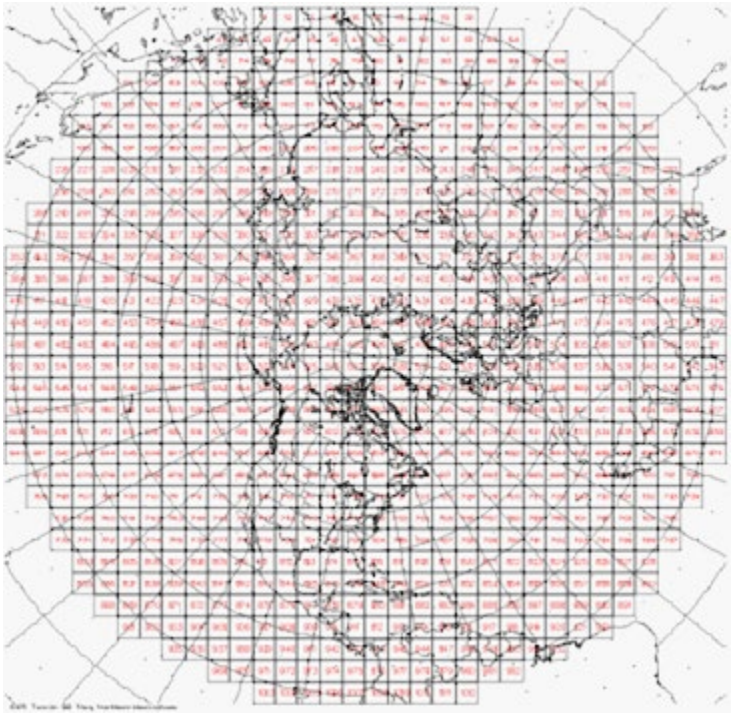

Figure: 9.2.1-1 The Northern Hemisphere Terrain DB

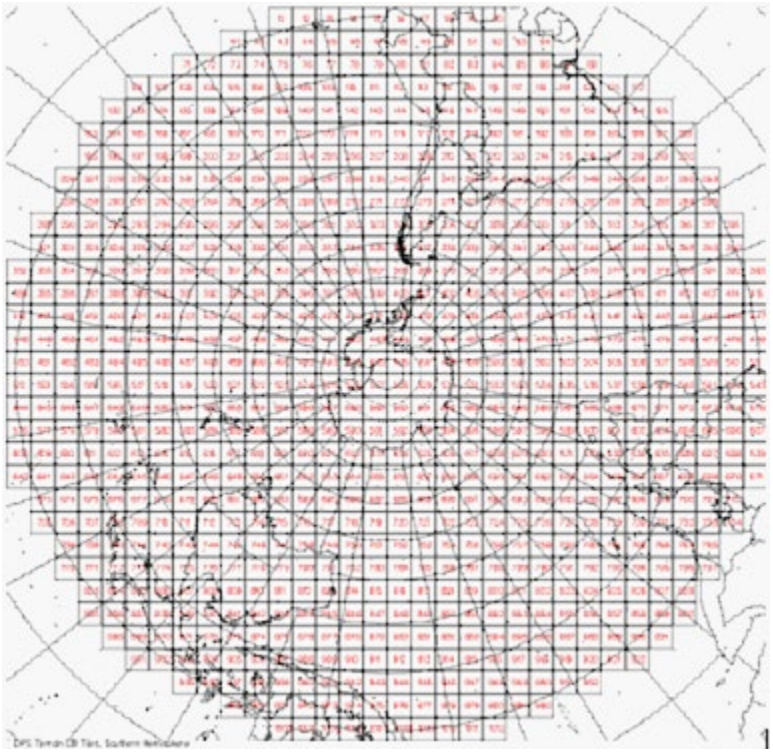

Figure: 9.2.1-2 The Southern Hemisphere Terrain DB

9.2.2 Planetary Ephemeris

Data Mnemonic	AN_NP-L10340-001
Description/ Purpose	JPSS Internal binary format of the Planetary ephemeris (DE200) from Jet Propulsion Laboratory (JPL). Used by IDPS to determine solar and lunar vectors during JPSS Mission Data processing. This internal format has been modified slightly from the DE200 format to accommodate use within JPSS without modifying the content or general layout of the source DE200 data. The layout, content, and description of the JPL DE200 Planetary Ephemeris can be found at the following URL: http://ssd.jpl.nasa.gov/?planet_eph_export.
File-Naming Construct	See the File-Naming Convention for Ancillary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. Version Number Field provides Provenance Version Identifier
File Size	3698 KiB per 50 year block. (UNXP2000.200)
File Format Type	Little Endian Binary
Production Frequency	Static
Data Content and Data Format	See Table 9.2.2-1, Planetary Ephemeris Format, for details.

Table: 9.2.2-1 Planetary Ephemeris Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
tjdStart	8	64-bit float	Varies	Julian Day	Terrestrial Dynamic Time of start of ephemeris, expressed as a Julian Day (DE200 Group 1070, 1st value of first coefficients sub-group)
tjdEnd	8	64-bit float	Varies	Julian Day	Terrestrial Dynamic Time of end of ephemeris, expressed as a Julian Day (DE200 Group 1070, 2nd value of last coefficients sub-group)
span	8	64-bit float	Varies	Days	Span of ephemeris (i.e., number of days of ephemeris data in coeffs array)
au	8	64-bit float	Constant	km	Constant: size, in kilometers, of 1 Astronomical Unit (AU) (DE200 Group 1041, 7th value--third row, 1st number)
emrat	8	64-bit float	Constant	unitless	Constant: ratio of mass of Earth to mass of Moon (DE200 Group 1041, 8th value--third row, 2nd number)
ipt Array	156	32-bit int	Varies	unitless	Index array (13 x 3) indicating location of orbital parameters in coefficients table which correspond to each of 11 Solar System objects, plus nutation tables. Earth-Moon system is addressed through indices [2,1],

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					[2,2], and [2,3]. The 13th item would be indices for libration tables, but DE200 does not include those, so these index slots are zeros. (DE200 Group 1050)
pad Array	4	byte	Varies	n/a	4 byte pad to adjust "coeffs" array to 8-byte longword boundary
coeffs Array	3039680	64-bit float	Varies	unitless	Data array is 460 x 826. Contains ephemeris timestamps, position and velocity tables for all 11 Solar System objects, and nutation tables. 460 DE200 data subblocks of 826 entries each. (DE200 Group 1070)

10 AUXILIARY DATA

Auxiliary Data is data other than that included in the sensor application packets, which is produced internally by JPSS, and is used to produce the JPSS Data Products. For a description of Auxiliary Data Files, see 474-00001-06, JPSS CDFCB-X Vol VI.

10.1 Provenance Data

Provenance files are used to capture the historical information for select Auxiliary Data and Static Ancillary files maintained by the JPSS Program. The following data format is used to describe these files.

10.1.1 Provenance Files

Data Mnemonic	NP_NU-LM1010-000
Description/ Purpose	The provenance files provide structured text information on the source and change history of specified versions of their associated Auxiliary Data or Static Ancillary Data files. A single provenance file contains the history of all versions of the referenced file. Note that not all Auxiliary Data or Static Ancillary Data files will require an associated Provenance file.
File-Naming Construct	<Collection Short Name>.prv Where <Collection Short Name> is that of the file which the Provenance File is associated with. The Collection Short Name used in the filename is based on the table - see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	1 KiB to 100 KiB
File Format Type	ASCII
Production Frequency	As needed
Data Content and Data Format	For details see Table 10.1.1-1, Provenance Files Data Format. An example is provided in Table 10.1.1-1, Provenance Files Data Format - ATMS-SDR-CC.prv.

Table: 10.1.1-1 Provenance Files Data Format

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
Short Name	Varies	String	Collection Short Name	N/A	Required. Collection Short Name of the associated file for this provenance file
Separator	18	String	"----------"	N/A	Required. Version separator

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
RevisionDate	Varies	Date	Valid Date (YYYY-MM-DD)	N/A	Required. Date of the update associated with this Provenance Entry.
Source	Varies	Complex Type	Contains information about the source of the data associated with this Provenance Entry. Subfields: EcrNumber SourceVersion TechMemo SourceFiles	N/A	Required. == Source Type ==
EcrNumber	Varies	String	Free Text	N/A	Required. Required. Provides the ECR number associated with the update. May be "None".
SourceVersion	Varies	String	Free Text	N/A	Required. Identifies the SCM VOB identifier containing the science drop source data. May be "N/A".
TechMemo	Varies	String	Free Text	N/A	Required, Identifies the technical memo by Identifier. May be "None".
SourceFiles	Varies	Complex Type	Contains a list of source files used to generate the data associated with this	N/A	Required. == Source Files Type ==

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
			Provenance Entry. Subfields: FileName		
FileName	Varies	String	File Name	N/A	Optional, repeating. Name of the source file translated to create the LUT. May be "N/A" if no translation or name change was required.
ProvenanceVersionID	Varies	String	See the Version ID Description of the File-Naming Convention for Auxiliary or Ancillary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 or 3.5.	N/A	Required. Version ID for this Provenance Entry.
BuildIdentifier	Varies	String	Free Text	N/A	Required. Configuration Management Build Identifier of initial version release.
Spacecraft	Varies	String	Free Text	N/A	Required, repeating. Configuration Management Build Identifier of initial version release.
Md5sum	Varies	String	Free Text	N/A	Required. MD5SUM of deployed file for the version defined in this

Field Name	Length (Bytes)	Data Type	Range of Values	Units	Comments
					section. May be "N/A"
Notes	Varies	String	Free Text	N/A	Required. Description of the source changes and applicability of the version defined in this section.
Separator	18	String	"----------"	N/A	Required. Version separator
Repeat above sections starting with Revision Date					Each Provenance version will have a completely repeated section from Revision Date to Notes.

Table: 10.1.1-2 Provenance Files Data Format - ATMS-SDR-CC.prv

ATMS-SDR-CC

Revision Date: 05/15/2007

Source:

ECR: None

Source Version: ISTN_ATMS_NPP_PROXY_DATA_NGST_002

Tech Memo: None

Source File(s)

Constants_set1.dat

Provenance Version ID: 1-D-NPP-4

Build Identifier: 1.5.0.X1

MD5SUM: N/A

Notes: Chain Testing Table

Revision Date: 04/11/2007

Source:

ECR: A116

Source Version: ISTN_ATMS_NGST_3.1

Tech Memo: TM2007.510.0044 - Diagnostic mode processing

Source File(s):

Constants_set1.dat

Provenance Version ID: 1-D-NPP-1

Build Identifier: 1.5.0.X1

MD5SUM: 576A3B76335

Notes: Data used for Standalone IPAC testing, last digit of Version ID corresponds to Data Set Used

---

Revision Date: 04/11/2007

Source:

ECR: A116

Source Version: ISTN_ATMS_NGST_3.1

Tech Memo: TM2007.510.0044 - Diagnostic mode processing

Source File(s)

Constants_set2.dat

Provenance Version ID: 1-D-NPP-2

Build Identifier: 1.5.0.X1

MD5SUM: N/A

Notes: Data used for Standalone IPAC testing, last digit of Version ID corresponds to Data Set Used

---

Revision Date: 04/11/2007

Source:

ECR: A116

Source Version: ISTN_ATMS_NGST_3.1

Tech Memo: TM2007.510.0044 - Diagnostic mode processing

Source File(s)

Constanst_set3.dat

Provenance Version Number: 1-D-NPP-3

Build Identifier: 1.5.0.X1

MD5SUM: N/A

Notes: Data used for Standalone IPAC testing, last digit of Version ID corresponds to Data Set Used

---

Appendix A. Examples

A.1 Example, 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>
```

A.2 Example, Single SDR, TDR, EDR, 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>

A.3 Example, Multiple SDR, TDR, EDR, 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>
<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>
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            <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>
```

A.4 Example, JPSS Data Product Profile XML Example

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="JPSS_Product_Profile_StyleSheet.xsl"?>
<JPSSDataProduct xsi:noNamespaceSchemaLocation="JPSS_Product_Profile.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<ProductName>ATMS SDR Ellipsoid Geolocation Data</ProductName>
<CollectionShortName>ATMS-SDR-GEO</CollectionShortName>
<DataProductID>GATMO</DataProductID>
<ProductData>
<DataName>ATMS SDR Geolocation Product Profile</DataName>
<Field>
<Name>StartTime</Name>
<Dimension>
<Name>Scan</Name>
<GranuleBoundary>1</GranuleBoundary>
<Dynamic>0</Dynamic>
<MinIndex>12</MinIndex>
<MaxIndex>12</MaxIndex>
</Dimension>
<DataSize>
<Count>8</Count>
<Type>byte(s)</Type>
```

</DataSize>
<Datum>
<Description>Starting Time of scan in IET (1/1/1958)</Description>
<DatumOffset>0</DatumOffset>
<Scaled>0</Scaled>
<MeasurementUnits>microsecond</MeasurementUnits>
<DataType>64-bit integer</DataType>
<FillValue>
<Name>NA_INT64_FILL</Name>
<Value>-999</Value>
</FillValue>
<FillValue>
<Name>MISS_INT64_FILL</Name>
<Value>-998</Value>
</FillValue>
<FillValue>
<Name>ERR_INT64_FILL</Name>
<Value>-995</Value>
</FillValue>
<FillValue>
<Name>VDNE_INT64_FILL</Name>
<Value>-993</Value>
</FillValue>
</Datum>
</Field>
<Field>
<Name>MidTime</Name>
<Dimension>
<Name>Scan</Name>
<GranuleBoundary>1</GranuleBoundary>
<Dynamic>0</Dynamic>
<MinIndex>12</MinIndex>
<MaxIndex>12</MaxIndex>
</Dimension>
<DataSize>
<Count>8</Count>
<Type>byte(s)</Type>
</DataSize>
<Datum>
<Description>Mid Time of scan in IET (1/1/1958)</Description>
<DatumOffset>0</DatumOffset>

<Scaled>0</Scaled>
<MeasurementUnits>microsecond</MeasurementUnits>
<DataType>64-bit integer</DataType>
<FillValue>
<Name>NA_INT64_FILL</Name>
<Value>-999</Value>
</FillValue>
<FillValue>
<Name>MISS_INT64_FILL</Name>
<Value>-998</Value>
</FillValue>
<FillValue>
<Name>ERR_INT64_FILL</Name>
<Value>-995</Value>
</FillValue>
<FillValue>
<Name>VDNE_INT64_FILL</Name>
<Value>-993</Value>
</FillValue>
</Datum>
</Field>
<Field>
<Name>Latitude</Name>
<Dimension>
<Name>Scan</Name>
<GranuleBoundary>1</GranuleBoundary>
<Dynamic>0</Dynamic>
<MinIndex>12</MinIndex>
<MaxIndex>12</MaxIndex>
</Dimension>
<Dimension>
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<GranuleBoundary>0</GranuleBoundary>
<Dynamic>0</Dynamic>
<MinIndex>96</MinIndex>
<MaxIndex>96</MaxIndex>
</Dimension>
<DataSize>
<Count>4</Count>
<Type>byte(s)</Type>
</DataSize>

<Datum>
<Description>Latitude of channel 17 beam position center (positive North)</Description>
<DatumOffset>0</DatumOffset>
<Scaled>0</Scaled>
<MeasurementUnits>degree</MeasurementUnits>
<RangeMin>-90</RangeMin>
<RangeMax>90</RangeMax>
<DataType>32-bit floating point</DataType>
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<Value>-999.9</Value>
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<FillValue>
<Name>MISS_FLOAT32_FILL</Name>
<Value>-999.8</Value>
</FillValue>
<FillValue>
<Name>ERR_FLOAT32_FILL</Name>
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</FillValue>
<FillValue>
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</FillValue>
<FillValue>
<Name>VDNE_FLOAT32_FILL</Name>
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</FillValue>
</Datum>
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<Field>
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<Dimension>
<Name>Scan</Name>
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</Dimension>
<Dimension>
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<Name>MISS_FLOAT32_FILL</Name>
<Value>-999.8</Value>
</FillValue>
<FillValue>
<Name>ERR_FLOAT32_FILL</Name>
<Value>-999.5</Value>
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</Datum>
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<Field>
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<Dimension>
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<Dynamic>0</Dynamic>
<MinIndex>12</MinIndex>
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<MaxIndex>96</MaxIndex>
</Dimension>
<DataSize>
<Count>4</Count>
<Type>byte(s)</Type>
</DataSize>
<Datum>
<Description>Zenith angle to sun at the geolocated beam position center</Description>
<DatumOffset>0</DatumOffset>
<Scaled>0</Scaled>
<MeasurementUnits>degree</MeasurementUnits>
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<RangeMax>180</RangeMax>
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<Value>-999.8</Value>
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<Dimension>
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<MaxIndex>96</MaxIndex>
</Dimension>
<DataSize>
<Count>4</Count>
<Type>byte(s)</Type>
</DataSize>
<Datum>
<Description>Azimuth angle (measured clockwise positive from North) of sun at the geolocated beam position center</Description>
<DatumOffset>0</DatumOffset>
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<MeasurementUnits>degree</MeasurementUnits>
<RangeMin>-180</RangeMin>
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<FillValue>
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<FillValue>
<Name>ELLIPSOID_FLOAT32_FILL</Name>
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<FillValue>
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<MaxIndex>96</MaxIndex>
</Dimension>
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<Count>4</Count>
<Type>byte(s)</Type>
</DataSize>
<Datum>
<Description>Zenith angle to satellite at the geolocated beam position center</Description>
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<MeasurementUnits>degree</MeasurementUnits>

<RangeMin>0</RangeMin>
<RangeMax>Approx. 70</RangeMax>
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<Dimension>
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</Dimension>
<Dimension>
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<MaxIndex>96</MaxIndex>
</Dimension>

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<Count>4</Count>
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</DataSize>
<Datum>
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<Scaled>0</Scaled>
<MeasurementUnits>degree</MeasurementUnits>
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<RangeMax>180</RangeMax>
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<Value>-999.8</Value>
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</FillValue>
</Datum>
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<Dimension>
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<Dynamic>0</Dynamic>
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<MaxIndex>12</MaxIndex>
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<MaxIndex>96</MaxIndex>
</Dimension>
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<Count>4</Count>
<Type>byte(s)</Type>
</DataSize>
<Datum>
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<DatumOffset>0</DatumOffset>
<Scaled>0</Scaled>
<MeasurementUnits>meter</MeasurementUnits>
<DataType>32-bit floating point</DataType>
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<Value>-999.9</Value>
</FillValue>
<FillValue>
<Name>MISS_FLOAT32_FILL</Name>
<Value>-999.8</Value>
</FillValue>
<FillValue>
<Name>ERR_FLOAT32_FILL</Name>
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<Value>-999.4</Value>
</FillValue>
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<Name>VDNE_FLOAT32_FILL</Name>
<Value>-999.3</Value>
</FillValue>
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<Field>
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<Dimension>
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<Dynamic>0</Dynamic>
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</Dimension>
<Dimension>
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<Dynamic>0</Dynamic>
<MinIndex>96</MinIndex>
<MaxIndex>96</MaxIndex>
</Dimension>
<DataSize>
<Count>4</Count>
<Type>byte(s)</Type>
</DataSize>
<Datum>
<Description>Line of sight distance from the ellipsoid intersection to the satellite</Description>
<DatumOffset>0</DatumOffset>
<Scaled>0</Scaled>
<MeasurementUnits>meter</MeasurementUnits>
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<Value>-999.9</Value>
</FillValue>
<FillValue>
<Name>MISS_FLOAT32_FILL</Name>
<Value>-999.8</Value>
</FillValue>
<FillValue>
<Name>ERR_FLOAT32_FILL</Name>
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<Field>
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<Dimension>
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<Dynamic>0</Dynamic>
<MinIndex>12</MinIndex>
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</DataSize>
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<Field>
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<Dimension>
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</DataSize>
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<Scaled>0</Scaled>
<MeasurementUnits>unitless</MeasurementUnits>
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<LegendEntry>
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10.2 Example, Data Quality Threshold Tables Example

<?xml version="1.0" encoding="UTF-8"?>

<!-- DQM Threshold Check file / table example -->

<!DOCTYPE dqmtable SYSTEM "ncc_edr_viirs_npp_DQMThresholdTable.dtd">

```
<!-- DQM Table declaration and mandatory type -->
<dqmtable type="DQThreshold" >
<!--
 Filter/data on this DQT Check table.

 'spacecraft'   -  The spacecraft represented by this DQ Threshold XML file.
 'sensor'       -  The sensor represented by this DQ Threshold XML file.
 'category'     -  The category represented by this DQ Threshold XML file.
 'product'      -  The product represented by this DQ Threshold XML file.
 'csname'       -  the Collection Short Name for the spacecraft, sensor (etc.)
                   represented by this file.
-->
 <dqthresholdchecks spacecraft="npp" sensor="viirs" category="edr" product="ncc"
 csname="VIIRS-NCC-EDR" >

 <!--
  List of DQ Checks to perform.

'id'            -  unique ID for this check. Corresponds  to the response
                   for that check in the Response file.
'name'          -  the name of the check/test.
'description'   -  a description of the test/check.
'testtype'      -  the test being performed for this check. Must be one of:
                   "Less Than", "Greater Than", "In Range", "Out of Range"
'fieldtype'     -  the type of the field (and 'min'/'max') for use in
                   validating the value. Usually one of: "int", "float",
                   "long", "double", or "date".
'min'           -  the minimum value of the field data for the given test.
                   Such as "Less Than" "263". Can be null depending on the
                   'testtype' as indicated by a "<min/>
'max'           -  the maximum value of the field data for the given test.
                   Such as "Greater Than" "724". Can be null depending on
```

the 'testtype' as indicated by a "<max/>
'thresholdcount' - the number of times that a threshold check must fail before a DQN is generated.
'active' - Is DQN interested in failures of this check.

-->

```
   <dqtcheck id="0" >
      <name>degrees</name>
      <description>A DQT check description.</description>
      <testtype>Less Than</testtype>
      <fieldtype>int</fieldtype>
      <min>100</min>
      <max/>
      <thresholdcount>20</thresholdcount>
      <active>true</active>
   </dqtcheck>
   <dqtcheck id="1" >
      <name>minutes</name>
      <description>A DQT check description.</description>
      <testtype>Out of Range</testtype>
      <fieldtype>int</fieldtype>
      <min>0</min>
      <max>60</max>
      <thresholdcount>4</thresholdcount>
<active>true</active>
   </dqtcheck>
   <dqtcheck id="2" >
      <name>hours</name>
      <description>A DQT check description.</description>
      <testtype>In Range</testtype>
      <fieldtype>int</fieldtype>
      <min>0</min>
```

```
      <max>24</max>
      <thresholdcount>7</thresholdcount>
      <active>true</active>
    </dqtcheck>
  </dqthresholdchecks>
</dqmtable>
```

Appendix B. JPSS Delivered Documentation

The following is a list of the documentation delivered by JPSS to the external community via the Documentation Release Packages. See the JPSS CDFCB-X Vol. I, 474-00001-01, for information regarding Release Packages. This list of documents completes the set of documentation to understand the S-NPP/JPSS Data Products.

Table: B-1 JPSS Delivered Documentation

Document Title	Doc Number	Collection Short Name
Science Documents		
JPSS Algorithm Specification Vol. III - OAD for ATMS RDR/TDR/SDR	474-00448-03-02	JPSS-ATMS-SDR-OAD-Part-2
JPSS Algorithm Specification Vol. III - OAD for CrIS RDR/SDR	474-00448-03-03	JPSS-CrIS-SDR-OAD-Part-3
JPSS Algorithm Specification Vol. III - OAD for OMPS TC RDR/SDR	474-00448-03-04	JPSS-OMPS-TC-SDR-OAD-Part-4
JPSS Algorithm Specification Vol. III - OAD for OMPS NP RDR/SDR	474-00448-03-05	JPSS-OMPS-NP-SDR-OAD-Part-5
JPSS Algorithm Specification Vol. III - OAD for VIIRS RDR/SDR	474-00448-03-06	JPSS-VIIRS-SDR-OAD-Part-6
JPSS Algorithm Specification Vol. III - OAD for Ancillary Data Handling, Gridding & Granulation	474-00448-03-07	JPSS-ANC-OAD-Part-7
JPSS Algorithm Specification Vol. III - OAD for Geolocation and Spacecraft Orientation	474-00448-03-08	JPSS-GEO-OAD-Part-8
JPSS Algorithm Specification Vol. III - OAD for VIIRS Imagery	474-00448-03-26	JPSS-VIIRS-Imagery-OAD-Part-26
JPSS Algorithm Specification Vol. I - Software Requirements Specification for the Common Algorithms	474-00448-01-01	JPSS-CAS-SRS-Part-1
JPSS Algorithm Specification Vol. I - Software Requirements Specification for ATMS RDR/TDR/SDR	474-00448-01-02	JPSS-ATMS-SDR-SRS-Part-2
JPSS Algorithm Specification Vol. I - Software Requirements Specification for CrIS RDR/SDR	474-00448-01-03	JPSS-CrIS-SDR-SRS-Part-3
JPSS Algorithm Specification Vol. I - Software Requirements Specification for OMPS TC RDR/SDR	474-00448-01-04	JPSS-OMPS-TC-SDR-SRS-Part-4
JPSS Algorithm Specification Vol. I - Software Requirements Specification for OMPS NP RDR/SDR	474-00448-01-05	JPSS-OMPS-NP-SDR-SRS-Part-5
JPSS Algorithm Specification Vol. I - Software Requirements Specification for VIIRS RDR/SDR	474-00448-01-06	JPSS-VIIRS-SDR-SRS-Part-6

Document Title	Doc Number	Collection Short Name
JPSS Algorithm Specification Vol. I - Software Requirements Specification for Common Geolocation and Spacecraft Orientation	474-00448-01-08	JPSS-GEO-SRS-Part-8
JPSS Algorithm Specification Vol. I - Software Requirements Specification for CERES RDR	474-00448-01-09	JPSS-CERES-RDR-SRS-Part-9
JPSS Algorithm Specification Vol. I - Software Requirements Specification for VIIRS Imagery	474-00448-01-26	JPSS-VIIRS-Imagery-SRS-Part-26
JPSS Algorithm Specification Vol. I - Software Requirements Specification for OMPS Limb Profiler RDR	474-00448-01-28	JPSS-OMPS-LP-RDR-SRS-Part-28
JPSS Algorithm Specification Vol. I - Software Requirements Specification for AMSR-2 RDR	474-00448-01-30	JPSS-AMSR2-RDR-SRS-Part-30
JPSS Algorithm Specification Vol. I – Software Requirements Specification for AMSR-3 RDR	474-00448-01-31	JPSS-AMSR3-RDR-SRS-Part-31
Interface Control Documents (ICD)		
JPSS Common Data Format Control Book - External - Volume I (Overview)	474-00001-01	JPSS-CDFCB-X-Vol-I
JPSS Data Product Profiles	Profile Dependent - See the JPSS CDFCB-X Vol. I, 474-00001-01, for document number and Collection Short Name convention	
JPSS Common Data Format Control Book - External - Volume VI (Ancillary Data, Auxiliary Data, Messages, and Reports)	474-00001-06	JPSS-CDFCB-X-Vol-VI
JPSS Algorithm Specification Vol. II - Data Dictionary for the Common Algorithms	474-00448-02-01	JPSS-CAS-DD-Part-1
JPSS Algorithm Specification Vol. II - Data Dictionary for ATMS RDR/TDR/SDR	474-00448-02-02	JPSS-ATMS-SDR-DD-Part-2
JPSS Algorithm Specification Vol. II - Data Dictionary for CrIS RDR/SDR	474-00448-02-03	JPSS-CrIS-SDR-DD-Part-3
JPSS Algorithm Specification Vol. II - Data Dictionary for OMPS TC RDR/SDR	474-00448-02-04	JPSS-OMPS-TC-SDR-DD-Part-4
JPSS Algorithm Specification Vol. II - Data Dictionary for OMPS NP RDR/SDR	474-00448-02-05	JPSS-OMPS-NP-SDR-DD-Part-5
JPSS Algorithm Specification Vol. II - Data Dictionary for VIIRS RDR/SDR	474-00448-02-06	JPSS-VIIRS-SDR-DD-Part-6

Document Title	Doc Number	Collection Short Name
JPSS Algorithm Specification Vol. II - Data Dictionary for Common Geolocation and Spacecraft Orientation	474-00448-02-08	JPSS-GEO-DD-Part-8
JPSS Algorithm Specification Vol. II - Data Dictionary for CERES RDR	474-00448-02-09	JPSS-CERES-RDR-DD-Part-9
JPSS Algorithm Specification Vol. II - Data Dictionary for VIIRS Imagery	474-00448-02-26	JPSS-VIIRS-Imagery-DD-Part-26
JPSS Algorithm Specification Vol. II - Data Dictionary for Community Radiative Transfer Model	474-00448-02-27	JPSS-CRTM-DD-Part-27
JPSS Algorithm Specification Vol. II - Data Dictionary for OMPS Limb Profiler RDR	474-00448-02-28	JPSS-OMPS-LP-RDR-DD-Part-28
JPSS Algorithm Specification Vol. II - Data Dictionary for AMSR-2 RDR	474-00448-02-30	JPSS-AMSR2-RDR-DD-Part-30
JPSS Algorithm Specification Vol. II – Data Dictionary for AMSR-3 RDR	474-00448-02-31	JPSS-AMSR3-RDR-DD-Part-31
JPSS Algorithm Specification Vol. IV - SRS Parameter File for the Common Algorithms	474-00448-04-01	JPSS-CAS-SRSPF-Part-1
JPSS Algorithm Specification Vol. IV - SRS Parameter File for ATMS RDR/TDR/SDR	474-00448-04-02	JPSS-ATMS-SDR-SRSPF-Part-2
JPSS Algorithm Specification Vol. IV - SRS Parameter File for CrIS RDR/SDR	474-00448-04-03	JPSS-CrIS-SDR-SRSPF-Part-3
JPSS Algorithm Specification Vol. IV - SRS Parameter File for OMPS TC RDR/SDR	474-00448-04-04	JPSS-OMPS-TC-SDR-SRSPF-Part-4
JPSS Algorithm Specification Vol. IV - SRS Parameter File for OMPS NP RDR/SDR	474-00448-04-05	JPSS-OMPS-NP-SDR-SRSPF-Part-5
JPSS Algorithm Specification Vol. IV - SRS Parameter File for VIIRS RDR/SDR	474-00448-04-06	JPSS-VIIRS-SDR-SRSPF-Part-6
JPSS Algorithm Specification Vol. IV - SRS Parameter File for Geolocation and Spacecraft Orientation	474-00448-04-08	JPSS-GEO-SRSPF-Part-8
JPSS Algorithm Specification Vol. IV - SRS Parameter File for CERES RDR	474-00448-04-09	JPSS-CERES-RDR-SRSPF-Part-9
JPSS Algorithm Specification Vol. IV - SRS Parameter File for VIIRS Imagery	474-00448-04-26	JPSS-VIIRS-Imagery-SRSPF-Part-26
JPSS Algorithm Specification Vol. IV - SRS Parameter File for OMPS Limb Profiler RDR	474-00448-04-28	JPSS-OMPS-LP-RDR-SRSPF-Part-28
JPSS Algorithm Specification Vol. IV - SRS Parameter File for AMSR-2 RDR	474-00448-04-30	JPSS-AMSR2-RDR-SRSPF-Part-30
JPSS Algorithm Specification Vol. IV – SRS Parameter File for AMSR-3 RDR	474-00448-04-31	JPSS-AMSR3-RDR-SRSPF-Part-31

Document Title	Doc Number	Collection Short Name
JPSS Common Ground System to CLASS ICD	474-00410	JPSS-CGS-CLASS-ICD
JPSS Common Ground System Services Interface Description Document (IDD)	IC60917-SEIT-002	JPSS-CGS-Services-IDD
S-NPP Mission Data Format Control Book (MDFCB)	GSFC 429-05-02-42	S-NPP-MDFCB
S-NPP Spacecraft High Rate Data (HRD) RFICD to the Direct-Broadcast Stations	GSFC 429-03-02-24	S-NPP-SC-HRD-RF-ICD
S-NPP X-Band Data Format ICD	472-00059 GSFC-429-05-02-102	S-NPP-X-Band-DFCB
JPSS-1 Mission Data Format Control Book (MDFCB)	472-00173	J01-MDFCB
JPSS-1 Spacecraft High Rate Data (HRD) to the Direct Broadcast Stations (DBS) RF ICD	472-00165	J01-SC-HRD-RF-ICD
JPSS-1 Mission Data Format ICD	472-00163	J01-SMD-DFCB
JPSS-2 Mission Data Format ICD	472-00289	J02-SMD-DFCB
Mission Data Format Control Book MDFCB)JPSS-2/3/4	472-00717	J02-MDFCB
JPSS-2 Satellite HRD to Direct Broadcast Stations (DBS) RF UCD	472-00340	J02-SC-HRD-RF-ICD
JPSS Data Mapping	D35853	JPSS-Data-Mapping

Appendix C. Abbreviations and Acronyms

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