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# Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the Surface Albedo

# Block 2.0.0

**Goddard Space Flight Center**
**Greenbelt, Maryland**

National Aeronautics and
Space Administration

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# Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the Surface Albedo JPSS Review/Approval Page

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# Preface

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

Any questions should be addressed to:

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# Change History Log

| Revision | Effective Date | Description of Changes (Reference the CCR & CCB/ERB Approve Date) | Sections Affected |
|---|---|---|---|
| 0200- | Aug. 29, 2013 | This version incorporates 474-CCR-13-1153 which was approved by JPSS Ground ERB on the effective date shown. | All |
| 0200A | Jan 30, 2014 | This version incorporates 474-CCR-13-1439 which was approved by JPSS Ground ERB on the effective date shown. | All |
| 0200A1 | Oct 23, 2014 | This version incorporates 474-CCR-14-2091 which was approved by the JPSS Ground ERB for CO10 on the effective date shown. | All |
| 0200B | Nov. 13, 2014 | This version incorporates 474-CCR-14-2103 which was approved by the JPSS Ground ERB for CO10 on the effective date shown. | All |
| 0200C | Jul 28, 2015 | This version incorporates 474-CCR-15-2288 and 474-CCR-15-2506 which was approved by the JPSS Ground ERB on the effective date shown. | All |


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## List of TBx Items

| TBx | Type | ID | Text | Action |
|---|---|---|---|---|
| None | | | | |


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# 1 Introduction

## 1.1 Scope

The Joint Polar Satellite System (JPSS) Algorithm Specification for Surface Albedo– Volume II: Data Dictionary contains the specifications for the format of the Surface Albedo Intermediate Products (IPs) and Environmental Data Records (EDRs). This specification includes the format of the Hierarchical Data Format Release 5 (HDF5) files, as well as the product definitions. These formats are available to external users of the JPSS. For an overview of the data product formats, see 474-00001-01, JPSS CDFCB-X Vol I. For an overview of the metadata formats for data products, see 474-00448-02-01, JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms.

## 1.2 Organization

| Section | Contents |
|---|---|
| Section 1 | Provides information regarding the scope, and organization of this document, as reference material only. |
| Section 2 | Lists parent documents and related documents that were used as sources of information for this document or that provide additional background information to aid understanding of the interface implementations. |
| Section 3 | Provides an overview of the HDF5 UML for the data product types |
| Section 4 | Provides a description of the contents of each JPSS Intermediate Product associated with this algorithm grouping. |
| Section 5 | Provides a description of the contents of each JPSS EDR associated with this algorithm grouping. |
| Section 6 | Identifies the ancillary and auxiliary data needed for the processing associated with this algorithm grouping if applicable. |
| Section 7 | Provides a description of relevant Look-Up Tables (LUTs) and Processing Coefficient Tables (PCTs) associated with this algorithm grouping. |
| Appendix A | Provides the Data Mnemonic to Interface Mapping for the data products in this volume. |
| Appendix B | Provides the mapping of the quality flags by sensor and product that are reportable to the associated data product quality flag Test ID used in the processing environment |
| Appendix C | Acronyms/Glossary. Reference 470-00041, JPSS Program Lexicon |
| Attachment A | Provides the list of applicable xml files for this Data Dictionary. |


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# 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 |
|---|---|
| 474-00448-01-20 | JPSS Algorithm Specification Volume I: Software Requirements Specification (SRS) for the Surface Albedo |

## 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 |
|---|---|
| NPR 7150.2A | NASA Software Engineering Requirements |
| 474-00167 | Joint Polar Satellite System (JPSS) Common Ground System (CGS) Requirements Document |
| 474-00005 | Joint Polar Satellite System (JPSS) Government Resource for Algorithm Verification, Independent Testing, and Evaluation (GRAVITE) Requirements Document |
| N/A | Hierarchical Data Format, Version 5 (HDF5), http://www.hdfgroup.org/HDF5/ |

## 2.3 Information Documents

The following documents are referenced herein and amplify or clarify the information presented in this document. These documents are not binding on the content of this document.

| Document Number | Title |
|---|---|
| 474-00040 | VIIRS Surface Albedo: Surface Albedo Algorithm Theoretical Basis Document (ATBD) |
| 474-00448-03-20 | JPSS Algorithm Specification Volume III: Operational Algorithm Description (OAD) for the Surface Albedo |
| 474-00333 | Joint Polar Satellite System (JPSS) Ground System (GS) Architecture Description Document (ADD) |
| 474-00054 | Joint Polar Satellite System (JPSS) Ground System (GS) Concept of |

| Document Number | Title |
|---|---|
| | Operations (ConOps) |
| 470-00041 | Joint Polar Satellite System (JPSS) Program Lexicon |
| 474-00001-01 | Joint Polar Satellite System (JPSS) Common Data Format Control Book, Vol I – Overview |
| 474-00448-02-01 | Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the Common Algorithms |


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# 3 UML for HDF5 Products

The following paragraphs describe the structure and contents of the IP and EDR granules formed by the JPSS ground processing software.

## 3.1 Intermediate Products and Environmental Data Records HDF5 Details - Statically Sized

Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, depicts the HDF5 IP/EDR organization as a Unified Modeling Language (UML) class diagram. Each HDF5 IP/EDR file contains an HDF5 Root Group, '/', a Data Products Group, Product Groups (Collection Short Name), an optional Geolocation Group (depending upon packaging option, see the JPSS CDFCB-X Vol. I, for a description of the geolocation packaging), and an All Data Group (dataset arrays). The Product Groups and Geolocation Group both contain datasets - an Aggregation Dataset (Collection Short Name_Agg) and Granule Datasets (Collection Short Name_Gran_n) - where n indicates the nth granule in a temporal aggregation of granules (1 .. n). A granule is a general term used to describe the minimum quanta of data collected per processing period, generally on the order of seconds. For the definition and organization of the metadata attributes contained in the HDF5 files, see the JPSS–Algorithm Specification Volume II: Data Dictionary for the Common Algorithms. Attributes that are specific to a particular IP/EDR are listed with the specific IP/EDR's data format definition. For the generalized formats and packaging options for the Geolocation data, see the JPSS CDFCB-X Vol. I - Overview.


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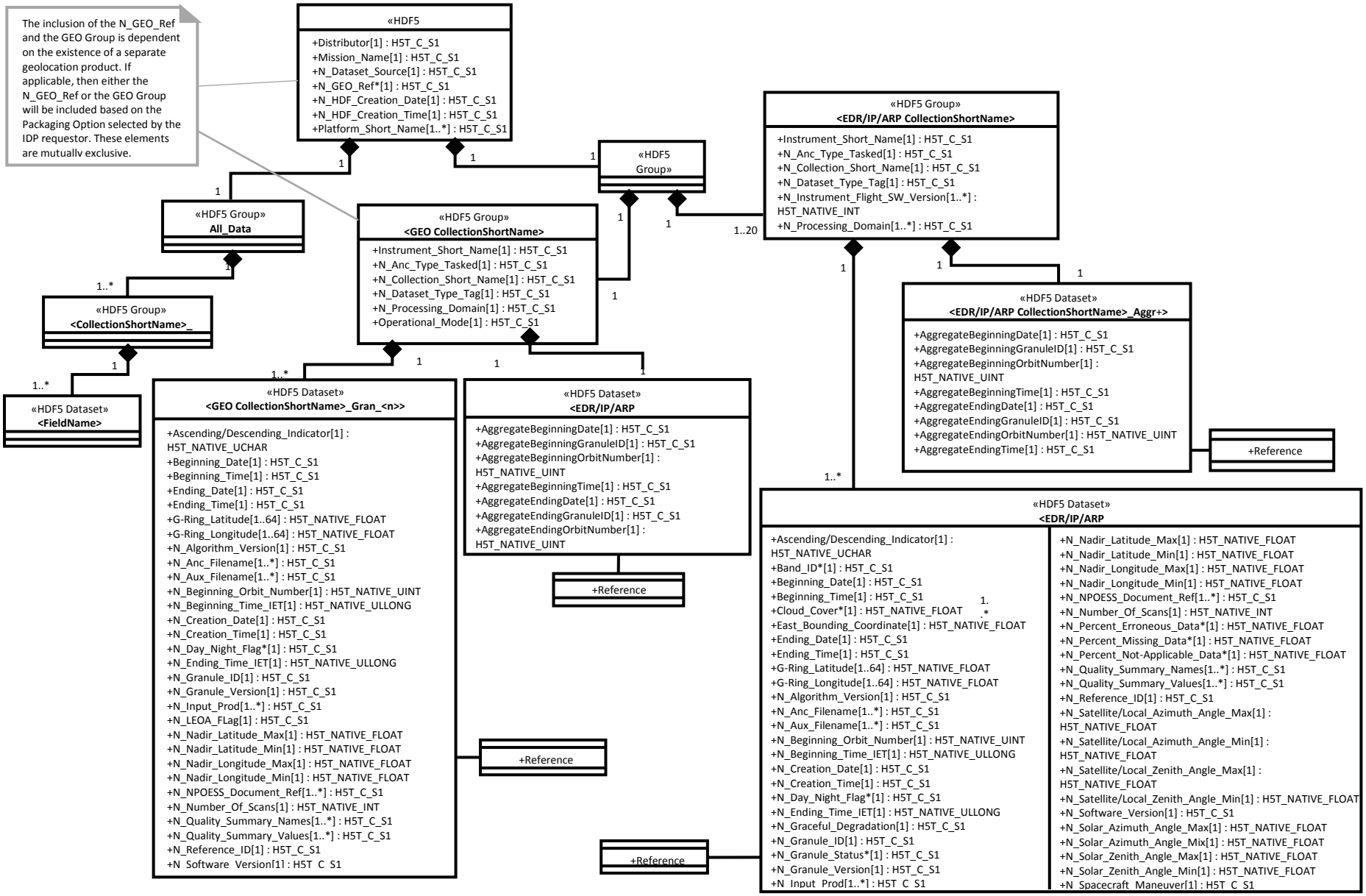


**Figure: 3.1-1 Generalized UML Diagram for statically sized HDF5 IP/EDR Files**



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## 3.2 Intermediate Products, Application Related Products and Environmental Data Records HDF5 Details - Dynamically Sized

Figure 3.2-1, Generalized UML Diagram for dynamically sized HDF5 IP/EDR Files, depicts the HDF5 IP/EDR organization as a Unified Modeling Language (UML) class diagram for products that contain dynamically sized fields. Dynamically sized means that a field's length will vary from granule to granule. The organization of the HDF5 file is identical to the statically sized HDF5 file with the exception of the aggregation and corresponding All_Data group.For statically sized products, the object ID stored in the aggregation array points to a Dataset_Array under the All_Data group. This Dataset_Array is a single HDF5 dataset for each field. This single HDF5 dataset contains all the data for all granules in the file for a given field. However, for dynamically sized products, the object ID stored in the aggregation array points to an HDF5 group instead. This HDF5 group contains one or more datasets - a separate dataset for each granule for a given field. The dataset is named "Dataset_Array_Gran_n".


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

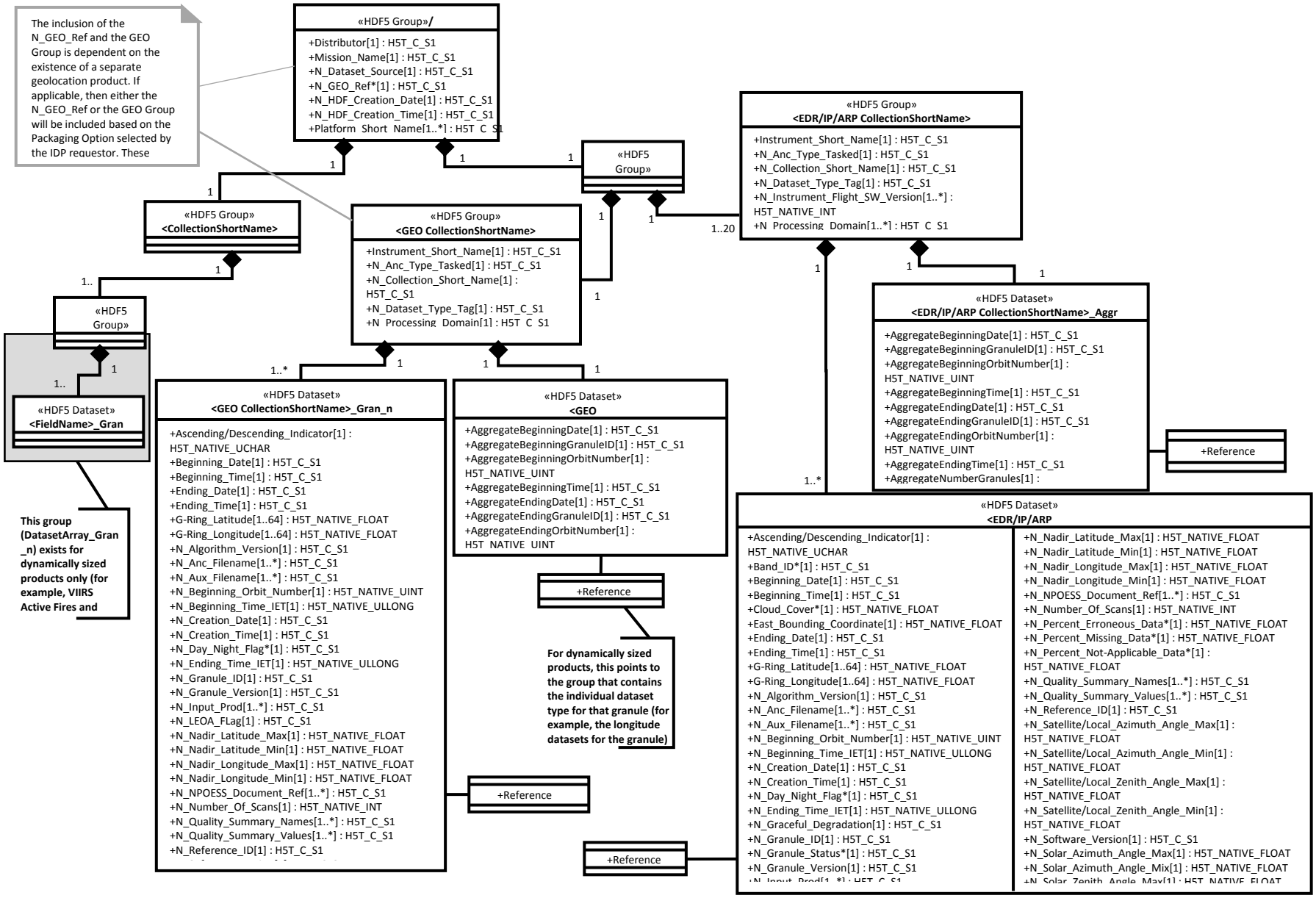


**Figure: 3.2-1 Generalized UML Diagram for dynamically sized HDF5 IP/EDR Files**



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# 4 Intermediate Products (IPs)

Not Applicable

# 5 Environmental Data Records (EDRs)

Environmental Data Records (EDRs) are data records that contain the environmental parameters or imagery generated by the JPSS system as products deliverable to the user. The JPSS and S-NPP required set of EDRs are defined in 470-00067-02, the JPSS Ground System Requirements Document, Vol II. An EDR is either an official EDR, which means that it is part of the set of official JPSS Data Products, or it is a substitute EDR. A substitute EDR is produced by substitute ancillary data, data defined by the IDP operator in order to create a data product using different input (specifically, different ancillary data) than that which is prescribed by JPSS. EDRs provide stable measurements useful for long-term trends. An EDR contains the following:

- EDR specific data (as described in each section)
- Appropriate geolocation values
- Quality Flags
- Metadata represented as Attributes in the HDF5 file that are provided at the granule and aggregation level
- The EDRs are separated by category and are presented alphabetically within each category. All S-NPP EDRs are also delivered during JPSS, thus only those EDRs which are JPSS-only are annotated as such within their respective Description/Purpose section of their interface definition.

## 5.1 VIIRS Surface Albedo EDR

| | |
|---|---|
| **Data Mnemonic** | EDRE-VRSA-C0030 (Official)<br>EDRE-VRSA-C0031 (Substitute) |
| **Description/ Purpose** | Surface Albedo is defined as the total amount of solar radiation in the 0.4 to 4.0 micron band that is reflected by the Earth's surface into an upward hemisphere (sky dome). This includes both diffuse and direct components, divided by the total amount incident from this hemisphere, again including both diffuse and direct components.<br>The Surface Albedo EDR is required only during the daytime and under clear conditions. This is an instantaneous, not a time-averaged, measurement.<br>The VIIRS Surface Albedo EDR consists of a single albedo field (with associated Quality Flags and scale/offset factors). The albedo is a combination of Land Surface Albedo (from the Land Surface Albedo IP), the Ocean Albedo (from the Net Heat Flux algorithm's Ocean Albedo IP), and the Ice Albedo (from the Snow Cover Fraction EDR). The Land Surface Albedo IP derives from the Land Surface Albedo Mod-Gran IP, which is a granulated version of the LSA 17-day Tile GIP.<br>Quality flags are passed through from the IPs and EDR where they originated. Since the Surface Albedo product is a combination of Land, Ocean Albedo IPs, and the Ice Albedo from the Snow Cover Fraction EDR, the quality flags may apply to some or all of these. See the flag's product profile description for details.<br>Sensors: VIIRS<br>Effectivity: S-NPP and JPSS |


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| | |
|---|---|
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, Section 3.0 for details. |
| **File Size** | See Table: 5.1.1-1 VIIRS Surface Albedo EDR Data Content Summary for size |
| **File Format Type** | HDF5 |
| **Production Frequency** | As per request |
| **Data Content and Data Format** | See Section 5.1.1, VIIRS Surface Albedo EDR Data Content Summary<br>See Section 5.1.2, VIIRS Surface Albedo EDR Product Profile<br>See Section 5.1.3, VIIRS Surface Albedo EDR HDF5 Details<br>See Section 5.1.4, VIIRS Surface Albedo EDR Metadata Details<br>See Section 5.1.5, VIIRS Surface Albedo EDR Geolocation Details |


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### 5.1.1 VIIRS Surface Albedo EDR Content Summary

**Table: 5.1.1-1 VIIRS Surface Albedo EDR Data Content Summary**

| Name | Description | Data Type | Aggregate Dimensions (N = Number of Granules) | Granule Dimensions | Units |
|---|---|---|---|---|---|
| Albedo | VIIRS Surface Albedo - Combined Albedo derived from the Land, Ocean and Ice Albedo inputs | unsigned 16-bit integer | [N*768, 3200] | [768, 3200] | unitless |
| QF1_VIIRSSAEDR | Pixel level Quality flags | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF2_VIIRSSAEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF3_VIIRSSAEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| AlbedoFactors | Scale = First Array Element; Offset = 2nd Array Element | 32-bit floating point | [N*2] | [2] | unitless |
| **File Size** | **12,288,008 Bytes** | | | | |

### 5.1.2 VIIRS Surface Albedo EDR Product Profile

**Table: 5.1.2-1 VIIRS Surface Albedo EDR Product Profile**

**VIIRS Surface Albedo EDR Product Profile**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| Albedo | 2byte(s) | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 768 | 768 |
| CrossTrack | No | No | 3200 | 3200 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| VIIRS Surface Albedo - Combined Albedo derived from the Land, Ocean and Ice Albedo Inputs | 0 | -1.00 | 2.00 | unitless | Yes | AlbedoFactors | unsigned 16-bit integer | | |

| Name | Value |
|---|---|
| NA_UINT16_FILL | 65535 |
| MISS_UINT16_FILL | 65534 |
| ONBOARD_PT_UINT16_FILL | 65533 |
| ONGROUND_PT_UINT16_FILL | 65532 |
| ERR_UINT16_FILL | 65531 |
| ELLIPSOID_UINT16_FILL | 65530 |
| VDNE_UINT16_FILL | 65529 |
| SOUB_UINT16_FILL | 65528 |

| Name | Value |
|---|---|

**VIIRS Surface Albedo EDR Product Profile - Quality Flags**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|



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**QF1_VIIRSSAEDR** 1byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 768 | 768 |
| CrossTrack | No | No | 3200 | 3200 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Albedo Retrieval Quality (Indicates the quality of the pixel level retrieval) - Applies to Ice, Ocean, and Land Albedos | 0 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Poor (Exclusion) 1<br>No Retrieval 2 |
| Out of Range - Retrieved albedo is out of expected reporting range of 0 <= Albedo <= 1. Applies to Ice, Ocean, and Land Albedos | 2 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Stray light maximum radiance exclusion - Applies to Ice, Ocean, and Land Albedos | 3 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Input Chlorophyll Concentration | 4 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>Available 0<br>Not Available (Climatology Used) 1 |
| Input Wind Speed Source - Applies to Ocean Albedo | 5 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Not available (ocean)/Not used (land/ice) 0<br>NWP 1<br>MIS 3 |
| Spare | 7 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value |

**QF2_VIIRSSAEDR** 1byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 768 | 768 |
| CrossTrack | No | No | 3200 | 3200 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Cloud Confidence - Applies to Ice, Ocean and Land Albedos | 0 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Confidently Clear 0<br>Probably Clear 1<br>Probably Cloudy 2<br>Confidently Cloudy 3 |
| Cloud Shadow Detected | 2 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Background Type - Identifies Background Type | 3 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Land 0<br>Sea Ice 1<br>Ocean 2<br>Not Produced 3 |
| Solar Zenith Angle Degradation/Exclusion - Applies to Ice, Ocean and Land Albedos | 5 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>None (Solar Zenith < 65 degrees) 0<br>Degraded (65 degrees <= Solar Zenith <= 85 degrees) 1<br>Exclusion (Solar Zenith > 85 degrees) 2 |
| Spare | 7 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value |

**QF3_VIIRSSAEDR** 1byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 768 | 768 |
| CrossTrack | No | No | 3200 | 3200 |

**Datum**



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| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Aerosol Source (Indicates source of the 550nm aerosol information used in the retrieval) - Applies to Land, Ice, and Ocean Albedos. NAAPS or Climatology used in processing identified in EDR metadata | 0 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Direct VIIRS retrieval 0<br>Interpolation Only 1<br>Interpolation & Climatology / NAAPS 2<br>Climatology / NAAPS 3 |
| Exclusion - AOT (at 550nm) > 1.0 | 2 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Coccolithophore degradation with calcite concentration due to coccolithophores >=0.3 mg/m^3 | 3 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Input Data Quality (Quality of Surface Albedo is degraded or not retrieved due to bad input data in horizontal cell) - Applies to Ice, Ocean and Land Albedos | 4 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Degraded 1<br>No Retrieval 2 |
| Spare | 6 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value |

## VIIRS Surface Albedo EDR Product Profile - Scale Factors

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| AlbedoFactors | 4byte(s) | |

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

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Scale = First Array Element; Offset = 2nd Array Element | 0 | MIN_VAL | MAX_VAL | unitless | No | | 32-bit floating point | Name Value | Name Value |

### 5.1.3 VIIRS Surface Albedo EDR HDF5 Details

Figure 5.1.3-1, VIIRS Surface Albedo EDR UML Diagram, provides details on the contents and data types of the VIIRS Surface Albedo EDR product. This UML provides details at the product level detail only. In addition to this UML, refer to Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

| **VIIRS-SA-EDR** |
|---|
| +Albedo : H5T_NATIVE_USHORT<br>+QF1_VIIRSSAEDR : H5T_NATIVE_UCHAR<br>+QF2_VIIRSSAEDR : H5T_NATIVE_UCHAR<br>+QF3_VIIRSSAEDR : H5T_NATIVE_UCHAR<br>+AlbedoFactors : H5T_NATIVE_FLOAT |

**Figure: 5.1.3-1 VIIRS Surface Albedo EDR HDF5 UML Diagram**

### 5.1.4 VIIRS Surface Albedo EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Surface Albedo EDR are listed in the JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms. The VIIRS Surface Albedo EDR metadata includes all of the common metadata at the root, product, aggregation, and granule levels. In addition to the common metadata items for this product, Table 5.1.4-1, VIIRS Surface Albedo EDR N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values, provides the following items as name/value pairs. The listed name/value pair items in the table are the granule level quality flags for the VIIRS Surface Albedo EDR.

**Table: 5.1.4-1 VIIRS Surface Albedo EDR Quality Summary Metadata Values**

| **N_Quality_Summary** | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Comments** |
| Albedo Exclusion Summary | 0 - 100 | Percent of pixels within granule one or more exclusion criteria flags | |
| Albedo Summary Quality | 0 - 100 | Percent of pixels within granule with high quality of retrieval | |
| No Land Coverage | 0 - 1 | 0 = At least one land pixel in granule<br>1 = No land pixels in granule | |
| No Ocean Coverage | 0 - 1 | 0 = At least one ocean pixel in granule<br>1 = No ocean pixels in granule | |
| Summary Range Check | 0 - 100 | Percent of retrieved pixels outside of valid range | |

### 5.1.5 VIIRS Surface Albedo EDR Geolocation Details

VIIRS Surface Albedo EDR is produced on the VIIRS Moderate Resolution Geolocation with terrain correction applied. See the 474-00448-02-06 JPSS Algorithm Specification Vol II: Data Dictionary for VIIRS RDR/SDR, Section 6.2.5, for geolocation details.


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## 5.2 VIIRS Net Heat Flux EDR

| | |
|---|---|
| **Data Mnemonic** | EDRE-VNHF-C0030 (Official)<br>EDRE-VNHF-C0031 (Substitute) |
| **Description/ Purpose** | Net heat flux refers to net surface flux over oceans (including ice covered). Components are longwave and shortwave radiation, latent heat flux and sensible heat flux.<br>Note: The term 'water' is synonymous with 'ocean water' in the description fields for this product. The term 'ice' is synonymous with 'ocean ice.' Net Heat Flux values are not retrieved over large inland bodies of water/ice. Recognize that there are no requirements for this product and the information is provided for legacy purposes.<br>Sensors: VIIRS<br>Effectivity: S-NPP and JPSS |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | See Table: 5.2.1-1 VIIRS Net Heat Flux EDR Content Summary for size |
| **File Format Type** | HDF5 |
| **Data Content and Data Format** | For each aggregated area, the Net Heat Flux EDR contains:<br>Net Heat Flux<br>Latent and Sensible Heat Fluxes<br>Longwave and Shortwave Fluxes<br>Number of pixels in cell (total, clear, water, and ice)<br>Quality Flags<br>Associated Geolocation fields for this EDR are also listed<br>Note: The Net Heat Flux EDR implements a special set fill values in order to avoid conflict with the valid range of values.<br>See Section 5.2.1, Net Heat Flux EDR Data Content Summary<br>See Section 5.2.2 Net Heat Flux EDR Product Profile<br>See Section 5.2.3, Net Heat Flux EDR HDF5 Details<br>See Section 5.2.4 Net Heat Flux EDR HDF5 Metadata<br>See Section 5.2.5, Net Heat Flux EDR Geolocation Content Summary<br>See Section 5.2.6, Net Heat Flux EDR Geolocation Product Profile<br>See Section 5.2.7, Net Heat Flux EDR Geolocation HDF5 Details<br>See Section 5.2.8, Net Heat Flux EDR Geolocation HDF5 Metadata Details |


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### 5.2.1 VIIRS Net Heat Flux EDR Data Content Summary

**Table: 5.2.1-1 VIIRS Net Heat Flux EDR Content Summary**

| Name | Description | Data Type | Aggregate Dimensions (N = Number of Granules) | Granule Dimensions | Units |
|---|---|---|---|---|---|
| NetHeatFlux_Total | Total net heat flux (positive = transfer from surface to atmosphere) from water and ice surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| NetHeatFlux_Water | Total net heat flux (positive = transfer from surface to atmosphere) from water surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| NetHeatFlux_Ice | Total net heat flux (positive = transfer from surface to atmosphere) from ice surfaces. | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| LatentHeatFlux_Water | Latent heat flux (positive = transfer from surface to atmosphere) from water surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| LatentHeatFlux_Ice | Latent heat flux (positive = transfer from surface to atmosphere) from ice surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| SensibleHeatFlux_Water | Sensible heat flux (positive = transfer from surface to atmosphere) from water surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| SensibleHeatFlux_Ice | Sensible heat flux (positive = transfer from surface to atmosphere) from ice surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| LW_Flux_Water | Longwave flux (positive = transfer from | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Name | Description | Data Type | Aggregate Dimensions (N = Number of Granules) | Granule Dimensions | Units |
|---|---|---|---|---|---|
| | surface to atmosphere) from water surfaces | | | | |
| LW_Flux_Ice | Longwave flux (positive = transfer from surface to atmosphere) from ice surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| SW_Flux_Water | Shortwave flux (positive = transfer from surface to atmosphere) from water surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| SW_Flux_Ice | Shortwave flux (positive = transfer from surface to atmosphere) from ice surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| Total_Number_Of_Pixels_In_Cell | Total number of pixels included in the aggregated cell (nTotal) | 16-bit integer | [N*48, 254] | [48, 254] | pixels |
| Number_Of_Clear_Pixels_In_Cell | Number of clear pixels included in the aggregated cell (nClear) | 16-bit integer | [N*48, 254] | [48, 254] | pixels |
| Number_Of_Water_Pixels_In_Cell | Number of pixels over water included in the aggregated cell (nWater) | 16-bit integer | [N*48, 254] | [48, 254] | pixels |
| Number_Of_Ice_Pixels_In_Cell | Number of pixels over ice included in the aggregated cell (nIce) | 16-bit integer | [N*48, 254] | [48, 254] | pixels |
| QF1_VIIRSNHFEDR | Net Heat Flux Quality Flags | unsigned 8-bit char | [N*48, 254] | [48, 254] | unitless |
| QF2_VIIRSNHFEDR | | unsigned 8-bit char | [N*48, 254] | [48, 254] | unitless |
| QF3_VIIRSNHFEDR | | unsigned 8-bit char | [N*48, 254] | [48, 254] | unitless |
| QF4_VIIRSNHFEDR | | unsigned 8-bit char | [N*48, 254] | [48, 254] | unitless |
| QF5_VIIRSNHFEDR | | unsigned 8-bit char | [N*48, 254] | [48, 254] | unitless |
| **File Size** | **694,944 Bytes** | | | | |

## 5.2.2 VIIRS Net Heat Flux EDR Product Profile

### Table: 5.2.2-1 VIIRS Net Heat Flux EDR Product Profile

**Net Heat Flux Product Profile**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| NetHeatFlux_Total | 4byte(s) | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Total net heat flux (positive = transfer from surface to atmosphere) from water and ice surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | NA_FLOAT32_FILL | -9999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | |
| | | | | | | | | ELLIPSOID_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |

| Name | Data Size | Dimensions |
|---|---|---|
| NetHeatFlux_Water | 4byte(s) | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Total net heat flux (positive = transfer from surface to atmosphere) from water surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | NA_FLOAT32_FILL | -9999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | |
| | | | | | | | | ELLIPSOID_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |

| Name | Data Size | Dimensions |
|---|---|---|
| NetHeatFlux_Ice | 4byte(s) | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Total net heat flux (positive = transfer from surface to atmosphere) from ice surfaces. | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | NA_FLOAT32_FILL | -9999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | |
| | | | | | | | | ELLIPSOID_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |



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**LatentHeatFlux_Water** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Latent heat flux (positive = transfer from surface to atmosphere) from water surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | NA_FLOAT32_FILL | -9999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | |
| | | | | | | | | ELLIPSOID_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |

**LatentHeatFlux_Ice** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Latent heat flux (positive = transfer from surface to atmosphere) from ice surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | NA_FLOAT32_FILL | -9999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | |
| | | | | | | | | ELLIPSOID_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |

**SensibleHeatFlux_Water** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Sensible heat flux (positive = transfer from surface to atmosphere) from water surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | NA_FLOAT32_FILL | -9999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | |
| | | | | | | | | ELLIPSOID_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |

**SensibleHeatFlux_Ice** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Sensible heat flux (positive = transfer from surface to atmosphere) from ice surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | NA_FLOAT32_FILL | - | | |



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| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | 9999.9 |
| | | | | | | | | | | | MISS_FLOAT32_FILL | -9999.8 |
| | | | | | | | | | | | ERR_FLOAT32_FILL | -9999.5 |
| | | | | | | | | | | | ELLIPSOID_FLOAT32_FILL | -9999.4 |
| | | | | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 |
| LW_Flux_Water | 4byte(s) | | | | | | | | | | | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

| Datum | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Description** | **Datum Offset** | **Unscaled Valid Range Min** | **Unscaled Valid Range Max** | **Measurement Units** | **Scaled** | **Scale Factor Name** | **Data Type** | **Fill Values** | **Legend Entries** |
| Longwave flux (positive = transfer from surface to atmosphere) from water surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | **Name** / **Value**: NA_FLOAT32_FILL -9999.9; MISS_FLOAT32_FILL -9999.8; ERR_FLOAT32_FILL -9999.5; ELLIPSOID_FLOAT32_FILL -9999.4; VDNE_FLOAT32_FILL -9999.3 | **Name** / **Value** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LW_Flux_Ice | 4byte(s) | | | | | | | | | | | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

| Datum | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Description** | **Datum Offset** | **Unscaled Valid Range Min** | **Unscaled Valid Range Max** | **Measurement Units** | **Scaled** | **Scale Factor Name** | **Data Type** | **Fill Values** | **Legend Entries** |
| Longwave flux (positive = transfer from surface to atmosphere) from ice surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | **Name** / **Value**: NA_FLOAT32_FILL -9999.9; MISS_FLOAT32_FILL -9999.8; ERR_FLOAT32_FILL -9999.5; ELLIPSOID_FLOAT32_FILL -9999.4; VDNE_FLOAT32_FILL -9999.3 | **Name** / **Value** |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW_Flux_Water | 4byte(s) | | | | | | | | | | | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

| Datum | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Description** | **Datum Offset** | **Unscaled Valid Range Min** | **Unscaled Valid Range Max** | **Measurement Units** | **Scaled** | **Scale Factor Name** | **Data Type** | **Fill Values** | **Legend Entries** |
| Shortwave flux (positive = transfer from surface to atmosphere) from water surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | **Name** / **Value**: NA_FLOAT32_FILL -9999.9; MISS_FLOAT32_FILL -9999.8; ERR_FLOAT32_FILL -9999.5; ELLIPSOID_FLOAT32_FILL -9999.4; VDNE_FLOAT32_FILL -9999.3 | **Name** / **Value** |



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**SW_Flux_Ice** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shortwave flux (positive = transfer from surface to atmosphere) from ice surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | Name | Value | Name | Value |
| | | | | | | | | NA_FLOAT32_FILL | -9999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | |
| | | | | | | | | ELLIPSOID_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |

**Total_Number_Of_Pixels_In_Cell** — 2byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total number of pixels included in the aggregated cell (nTotal) | 0 | MIN_VAL | MAX_VAL | pixels | No | | 16-bit integer | Name | Value | Name | Value |
| | | | | | | | | NA_INT16_FILL | -999 | | |
| | | | | | | | | MISS_INT16_FILL | -998 | | |
| | | | | | | | | ERR_INT16_FILL | -995 | | |
| | | | | | | | | ELLIPSOID_INT16_FILL | -994 | | |
| | | | | | | | | VDNE_INT16_FILL | -993 | | |

**Number_Of_Clear_Pixels_In_Cell** — 2byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of clear pixels included in the aggregated cell (nClear) | 0 | MIN_VAL | MAX_VAL | pixels | No | | 16-bit integer | Name | Value | Name | Value |
| | | | | | | | | NA_INT16_FILL | -999 | | |
| | | | | | | | | MISS_INT16_FILL | -998 | | |
| | | | | | | | | ERR_INT16_FILL | -995 | | |
| | | | | | | | | ELLIPSOID_INT16_FILL | -994 | | |
| | | | | | | | | VDNE_INT16_FILL | -993 | | |

**Number_Of_Water_Pixels_In_Cell** — 2byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of pixels over water included in the aggregated cell (nWater) | 0 | MIN_VAL | MAX_VAL | pixels | No | | 16-bit integer | Name | Value | Name | Value |
| | | | | | | | | NA_INT16_FILL | -999 | | |
| | | | | | | | | MISS_INT16_FILL | -998 | | |
| | | | | | | | | ERR_INT16_FILL | -995 | | |
| | | | | | | | | ELLIPSOID_INT16_FILL | -994 | | |
| | | | | | | | | VDNE_INT16_FILL | -993 | | |

**Number_Of_Ice_Pixels_In_Cell** — 2byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**



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| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of pixels over ice included in the aggregated cell (nIce) | 0 | MIN_VAL | MAX_VAL | pixels | No | | 16-bit integer | Name | Value | Name | Value |
| | | | | | | | | NA_INT16_FILL | -999 | | |
| | | | | | | | | MISS_INT16_FILL | -998 | | |
| | | | | | | | | ERR_INT16_FILL | -995 | | |
| | | | | | | | | ELLIPSOID_INT16_FILL | -994 | | |
| | | | | | | | | VDNE_INT16_FILL | -993 | | |

## Net Heat Flux Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSNHFEDR | 1byte(s) | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Net Heat Flux Pixel Quality (Indicates quality of retrieved value) | 0 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |
| Net Heat Flux Over Water Quality (Indicates quality of retrieved value) | 2 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |
| Net Heat Flux Over Ice Quality (Indicates quality of retrieved value) | 4 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |
| Latent Heat Flux Over Water Quality (Indicates quality of retrieved value) | 6 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |

| Name | Data Size | Dimensions |
|---|---|---|
| QF2_VIIRSNHFEDR | 1byte(s) | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Latent Heat Flux Over Ice Quality (Indicates quality of retrieved value) | 0 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |
| Sensible Heat Flux Over Water Quality (Indicates quality of retrieved value) | 2 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |
| Sensible Heat Flux Over Ice Quality (Indicates quality of retrieved value) | 4 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Good | 0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Invalid 1<br>Out of Range 2<br>Exclusion 3 |
| | | Shortwave Flux Over Water Quality (Indicates quality of retrieved value) | 6 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Invalid 1<br>Out of Range 2<br>Exclusion 3 | |

QF3_VIIRSNHFEDR 1byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Shortwave Flux Over Ice Quality (Indicates quality of retrieved value) | 0 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Invalid 1<br>Out of Range 2<br>Exclusion 3 |
| Longwave Flux Over Water Quality (Indicates quality of retrieved value) | 2 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Invalid 1<br>Out of Range 2<br>Exclusion 3 |
| Longwave Flux Over Ice Quality (Indicates quality of retrieved value) | 4 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Invalid 1<br>Out of Range 2<br>Exclusion 3 |
| Sea Surface Temperature Input is of poor quality | 6 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Ice Surface Temperature Input is of poor quality | 7 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |

QF4_VIIRSNHFEDR 1byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Aerosol Optical Thickness Interpolation and Climatology/NAAPS Processing Used. NAAPS or Climatology used in processing identified in EDR metadata. | 0 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Direct VIIRS retrieval 0<br>Interpolation Only 1<br>Interpolation & Climatology/NAAPS 2<br>Climatology/NAAPS 3 |
| Suspended Matter Index Input is of poor quality | 2 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Chlorophyll Input is of poor quality | 3 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Sea Ice Age Input is of poor quality | 4 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0 |



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| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | True | 1 |
| | | Exclusion - Cloud Present (80% or more of the moderate resolution pixels in the horizontal cell are not assigned "Confidently Clear" by the VIIRS Cloud Mask (VCM)) | 5 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | **Name** **Value** | **Name** | **Value** |
| | | | | | | | | | | | Clear Ocean (Water or Ice) Fraction >= 0.8 | 0 |
| | | | | | | | | | | | 0.8 > Clear Ocean Fraction > 0.1 | 1 |
| | | | | | | | | | | | Clear Ocean Fraction <= 0.1 or Land | 2 |
| | | Sun Glint detected in horizontal cell (sun glint in horizontal cell < 36 degrees for more than 50% of aggregated pixels) | 7 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | **Name** **Value** | **Name** | **Value** |
| | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | True | 1 |

QF5_VIIRSNHFEDR 1byte(s)

| **Name** | **Granule Boundary** | **Dynamic** | **Min Array Size** | **Max Array Size** |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| **Description** | **Datum Offset** | **Unscaled Valid Range Min** | **Unscaled Valid Range Max** | **Measurement Units** | **Scaled** | **Scale Factor Name** | **Data Type** | **Fill Values** | **Legend Entries** |
|---|---|---|---|---|---|---|---|---|---|
| Wind Speed Source/Exclusion (Indicates the source of wind speed if less than exclusion condition or indicates that the average wind speed in horizontal cell exceeds 25 m/s) | 0 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | **Name** **Value** | **Name** **Value**<br>Not Used 0<br>NWP 1<br>Exclusion (> 25 m/s) 2<br>MIS 3 |
| Exclusion: If average AOT in horizontal cell > 1.0 (AOT @550nm), the exclusion condition is exceeded | 2 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | **Name** **Value** | **Name** **Value**<br>AOT within Range 0<br>AOT out of range 1 |
| Spare | 3 | MIN_VAL | MAX_VAL | unitless | No | | 5 bit(s) | **Name** **Value** | **Name** **Value** |

### 5.2.3 VIIRS Net Heat Flux EDR HDF5 Details

Figure 5.2.3-1, VIIRS Net Heat Flux UML Diagram, provides details on the content and datatypes of the NHF product. This UML provides details at the product level detail only. In addition to this UML, refer to Figure 3.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

| **VIIRS-NHF-EDR** |
|---|
| +NetHeatFlux_Total : H5T_NATIVE_FLOAT |
| +NetHeatFlux_Water : H5T_NATIVE_FLOAT |
| +NetHeatFlux_Ice : H5T_NATIVE_FLOAT |
| +LatentHeatFlux_Water : H5T_NATIVE_FLOAT |
| +LatentHeatFlux_Ice : H5T_NATIVE_FLOAT |
| +SensibleHeatFlux_Water : H5T_NATIVE_FLOAT |
| +SensibleHeatFlux_Ice : H5T_NATIVE_FLOAT |
| +LW_Flux_Water : H5T_NATIVE_FLOAT |
| +LW_Flux_Ice : H5T_NATIVE_FLOAT |
| +SW_Flux_Water : H5T_NATIVE_FLOAT |
| +SW_Flux_Ice : H5T_NATIVE_FLOAT |
| +Total_Number_Pixels_In_Cell : H5T_NATIVE_SHORT |
| +Number_Clear_Pixels_In_Cell : H5T_NATIVE_SHORT |
| +Number_Water_Pixels_In_Cell : H5T_NATIVE_SHORT |
| +Number_Ice_Pixels_In_Cell : H5T_NATIVE_SHORT |
| +QF1_VIIRSNHFEDR : H5T_NATIVE_UCHAR |
| +QF2_VIIRSNHFEDR : H5T_NATIVE_UCHAR |
| +QF3_VIIRSNHFEDR : H5T_NATIVE_UCHAR |
| +QF4_VIIRSNHFEDR : H5T_NATIVE_UCHAR |
| +QF5_VIIRSNHFEDR : H5T_NATIVE_UCHAR |

**Figure: 5.2.3-1 VIIRS Net Heat Flux EDR HDF5 UML Diagram**

### 5.2.4 VIIRS Net Heat Flux EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the Net Heat Flux EDR are listed in the JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms, 474-00448-02-01, Section 5.3, HDF5 (Metadata) Hierarchy. The NHF metadata includes all common metadata at the root, product, aggregation, and granule level. In addition to the common metadata items for Net Heat Flux, the following items are included as name/value pairs under the granule level metadata attribute “N_Quality_Summary”:

**Table: 5.2.4-1 VIIRS Net Heat Flux EDR Quality Summary Metadata Values**

| **N_Quality_Summary** | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Comments** |
| Exclusion - No Ocean Coverage | 0 - 1 | This horizontal cell is/is not characterized as over ocean | 0 = Ocean Present in Granule<br>1 = No Ocean Present in Granule |
| Exclusion Summary | 0 - 100% | Percent of cells in this granule that have one or more of the exclusion | |


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| N_Quality_Summary | | | |
|---|---|---|---|
| | | criteria met | |
| Total Net Heat Flux Product Quality | 0 - 100% | Percent of cells within this granule with a high quality of retrieval | |

### 5.2.5 VIIRS Net Heat Flux EDR Geolocation Content Summary

| | |
|---|---|
| **Data Mnemonic** | None |
| **Description/ Purpose** | The Net Heat Flux Geolocation is produced at the same resolution as the Net Heat Flux Product. |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | See Table: 5.2.5-1 VIIRS Net Heat Flux EDR Geolocation Content Summary for size |
| **File Format Type** | HDF5 |
| **Data Content and Data Format** | For each aggregated area, the Net Heat Flux Geolocation contains:<br>Time Fields<br>Geolocation Angular Fields<br>Height and Satellite Range<br>Spacecraft Position, Velocity, and Attitude<br>Spacecraft Solar Zenith and Azimuth Angles<br>Geolocation Quality Flags<br>See Section 5.2.5, Net Heat Flux EDR Geolocation Content Summary<br>See Section 5.2.6, Net Heat Flux EDR Geolocation Product Profile<br>See Section 5.2.7, Net Heat Flux EDR Geolocation HDF5 Details<br>See Section 5.2.8, Net Heat Flux EDR Geolocation HDF5 Metadata Details |


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**Table: 5.2.5-1 VIIRS Net Heat Flux EDR Geolocation Content Summary**

| Name | Description | Data Type | Aggregate Dimensions (N = Number of Granules) | Granule Dimensions | Units |
|---|---|---|---|---|---|
| StartTime | Starting Time of each scan in IET (1/1/1958) | 64-bit integer | [N*48] | [48] | microsecond |
| MidTime | Mid-Time of each scan in IET (1/1/1958) | 64-bit integer | [N*48] | [48] | microsecond |
| Latitude | Latitude of each cell (positive North) | 32-bit floating point | [N*48, 254] | [48, 254] | degree |
| Longitude | Longitude of each cell (positive East) | 32-bit floating point | [N*48, 254] | [48, 254] | degree |
| SolarZenithAngle | Zenith angle of sun at each cell position | 32-bit floating point | [N*48, 254] | [48, 254] | degree |
| SolarAzimuthAngle | Azimuth angle of sun (measured clockwise positive from North) at each cell position | 32-bit floating point | [N*48, 254] | [48, 254] | degree |
| SatelliteZenithAngle | Zenith angle to Satellite at each cell position | 32-bit floating point | [N*48, 254] | [48, 254] | degree |
| SatelliteAzimuthAngle | Azimuth angle (measured clockwise positive from North) to Satellite at each cell position | 32-bit floating point | [N*48, 254] | [48, 254] | degree |
| Height | Height above Mean Sea Level | 32-bit floating point | [N*48, 254] | [48, 254] | meter |
| SatelliteRange | Line of sight distance from the ellipsoid intersection to the satellite | 32-bit floating point | [N*48, 254] | [48, 254] | meter |
| SCPosition | Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan | 32-bit floating point | [N*48, 3] | [48, 3] | meter |
| SCVelocity | Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan | 32-bit floating point | [N*48, 3] | [48, 3] | m/s |
| SCAttitude | Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the midtime of scan | 32-bit floating point | [N*48, 3] | [48, 3] | arcsecond |
| SCSolarZenithAngle | The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector | 32-bit floating point | [N*48] | [48] | degree |
| SCSolarAzimuthAngle | The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface) | 32-bit floating point | [N*48] | [48] | degree |
| QF1_SCAN_VIIRSNHFG | Scan Level Geolocation Quality Flags | unsigned 8-bit char | [N*48] | [48] | unitless |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Name | Description | Data Type | Aggregate Dimensions (N = Number of Granules) | Granule Dimensions | Units |
|---|---|---|---|---|---|
| EO | | | | | |
| QF2_VIIRS NHFGEO | Cell Level Geolocation Quality Flags | unsigned 8-bit char | [N*48, N*254] | [48, 254] | unitless |
| **File Size** | **405,264 Bytes** | | | | |

## 5.2.6 VIIRS Net Heat Flux EDR Geolocation Product Profile

**Table: 5.2.6-1 VIIRS Net Heat Flux EDR Geolocation Product Profile**

**Net Heat Flux Geolocation Product Profile**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| StartTime | 8byte(s) | |
| MidTime | 8byte(s) | |
| Latitude | 4byte(s) | |
| Longitude | 4byte(s) | |

**StartTime — Dimensions**

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| Scan | Yes | No | 48 | 48 |

**StartTime — Datum**

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

**MidTime — Dimensions**

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| Scan | Yes | No | 48 | 48 |

**MidTime — Datum**

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

**Latitude — Dimensions**

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Latitude — Datum**

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

**Longitude — Dimensions**

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Longitude — Datum**



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

**SolarZenithAngle** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

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

**SolarAzimuthAngle** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

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

**SatelliteZenithAngle** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

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

**SatelliteAzimuthAngle** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Azimuth angle (measured clockwise positive from North) to Satellite at each cell position | 0 | MIN_VAL | MAX_VAL | degree | No | | 32-bit floating point | Name | Value | Name | Value |
| | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |



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| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | |

**Height** (4byte(s))

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

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

**SatelliteRange** (4byte(s))

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | No | No | 254 | 254 |

**Datum**

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

**SCPosition** (4byte(s))

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| Scan | Yes | No | 48 | 48 |
| ECRCoordinate | No | No | 3 | 3 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan | 0 | MIN_VAL | MAX_VAL | meter | No | | 32-bit floating point | Name | Value | Name | Value |
| | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

**SCVelocity** (4byte(s))

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| Scan | Yes | No | 48 | 48 |
| ECRCoordinate | No | No | 3 | 3 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan | 0 | MIN_VAL | MAX_VAL | m/s | No | | 32-bit floating point | Name | Value | Name | Value |
| | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |



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| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 |

**SCAttitude** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| Scan | Yes | No | 48 | 48 |
| GRFCoordinate | No | No | 3 | 3 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Spacecraft attitude with respect to Geodetic Reference Frame Coordinates (roll, pitch, yaw) at the midtime of scan | 0 | MIN_VAL | MAX_VAL | arcsecond | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

**SCSolarZenithAngle** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| Scan | Yes | No | 48 | 48 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| The angle from the normal vector of the Solar Diffuser surface (z-axis of the solar diffuser frame) to the solar vector | 0 | MIN_VAL | MAX_VAL | degree | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

**SCSolarAzimuthAngle** — 4byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| Scan | Yes | No | 48 | 48 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| The angle from the Solar Diffuser reference frame x-axis to the projection of the solar vector onto the solar diffuser surface (x-y plane), measured counterclockwise (observer looking toward the SD surface) | 0 | MIN_VAL | MAX_VAL | degree | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

## Net Heat Flux Geolocation Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_SCAN_VIIRSNHFGEO | 1byte(s) | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| Scan | Yes | No | 48 | 48 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Attitude and Ephemeris Availability Status | 0 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | | | Nominal - E&A data available | 0 |



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| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Missing Data <= Small Gap: 1<br>Small Gap < Missing Data < Granule Boundary: 2<br>Missing Data >= Granule Boundary: 3 |
| | | HAM/RTA Encoder Flag - Indicates the quality of the HAM and RTA encoder timestamps | 2 | MIN_VAL | MAX_VAL | unitless | No | | 2 bit(s) | Name, Value | Name, Value:<br>Good Data: 0<br>Bad Data - either HAM, RTA, or both are bad for the entire scan: 1<br>Degraded Data - either HAM, RTA, or both are corrupted within the scan.: 2<br>Missing Data - Missing encoder data for the scan: 3 |
| | | Within South Atlantic Anomaly | 4 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name, Value | Name, Value:<br>False: 0<br>True: 1 |
| | | Solar Eclipse during Earth view scan | 5 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name, Value | Name, Value:<br>False: 0<br>True: 1 |
| | | Spare | 6 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name, Value | Name, Value |
| | | Half Angle Mirror Side | 7 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name, Value | Name, Value:<br>A-Side: 0<br>B-Side: 1 |

QF2_VIIRSNHFGEO — 1byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 48 | 48 |
| CrossTrack | Yes | No | 254 | 254 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Invalid Input Data (Indicates that any of the Spacecraft Ephemeris or Attitude Data is Invalid or the encoder data is invalid) | 0 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name, Value | Name, Value:<br>False: 0<br>True: 1 |
| Bad Pointing (Indicates that the sensor LOS does not intersect the geoid, is near the limb, has invalid sensor angles, or other similar condition.) | 1 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name, Value | Name, Value:<br>False: 0<br>True: 1 |
| Bad Terrain (Indicates that the algorithm could not obtain a valid terrain value.) | 2 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name, Value | Name, Value:<br>False: 0<br>True: 1 |
| Invalid Solar Angles | 3 | MIN_VAL | MAX_VAL | unitless | No | | 1 bit(s) | Name, Value | Name, Value:<br>False: 0<br>True: 1 |
| Spare | 4 | MIN_VAL | MAX_VAL | unitless | No | | 4 bit(s) | Name, Value | Name, Value |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

### 5.2.7 VIIRS Net Heat Flux EDR Geolocation HDF5 Details

The Net Heat Flux Geolocation is based on the average position of the (12km x 12km) aggregated cells, each of which is based on the VIIRS moderate resolution SDR, terrain corrected. Figure 5.2.7-1, VIIRS Net Heat Flux Geolocation UML Diagram, provides details on the contents and datatypes of the NHF geolocation.

| VIIRS-NHF-EDR GEO |
|---|
| +StartTime : H5T_NATIVE_LLONG<br>+MidTime : H5T_NATIVE_LLONG<br>+Latitude : H5T_NATIVE_FLOAT<br>+Longitude : H5T_NATIVE_FLOAT<br>+SolarZenithAngle : H5T_NATIVE_FLOAT<br>+SolarAzimuthAngle : H5T_NATIVE_FLOAT<br>+SatelliteZenithAngle : H5T_NATIVE_FLOA<br>+SatelliteAzimuthAngle : H5T_NATIVE_FLOAT<br>+Height : H5T_NATIVE_FLOAT<br>+SatelliteRange : H5T_NATIVE_FLOAT<br>+SCPosition : H5T_NATIVE_FLOAT<br>+SCVelocity : H5T_NATIVE_FLOAT<br>+SCAttitude : H5T_NATIVE_FLOAT<br>+SCSolarZenithAngle : H5T_NATIVE_FLOAT<br>+SCSolarAzimuthAngle : H5T_NATIVE_FLOAT<br>+QF1_SCAN_VIIRSNHFGEO : H5T_NATIVE_UCHAR<br>+QF2_VIIRSNHFGEO : H5T_NATIVE_UCHAR |

**Figure: 5.2.7-1 VIIRS Net Heat Flux Geolocation UML Diagram**

### 5.2.8 VIIRS Net Heat Flux EDR Geolocation HDF5 Metadata Details

The HDF5 metadata elements associated with the Net Heat Flux Geolocation EDR are listed in the JPSS Algorithm Specification Volume II: Data Dictionary for the Common Algorithms, 474-00448-02-01, Section 5.3, HDF5 (Metadata) Hierarchy. The NHF Geolocation metadata includes all common metadata at the root, product, aggregation, and granule level. In addition to the common metadata items for Net Heat Flux, the following items are included as name/value pairs under the granule level metadata attribute “N_Quality_Summary”.

**Table: 5.2.8-1 VIIRS Net Heat Flux Geolocation Quality Summary Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Comments** |
| Automatic Quality Flag | 0 - 1 | Flag displays 0 for 'Retrieval Successful' and 1 for 'Retrieval not Successful' (one or more geolocation subroutines failed). | This is a granule level quality flag. |
| QA Percent Missing Data | 0 - 100% | Contains the percentage of missing data equal to the quotient of the number of pixels with | |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| **N_Quality_Summary** | | | |
|---|---|---|---|
| | | missing data over the total number of pixels in the granule. | |
| QA Percent Out of Bounds Data | 0 - 100% | Contains the percentage of out of bounds data equal to the quotient of the number of pixels with out of bounds data over the total number of pixels in the granule. | |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

# 6 Ancillary and Auxiliary Data Inputs

Not applicable.

# 7 Look-up Tables and Processing Coefficient Tables

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

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

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

**Instrument:** Identification of the Instrument associated with the table.

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

**File Size:** The size of the data file.

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

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

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

The following rules apply to all tables:

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

## 7.1 Look Up Tables

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

### 7.1.1 VIIRS Surface Albedo LUTs

#### *7.1.1.1 VIIRS Surface Albedo Skylight Diffusion Coefficients LUT*

| | |
|---|---|
| **Data Mnemonic** | NP_NU-LM0040-014 |
| **Description/ Purpose** | The VIIRS Surface Albedo (SA) Skylight Diffusion Coefficients LUT file contains the Dark Pixel Sub-Algorithm (DPSA) Fraction of Diffuse |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| | |
|---|---|
| | Skylight (per band, per solar zenith angle, per aot value and per aerosol model, 5 currently). This file relates the fraction of diffuse skylight as a function of band, zenith angles, aerosol optical thickness values and aerosol model. It is used to produce the interpolated value of the diffuse skylight used in conjunction with the black sky and white sky albedo.<br>The Five Aerosol models, in order, are:<br>Dust, Smoke High, Smoke Low, Urban High and Urban Low.<br>This file is used in the VIIRS Surface Albedo algorithm. |
| **File-Naming Construct** | See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4.<br>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.<br>Version Number Field provides Provenance Version Identifier. |
| **File Size** | See Table: 7.1.1.1-1 VIIRS Surface Albedo Skylight Diffusion Coefficients LUT Data Format for size |
| **File Format Type** | Little Endian Binary |
| **Production Frequency** | As needed |
| **Data Content and Data Format** | For details see Table 7.1.1.1-1, VIIRS Surface Albedo Skylight Diffusion Coefficients LUT Data Format. |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

**Table: 7.1.1.1-1 VIIRS Surface Albedo Skylight Diffusion Coefficients LUT Data Format**

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| C | 47872 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| M1 | 47872 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Fraction of diffuse skylight for the M1 band<br>2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| M2 | 47872 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Fraction of diffuse skylight for the M2 band<br>2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| M3 | 47872 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Fraction of diffuse skylight for the M3 band<br>2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| M4 | 47872 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Fraction of diffuse skylight for the M4 band<br>2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| M5 | 47872 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Fraction of diffuse skylight for the M5 band<br>2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| M7 | 47872 | 32-bit floating | MIN_VAL - | unitless | Fraction of diffuse skylight for the M7 band |



Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | point | MAX_VAL | | 2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| M8 | 47872 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Fraction of diffuse skylight for the M8 band<br>2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| M10 | 47872 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Fraction of diffuse skylight for the M10 band<br>2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| M11 | 47872 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Fraction of diffuse skylight for the M11 band<br>2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_LUT_SIZE_BPSA<br><br>Size of Dimension(s): 4 x 2992 |
| **File Size** | **478,720 Bytes** | | | | |

#### *7.1.1.2 VIIRS Surface Albedo BPSA Regression Weight Coefficients LUT*

| | |
|---|---|
| **Data Mnemonic** | NP_NU-LM0040-015 |
| **Description/ Purpose** | The VIIRS Surface Albedo BPSA Regression Weight Coefficients LUT file contains the Bright Pixel Sub-Algorithm (BPSA) Regression Weight Coefficients (one per five aerosol models, per solar zenith angle, per view zenith angle, per relative azimuth, and per land type (desert or not)) for bands M1-M5, M7, M8, M10, M11 and an additional coefficient for the linear regression's constant term. This file is used for bright pixels when VIIRS AOT is suspect and cannot be used. Linear regression coefficients are used to directly obtain an albedo value using 10 coefficients (constant value + 9 M-band coefficients).<br>This file is used in the VIIRS Surface Albedo algorithm. |
| **File-Naming Construct** | See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4.<br>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.<br>Version Number Field provides Provenance Version Identifier. |
| **File Size** | See Table: 7.1.1.2-1 VIIRS Surface Albedo BPSA Regression Weight Coefficients LUT Data Format for size |
| **File Format Type** | Little Endian Binary |
| **Production Frequency** | As needed |
| **Data Content and Data Format** | For details see Table 7.1.1.2-1, VIIRS Surface Albedo BPSA Regression Weight Coefficients LUT Data Format. |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

**Table: 7.1.1.2-1 VIIRS Surface Albedo BPSA Regression Weight Coefficients LUT Data Format**

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| BPSA regression weight coefficients C | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>6 Dimensional Array:<br>BPSA_NUM_BINS_SOLAR_ZENITH x<br>BPSA_NUM_BINS_VIEW_ZENITH x<br>BPSA_NUM_BINS_REL_AZIMUTH x<br>NUM_BPSA_AERO_MODELS x<br>NUM_COEFFS<br>LSA_NUM_LANDTYPE<br>Size of Dimension(s):(18 x 18 x 23 x 4 x 2) |
| BPSA regression weight coefficients M1 | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br>6 Dimensional Array:<br><br>BPSA_NUM_BINS_SOLAR_ZENITH x<br>BPSA_NUM_BINS_VIEW_ZENITH x<br>BPSA_NUM_BINS_REL_AZIMUTH x<br>NUM_BPSA_AERO_MODELS x<br>LSA_NUM_LANDTYPE<br>Size of Dimension(s): (18 x 18 x 23 x 4 x 2) |
| BPSA regression weight coefficients M2 | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>6 Dimensional Array:<br>BPSA_NUM_BINS_SOLAR_ZENITH x<br>BPSA_NUM_BINS_VIEW_ZENITH x<br>BPSA_NUM_BINS_REL_AZIMUTH x<br>NUM_BPSA_AERO_MODELS x<br>LSA_NUM_LANDTYPE<br>Size of Dimension(s): (18 x 18 x 23 x 4 x 2) |
| BPSA regression weight coefficients M3 | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>6 Dimensional Array:<br>BPSA_NUM_BINS_SOLAR_ZENITH x<br>BPSA_NUM_BINS_VIEW_ZENITH x<br>BPSA_NUM_BINS_REL_AZIMUTH x<br>NUM_BPSA_AERO_MODELS x<br>LSA_NUM_LANDTYPE |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | | | Size of Dimension(s): (18 x 18 x 23 x 4 x 2) |
| BPSA regression weight coefficients M4 | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>6 Dimensional Array:<br>BPSA_NUM_BINS_SOLAR_ZENITH x BPSA_NUM_BINS_VIEW_ZENITH x BPSA_NUM_BINS_REL_AZIMUTH x NUM_BPSA_AERO_MODELS x LSA_NUM_LANDTYPE<br>Size of Dimension(s): (18 x 18 x 23 x 4 x 2) |
| BPSA regression weight coefficients M5 | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>6 Dimensional Array:<br>BPSA_NUM_BINS_SOLAR_ZENITH x BPSA_NUM_BINS_VIEW_ZENITH x BPSA_NUM_BINS_REL_AZIMUTH x NUM_BPSA_AERO_MODELS x LSA_NUM_LANDTYPE<br>Size of Dimension(s): (18 x 18 x 23 x 4 x 2) |
| BPSA regression weight coefficients M7 | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>6 Dimensional Array:<br>BPSA_NUM_BINS_SOLAR_ZENITH x BPSA_NUM_BINS_VIEW_ZENITH x BPSA_NUM_BINS_REL_AZIMUTH x NUM_BPSA_AERO_MODELS x LSA_NUM_LANDTYPE<br>Size of Dimension(s): (18 x 18 x 23 x 4 x 2) |
| BPSA regression weight coefficients M8 | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>6 Dimensional Array:<br>BPSA_NUM_BINS_SOLAR_ZENITH x BPSA_NUM_BINS_VIEW_ZENITH x BPSA_NUM_BINS_REL_AZIMUTH x NUM_BPSA_AERO_MODELS x LSA_NUM_LANDTYPE<br>Size of Dimension(s): (18 x 18 x 23 x 4 x 2) |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| BPSA regression weight coefficients M10 | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>6 Dimensional Array:<br>BPSA_NUM_BINS_SOLAR_ZENITH x<br>BPSA_NUM_BINS_VIEW_ZENITH x<br>BPSA_NUM_BINS_REL_AZIMUTH x<br>NUM_BPSA_AERO_MODELS x<br>LSA_NUM_LANDTYPE<br>Size of Dimension(s): (18 x 18 x 23 x 4 x 2) |
| BPSA regression weight coefficients M11 | 238464 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>6 Dimensional Array:<br>BPSA_NUM_BINS_SOLAR_ZENITH x<br>BPSA_NUM_BINS_VIEW_ZENITH x<br>BPSA_NUM_BINS_REL_AZIMUTH x<br>NUM_BPSA_AERO_MODELS x<br>LSA_NUM_LANDTYPE<br>Size of Dimension(s): (18 x 18 x 23 x 4 x 2) |
| **File Size** | **2,384,640 Bytes** | | | | |

#### *7.1.1.3 VIIRS Surface Albedo DPSA Narrowband to Broadband Conversion LUT*

| | |
|---|---|
| **Data Mnemonic** | NP_NU-LM0040-016 |
| **Description/ Purpose** | The VIIRS Surface Albedo DPSA Narrowband to Broadband Coefficients LUT file contains coefficients needed to convert the spectral surface albedo to broadband albedo. One coefficient per M-band is used plus a constant term (10 terms total).<br>Coefficients are derived (via multivariate regression analysis) from radiative transfer simulations.<br>This file is used in the VIIRS Surface Albedo algorithm. |
| **File-Naming Construct** | See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4.<br>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.<br>Version Number Field provides Provenance Version Identifier. |
| **File Size** | See Table: 7.1.1.3-1 VIIRS Surface Albedo DPSA Narrowband to Broadband Conversion LUT Data Format for size |
| **File Format Type** | Little Endian Binary |
| **Production Frequency** | As needed |
| **Data Content and Data Format** | For details see Table 7.1.1.3-1, VIIRS Surface Albedo DPSA Narrowband to Broadband Conversion Coefficients LUT Data Format. |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

**Table: 7.1.1.3-1 VIIRS Surface Albedo DPSA Narrowband to Broadband Conversion LUT Data Format**

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| C | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient (Constant Term) |
| M1 | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient for the M1 Narrowband Albedo variable |
| M2 | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient for the M2 Narrowband Albedo variable |
| M3 | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient for the M3 Narrowband Albedo variable |
| M4 | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient for the M4 Narrowband Albedo variable |
| M5 | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient for the M5 Narrowband Albedo variable |
| M7 | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient for the M7 Narrowband Albedo variable |
| M8 | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient for the M8 Narrowband Albedo variable |
| M10 | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient for the M10 Narrowband Albedo variable |
| M11 | 4 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Regression coefficient for the M11 Narrowband Albedo variable |
| **File Size** | **40 Bytes** | | | | |

#### *7.1.1.4 VIIRS Surface Albedo BPSA Sea Ice LUT*

| | |
|---|---|
| **Data Mnemonic** | NP_NU-LM0040-111 |
| **Description/ Purpose** | The VIIRS Surface Albedo BPSA Sea Ice LUT file contains coefficients needed to compute the surface albedo of sea ice pixels based on linear regression with top of atmosphere reflectance. One coefficient per M-band is used plus a constant term (10 terms total). Bands M1-M5, M7-M8 and M10-M11 (9 bands) are used plus a constant offset term make the 10 required coefficients for each solar angle bin (currently a total of 15 bins). Coefficients are derived (via multivariate regression analysis) from radiative transfer simulations.<br>This file is used in the VIIRS Surface Albedo algorithm. |
| **File-Naming Construct** | See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4.<br>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.<br>Version Number Field provides Provenance Version Identifier. |
| **File Size** | See Table: 7.1.1.4-1 VIIRS Surface Albedo BPSA Sea Ice LUT Data Format for size |
| **File Format Type** | Little Endian Binary |
| **Production Frequency** | As needed |
| **Data Content and Data Format** | For details see Table 7.1.1.4-1, VIIRS Surface Albedo BPSA Sea Ice LUT Data Format. |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

**Table: 7.1.1.4-1 VIIRS Surface Albedo BPSA Sea Ice LUT Data Format**

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| BPSA regression weight coefficients C | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | BPSA linear regression coefficients.<br><br>2 Dimensional Array: LSA_NUM_ BPSA_AERO_MODELS x LSA_SEA_ICE_NUM_ BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| M1 | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: LSA_NUM_BPSA_AERO_MODELS x LSA_ SEA_ICE_NUM_BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| M2 | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: LSA_NUM_BPSA_AERO_MODELS x LSA_ SEA_ICE_NUM_BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| M3 | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: LSA_NUM_BPSA_AERO_MODELS x LSA_ SEA_ICE_NUM_BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| M4 | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: LSA_NUM_BPSA_AERO_MODELS x LSA_ SEA_ICE_NUM_BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| M5 | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: LSA_NUM_BPSA_AERO_MODELS x LSA_ SEA_ICE_NUM_BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| M7 | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: LSA_NUM_BPSA_AERO_MODELS x |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | | | LSA_ SEA_ICE_NUM_BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| M8 | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_ SEA_ICE_NUM_BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| M10 | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_ SEA_ICE_NUM_BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| M11 | 240 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>LSA_NUM_BPSA_AERO_MODELS x LSA_ SEA_ICE_NUM_BIN_SOLZEN<br><br>Size of Dimension(s): 4 x 15 |
| **File Size** | **2,400 Bytes** | | | | |

#### *7.1.1.5 VIIRS Surface Albedo Kernel Black-sky and White-sky Albedo LUT*

| | |
|---|---|
| **Data Mnemonic** | NP_NU-LM0233-019 |
| **Description/ Purpose** | The VIIRS Surface Albedo Kernel black-sky and white-sky albedo LUT file contains the values of the black sky and white sky albedos for each of the kernel models (Volumetric and Geometric) used in the inversion process of the DPSA.<br>This file is used in the VIIRS Surface Albedo / DPSA algorithm. |
| **File-Naming Construct** | See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4.<br>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.<br>Version Number Field provides Provenance Version Identifier |
| **File Size** | See Table: 7.1.1.5-1 VIIRS Surface Albedo Kernel Black-sky and white-sky albedo LUT Data Format for size |
| **File Format Type** | Little Endian Binary |
| **Production Frequency** | As needed |
| **Data Content and Data Format** | For details see Table 7.1.1.5-1, VIIRS Surface Albedo Kernel black-sky and white-sky albedo LUT Data Format |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

**Table: 7.1.1.5-1 VIIRS Surface Albedo Kernel Black-sky and White-sky Albedo LUT Data Format**

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| BlackSky | 5440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Kernel Black Sky Albedo<br><br>The 8 Kernels are, in order:<br>1. Ross-Thick Volumetric Scattering<br>2. Ross-Thin Volumetric Scattering<br>3. Non-reciprocal Li-Sparse<br>4. Reciprocal Li-Sparse<br>5. Non-Reciprocal Li-Dense<br>6. Reciprocal Li-Dense<br>7.Non-Reciprocal Li-Transit<br>8. Roujean<br><br>2 Dimensional Array:<br>LSA_NUM_KERNELS x LSA_NUMBINS_KERNEL_BLACKSKY_ALBEDO<br>Size of Dimension(s): 8 x 170 |
| WhiteSky | 32 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Kernel White Sky Albedo<br><br>The 8 Kernels are, in order:<br>1. Ross-Thick Volumetric Scattering<br>2. Ross-Thin Volumetric Scattering<br>3. Non-reciprocal Li-Sparse<br>4. Reciprocal Li-Sparse<br>5. Non-Reciprocal Li-Dense<br>6. Reciprocal Li-Dense<br>7.Non-Reciprocal Li-Transit<br>8. Roujean<br><br>1 Dimensional Array:<br>LSA_NUM_KERNELS<br>Size of Dimension(s): 8 |
| **File Size** | **5,472 Bytes** | | | | |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

### *7.1.1.6 VIIRS Net Heat Flux COART LUT*

| | |
|---|---|
| **Data Mnemonic** | NP_NU-LM0234-000 |
| **Description/ Purpose** | The NHF COART LUT<br>This file contains Ocean Albedo and albedo weight Look-up data for the VIIRS NHF algorithm. Table data is from the Coupled Ocean and Atmospheric Radiative Transfer (COART) model. |
| **File-Naming Construct** | See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4.<br>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.<br>Version Number Field provides Provenance Version Identifier. |
| **File Size** | See Table: 7.1.1.6-1 VIIRS Net Heat Flux COART LUT Data Format for size |
| **File Format Type** | Little Endian Binary |
| **Production Frequency** | As needed |
| **Data Content and Data Format** | For details see Table 7.1.1.6-1, VIIRS Net Heat Flux COART LUT Data Format. |

**Table: 7.1.1.6-1 VIIRS Net Heat Flux COART LUT Data Format**

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| ocnalbtab | 806400 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Ocean Albedo<br>2 Dimensional Array: OCNALB_NUM_RECS x COART_REC_SIZ<br>Size of Dimension(s): 8400 x 24 |
| albwt | 23040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | Albedo Weights<br><br>2 Dimensional Array: ALBWT_NUM_RECS x COART_REC_SIZ<br>Size of Dimension(s): 240 x 24 |
| **File Size** | **829,440 Bytes** | | | | |

### *7.1.1.7 VIIRS Net Heat Flux RTM LUT*

| | |
|---|---|
| **Data Mnemonic** | NP_NU-LM0234-001 |
| **Description/ Purpose** | The NHF RTM LUT<br>This file contains the RRTM (Rapid Radiative Transfer Model) correlated-k absorption coefficients for calculating radiative fluxes. |
| **File-Naming Construct** | See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4.<br>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. |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| | |
|---|---|
| | Version Number Field provides Provenance Version Identifier. |
| **File Size** | See Table: 7.1.1.7-1 VIIRS Net Heat Flux RTM LUT for size |
| **File Format Type** | Little Endian Binary |
| **Production Frequency** | As needed |
| **Data Content and Data Format** | For details see Table 7.1.1.7-1, VIIRS Net Heat Flux RTM LUT Data Format. |

**Table: 7.1.1.7-1 VIIRS Net Heat Flux RTM LUT**

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| K1_ka | 4160 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS Size of Dimension(s): 16 x 13 x 5 |
| K1_kb | 15040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS Size of Dimension(s): 16 x 47 x 5 |
| K1_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x FORREF_RTM_COLS Size of Dimension(s): 16 x 4 |
| K1_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x SELFREF_RTM_COLS Size of Dimension(s): 16 x 10 |
| K1_ka_mn2 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x KA_MN2_RTM_COLS Size of Dimension(s): 16 x 19 |
| K1_kb_mn2 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x KB_MN2_RTM_COLS Size of Dimension(s): 16 x 19 |
| K2_ka | 4160 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS Size of Dimension(s): 16 x 13 x 5 |
| K2_kb | 15040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS Size of Dimension(s): 16 x 47 x 5 |
| K2_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x FORREF_RTM_COLS Size of Dimension(s): 16 x 4 |
| K2_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x SELFREF_RTM_COLS Size of Dimension(s): 16 x 10 |
| K3_ka | 37440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array: RTM_ROWS x KA_RTM_COLS x |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | | | KA_RTM_BANDS x KA_RTM_DIMS<br>Size of Dimension(s): 16 x 13 x 5 x 9 |
| K3_kb | 75200 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array:<br>RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS x KB_RTM_DIMS<br>Size of Dimension(s): 16 x 47 x 5 x 5 |
| K3_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |
| K3_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K3_ka_mn2o | 10944 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KA_MN2_RTM_COLS x KA_MN2_RTM_BANDS<br>Size of Dimension(s): 16 x 19 x 9 |
| K3_kb_mn2o | 6080 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KB_MN2_RTM_COLS x KB_MN2_RTM_BANDS<br>Size of Dimension(s): 16 x 19 x 5 |
| K4_ka | 37440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array:<br>RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS x KA_RTM_DIMS<br>Size of Dimension(s): 16 x 13 x 5 x 9 |
| K4_kb | 75200 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array:<br>RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS x KB_RTM_DIMS<br>Size of Dimension(s): 16 x 47 x 5 x 5 |
| K4_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |
| K4_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K5_ka | 37440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array:<br>RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS x KA_RTM_DIMS |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | | | Size of Dimension(s): 16 x 13 x 5 x 9 |
| K5_kb | 75200 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array: RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS x KB_RTM_DIMS Size of Dimension(s): 16 x 47 x 5 x 5 |
| K5_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x FORREF_RTM_COLS Size of Dimension(s): 16 x 4 |
| K5_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x SELFREF_RTM_COLS Size of Dimension(s): 16 x 10 |
| K5_ka_mo3 | 10944 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KA_MN2_RTM_COLS x KA_MN2_RTM_BANDS Size of Dimension(s): 16 x 19 x 9 |
| K6_ka | 4160 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS Size of Dimension(s): 16 x 13 x 5 |
| K6_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x FORREF_RTM_COLS Size of Dimension(s): 16 x 4 |
| K6_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x SELFREF_RTM_COLS Size of Dimension(s): 16 x 10 |
| K6_ka_mco2 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x KA_MN2_RTM_COLS Size of Dimension(s): 16 x 19 |
| K7_ka | 37440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array: RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS x KA_RTM_DIMS Size of Dimension(s): 16 x 13 x 5 x 9 |
| K7_kb | 15040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS Size of Dimension(s): 16 x 47 x 5 |
| K7_forref | 256 | 32-bit floating point | MIN_VAL - | unitless | 2 Dimensional Array: |

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | MAX_VAL | | RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |
| K7_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K7_ka_mco2 | 10944 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KA_MN2_RTM_COLS x KA_MN2_RTM_BANDS<br>Size of Dimension(s): 16 x 19 x 9 |
| K7_kb_mco2 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x KB_MN2_RTM_COLS<br>Size of Dimension(s): 16 x 19 |
| K8_ka | 4160 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS<br>Size of Dimension(s): 16 x 13 x 5 |
| K8_kb | 15040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS<br>Size of Dimension(s): 16 x 47 x 5 |
| K8_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |
| K8_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K8_ka_mco2 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x KA_MN2_RTM_COLS<br>Size of Dimension(s): 16 x 19 |
| K8_ka_mo3 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x KA_MN2_RTM_COLS<br>Size of Dimension(s): 16 x 19 |
| K8_ka_mn2o | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x KA_MN2_RTM_COLS<br>Size of Dimension(s): 16 x 19 |
| K8_kb_mco2 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x KB_MN2_RTM_COLS |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | | | Size of Dimension(s): 16 x 19 |
| K8_kb_mn2o | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x KB_MN2_RTM_COLS Size of Dimension(s): 16 x 19 |
| K9_ka | 37440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array: RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS x KA_RTM_DIMS Size of Dimension(s): 16 x 13 x 5 x 9 |
| K9_kb | 15040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS Size of Dimension(s): 16 x 47 x 5 |
| K9_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x FORREF_RTM_COLS Size of Dimension(s): 16 x 4 |
| K9_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x SELFREF_RTM_COLS Size of Dimension(s): 16 x 10 |
| K9_ka_mn2o | 10944 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KA_MN2_RTM_COLS x KA_MN2_RTM_BANDS Size of Dimension(s): 16 x 19 x 9 |
| K9_kb_mn2o | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x KB_MN2_RTM_COLS Size of Dimension(s): 16 x 19 |
| K10_ka | 4160 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS Size of Dimension(s): 16 x 13 x 5 |
| K10_kb | 15040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array: RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS Size of Dimension(s): 16 x 47 x 5 |
| K10_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array: RTM_ROWS x FORREF_RTM_COLS Size of Dimension(s): 16 x 4 |
| K10_selfref | 640 | 32-bit floating point | MIN_VAL - | unitless | 2 Dimensional Array: |

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | MAX_VAL | | RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K11_ka | 4160 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS<br>Size of Dimension(s): 16 x 13 x 5 |
| K11_kb | 15040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS<br>Size of Dimension(s): 16 x 47 x 5 |
| K11_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |
| K11_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K11_ka_mo2 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x KA_MN2_RTM_COLS<br>Size of Dimension(s): 16 x 19 |
| K11_kb_mo2 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x KB_MN2_RTM_COLS<br>Size of Dimension(s): 16 x 19 |
| K12_ka | 37440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array:<br>RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS x KA_RTM_DIMS<br>Size of Dimension(s): 16 x 13 x 5 x 9 |
| K12_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |
| K12_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K13_ka | 37440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array:<br>RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS x KA_RTM_DIMS<br>Size of Dimension(s): 16 x 13 x 5 x 9 |
| K13_forref | 256 | 32-bit floating point | MIN_VAL - | unitless | 2 Dimensional Array: |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | MAX_VAL | | RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |
| K13_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K13_ka_mco2 | 10944 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KA_MN2_RTM_COLS x KA_MN2_RTM_BANDS<br>Size of Dimension(s): 16 x 19 x 9 |
| K13_ka_mco | 10944 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KA_MN2_RTM_COLS x KA_MN2_RTM_BANDS<br>Size of Dimension(s): 16 x 19 x 9 |
| K13_kb_mo3 | 1216 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x KB_MN2_RTM_COLS<br>Size of Dimension(s): 16 x 19 |
| K14_ka | 4160 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS<br>Size of Dimension(s): 16 x 13 x 5 |
| K14_kb | 15040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS<br>Size of Dimension(s): 16 x 47 x 5 |
| K14_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |
| K14_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K15_ka | 37440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array:<br>RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS x KA_RTM_DIMS<br>Size of Dimension(s): 16 x 13 x 5 x 9 |
| K15_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| K15_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| K15_ka_mn2 | 10944 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KA_MN2_RTM_COLS x KA_MN2_RTM_BANDS<br>Size of Dimension(s): 16 x 19 x 9 |
| K16_ka | 37440 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 4 Dimensional Array:<br>RTM_ROWS x KA_RTM_COLS x KA_RTM_BANDS x KA_RTM_DIMS<br>Size of Dimension(s): 16 x 13 x 5 x 9 |
| K16_kb | 15040 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 3 Dimensional Array:<br>RTM_ROWS x KB_RTM_COLS x KB_RTM_BANDS<br>Size of Dimension(s): 16 x 47 x 5 |
| K16_forref | 256 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x FORREF_RTM_COLS<br>Size of Dimension(s): 16 x 4 |
| K16_selfref | 640 | 32-bit floating point | MIN_VAL - MAX_VAL | unitless | 2 Dimensional Array:<br>RTM_ROWS x SELFREF_RTM_COLS<br>Size of Dimension(s): 16 x 10 |
| **File Size** | **839,872 Bytes** | | | | |

#### *7.1.1.8 VIIRS NHF RRTM Ozone Climatology LUT*

This LUT is an ancillary table. For format details see the JPSS Algorithm Specification Volume II: Data Dictionary for the Ancillary Data Handling, Gridding and Granulation, 474-00448-02-07, Section 6.1.3.23, Normalized Ozone Profile Climatology.

## 7.2 Processing Coefficient Tables

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

### 7.2.1 Automated Processing Coefficients

Automated Processing Coefficient (PC) files contain parameters updated and/or created during the processing of the S-NPP/JPSS Data Products by the processing algorithms. The processing environment subsequently uses these files without human review of their contents. Files can be used immediately after creation or in future processing such as the next granule in the production data stream processing.

#### *7.2.1.1 VIIRS Surface Albedo Automated PCs*

VIIRS Surface Albedo product generation currently uses no Automated PCs.

### 7.2.2 Manual Processing Coefficients

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

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

#### *7.2.2.1 VIIRS Surface Albedo Initialization PCs.*

VIIRS Surface Albedo product generation currently uses no Initialization PCs.

#### *7.2.2.2 VIIRS Surface Albedo EDR Ephemeral PCT*

| **Data Mnemonic** | DP_NU-LM2020-021 |
|---|---|
| **Description/ Purpose** | The VIIRS Surface Albedo EDR Ephemeral PC provides tunable processing coefficients for use by the algorithm during execution. The coefficients can be modified (tuned) through a configuration control process in response to algorithm, performance, inputs, sensitivity, etc. changes. |
| **File-Naming Construct** | See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4.<br>The Collection Short Name used in the filename is based on the table – see |

| | |
|---|---|
| | the JPSS CDFCB-X Vol. I, 474-00001-01, Table B-1 for the applicable Collection Short Names. |
| **File Size** | See Table: 7.2.2.2-1 VIIRS Surface Albedo EDR Ephemeral PC for size |
| **File Format Type** | Little Endian Binary |
| **Production Frequency** | As needed |
| **Data Content and Data Format** | For details see Table 7.2.2.2-1, VIIRS Surface Albedo EDR Ephemeral PC Data Format |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

**Table: 7.2.2.2-1 VIIRS Surface Albedo EDR Ephemeral PC**

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| SnowThreshold | 4 | 32-bit floating point | 0.5 | unitless | Snow Fraction Threshold |
| NDVI_Threshold | 4 | 32-bit floating point | 0.15 | unitless | NDVI Threshold |
| NumBins_SolarZenith | 8 | 64-bit integer | 86 | unitless | Number of Solar Zenith Angle Values/Bins |
| BinSize_SolarZenith | 4 | 32-bit floating point | 0.01745329251 99433 | radians | Solar Zenith Angle Bin Size, angular increment |
| implicit_pad0 | 4 | unsigned 8-bit char | 0 | unitless | 1 Dimensional Array:<br>Size of Dimension(s): 4 |
| NumBins_KernelBlackSkyAlbedo | 8 | 64-bit integer | 170 | unitless | Number of Black Sky Albedo Bins in the LUTs |
| BinSize_KernelBlackSky Albedo | 4 | 32-bit floating point | 0.008726646 | radians | Bin size for each Kernel Black Sky Albedo |
| implicit_pad1 | 4 | unsigned 8-bit char | 0 | unitless | 1 Dimensional Array:<br>Size of Dimension(s): 4 |
| NumBins_AOT | 8 | 64-bit integer | 101 | unitless | Number of AOT Bins |
| BinSize_AOT | 4 | 32-bit floating point | 0.02 | unitless | |
| implicit_pad2 | 4 | unsigned 8-bit char | 0 | unitless | 1 Dimensional Array:<br>Size of Dimension(s): 4 |
| NumKernels | 8 | 64-bit integer | 8 | unitless | Number of Surface Albedo LUTs |
| Num_Kernel_Lut | 8 | 64-bit integer | 8 | unitless | Number of Kernel Model LUTs |
| Max_Lut_Dim | 8 | 64-bit integer | 3 | unitless | Maximum LUT Dimensions (Represents the 3 Geometry Parameters: Solar Zenith, View Zenith, and Relative Azimuth) |
| Bpsa_Num_Bins_Solar_ Zenith | 8 | 64-bit integer | 18 | unitless | Number of Solar Zenith Angles LUT bins |
| Bpsa_Num_Bins_View_ Zenith | 8 | 64-bit integer | 18 | unitless | Number of View Zenith Angle LUT bins |
| Bpsa_Num_Bins_Rel_Az imuth | 8 | 64-bit integer | 23 | unitless | Number of Relative Azimuth Angle LUT bins |
| BinCoord_SeaIce_SolarZenith | 60 | 32-bit floating point | {0, 53.5, 57.5, 61, 63.5, 66, 68.25, 70.25, | unitless | Grid coordinates for BPSA SEA ICE LUTs<br>1 Dimensional Array<br>Size of Dimension(s): 15 |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | 72.25, 74.25, 76, 78, 79.5, 81, 83} | | |
| BinCoord_SolarZenith | 72 | 32-bit floating point | {0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80} | unitless | Grid Coordinates for BPSA LUT for Solar Zenith Angles<br>LSA_BINCOORD_SOLZEN<br>1 Dimensional Array:<br>Size of Dimension(s): 18 |
| BinCoord_ViewZenith | 72 | 32-bit floating point | {0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75} | unitless | Grid Coordinates for BPSA LUT for View Zenith Angles<br>LSA_BINCOORD_VIEWZEN<br>1 Dimensional Array:<br>Size of Dimension(s): 18 |
| BinCoord_RelAzimuth | 92 | 32-bit floating point | {0, 5, 15, 30, 60, 90, 120, 150, 165, 175, 180} | unitless | Grid Coordinates for BPSA LUT for Relative Azimuth Angles<br><br>1 Dimensional Array:<br>Size of Dimension(s): 23 |
| implicit_pad3 | 4 | unsigned 8-bit char | 0 | unitless | 1 Dimensional Array:<br>Size of Dimension(s): 4 |
| Lut_Size_Bpsa | 8 | 64-bit integer | Size = BPSA_NUM_BINS_SOLAR_ZENITH * BPSA_NUM_BINS_VIEW_ZENITH * BPSA_NUM_BINS_REL_AZIMUTH | unitless | Size of LUT for BPSA |
| Bpsa_Map_AeroModel | 40 | 64-bit integer | { 1, 2, 3, 4, 5 } | unitless | Aerosol Model map used for interpolation<br>1 Dimensional Array<br>Size of Dimension(s): 5 |
| **File Size** | **392 Bytes** | | | | |

#### *7.2.2.3 VIIRS Net Heat Flux EDR Ephemeral PCT*

| | |
|---|---|
| **Data Mnemonic** | DP_NU-LM2020-024 |
| **Description/ Purpose** | The VIIRS Net Heat Flux EDR Ephemeral PC provides tunable processing coefficients for use by the algorithm during execution. The coefficients can be modified (tuned) through a configuration control process in response to algorithm, performance, inputs, sensitivity, etc. changes. |
| **File-Naming Construct** | See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4.<br>The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, Table B-1 for the applicable Collection Short Names. |
| **File Size** | See Table: 7.2.2.3-1 VIIRS Net Heat Flux EDR Ephemeral PC for size |
| **File Format Type** | Little Endian Binary |
| **Production Frequency** | As needed |
| **Data Content and Data Format** | For details see Table 7.2.2.3-1, VIIRS Net Heat Flux EDR Ephemeral PC Data Format |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

**Table: 7.2.2.3-1 VIIRS Net Heat Flux EDR Ephemeral PC**

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| minClear | 4 | 32-bit floating point | Initially set to 0.8 | unitless | Threshold for determining a clear pixel(fraction) |
| minIceWater | 4 | 32-bit floating point | Initially set to 0.1 | unitless | Threshold for determining water or ice pixels(fraction) |
| boundaryLayer | 4 | 32-bit floating point | Initially set to 400 | meters | Boundary layer threshold |
| minSSTp | 4 | 32-bit integer | Initially set to 5 | unitless | Minimum input data points needed |
| minISTp | 4 | 32-bit integer | Initially set to 5 | unitless | Minimum input data points needed for ice skin temperature |
| minODp | 4 | 32-bit integer | Initially set to 1 | unitless | Minimum input data points needed for aerosol optical depth(aot 550 nm) data |
| minSMp | 4 | 32-bit integer | Initially set to 1 | unitless | Minimum input data points needed for suspended matter index data |
| minCHLp | 4 | 32-bit integer | Initially set to 5 | unitless | Minimum input data points needed for chlorophyll data |
| minIAp | 4 | 32-bit integer | Initially set to 1 | unitless | Minimum input data points needed for ice age index data |
| minALBp | 4 | 32-bit integer | Initially set to 1 | | Minimum for albedo data |
| defaultIA | 4 | 32-bit integer | Initially set to 0 | unitless | Data source flag(1 = default, 0 = retrieve if available) for ice age |
| defaultCHL | 4 | 32-bit integer | Initially set to 0 | unitless | Data source flag for chlorophyll |
| defaultSM | 4 | 32-bit integer | Initially set to 0 | unitless | Data source flag for Suspended matter |
| iaBase | 4 | 32-bit integer | Initially set to 2 | unitless | Default index to ice age model for ice roughness length |
| chloro | 4 | 32-bit floating point | Initially set to 0.1 | $mg/m^3$ | Default value for chlorophyll concentration(mg/m3) |
| smBase | 4 | 32-bit integer | Initially set to 3 | unitless | Default index to suspended matter model for optical depth distribution |
| aotBase | 4 | 32-bit floating point | Initially set to 0.1 | unitless | Default base aerosol optical depth at .550 microns |
| nAotModels | 4 | 32-bit integer | Initially set to 6 | unitless | Number of AOT models as defined in the RRTM SW |
| bmAOT | 4 | 32-bit floating point | Initially set to 0.05 | unitless | Default value of base maritime optical depth |
| bbsAOT | 4 | 32-bit floating | | unitless | Default value of base stratospheric optical depth |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | point | Initially set to 0.004 | | |
| newIce | 4 | 32-bit floating point | Initially set to 0.0001 | m | Default value of roughness length over new ice(m) |
| firstyr | 4 | 32-bit floating point | Initially set to 0.0005 | m | Default value of roughness length over first year ice(m) |
| multiyr | 4 | 32-bit floating point | Initially set to 0.001 | m | Default value of roughness length over multi year ice(m) |
| co2mmr | 4 | 32-bit floating point | Initially set to 0.000538301 | kg/kg | Default value of gaseous species CO2(kg/kg) |
| ch4mmr | 4 | 32-bit floating point | Initially set to 9.10876e-07 | kg/kg | Default value for gaseous species CH4(kg/kg) |
| n2ommr | 4 | 32-bit floating point | Initially set to 4.65468e-07 | kg/kg | Default value for gaseous species N2O(kg/kg) |
| cfc11mmr | 4 | 32-bit floating point | Initially set to 1.28052e-09 | kg/kg | Default value for gaseous species CFC-11(kg/kg) |
| cfc12mmr | 4 | 32-bit floating point | Initially set to 2.00379e-09 | kg/kg | Default value for gaseous species CFC-12(kg/kg) |
| emislwW | 4 | 32-bit floating point | Initially set to 0.95 | unitless | Default value for LW emissivity over water |
| emislwI | 4 | 32-bit floating point | Initially set to 0.99 | unitless | Default value for LW emissivity over ice |
| levels | 104 | 32-bit floating point | Initially set to [10, 20, 30, 50, 70, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 925, 950, 975, 1000] | hPa | Atmospheric Pressure levels in hPa<br><br>1 Dimensional Array<br><br>Size of Dimension(s): 26 |
| surfaceD | 56 | 32-bit floating point | Initially set to [0.05, 0.05, 0.05, 0.05, 0.05, 0.05, | unitless | Default values of surface albedo over water(diffuse)<br><br>1 Dimensional Array |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| | | | 0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.0] | | Size of Dimension(s): 14 |
| surfaceP | 56 | 32-bit floating point | Initially set to [0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.05, 0.0] | unitless | Default values of surface albedo over water(parallel)<br><br>1 Dimensional Array<br><br>Size of Dimension(s): 14 |
| surfaceIceD | 56 | 32-bit floating point | Initially set to [0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,0.0] | unitless | Default values of surface albedo over ice(diffuse)<br><br>1 Dimensional Array<br><br>Size of Dimension(s): 14 |
| surfaceIceP | 56 | 32-bit floating point | Initially set to [0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07, 0.07,0.0] | unitless | Default values of surface albedo over ice(parallel)<br><br>1 Dimensional Array<br><br>Size of Dimension(s): 14 |
| bands | 64 | 32-bit floating point | Initially set to [3.846, 3.077, 2.5, 2.15, 1.942, 1.626, 1.299, 1.242, 0.7782, 0.625, 0.4415, 0.3448, 0.2632, 0.2, 12.195, 3.846] | micrometers | Array of spectral channels for RRTM SW(in microns)<br><br>1 Dimensional Array<br><br>Size of Dimension(s): 16 |
| aotExclThreshold | 4 | 32-bit floating point | 1.0 | unitless | |
| windExclThreshold | 4 | 32-bit floating point | 25 | m/s | |
| minFlux | 4 | 32-bit floating point | -2000 | W/m^2 | |
| maxFlux | 4 | 32-bit floating point | 2000 | W/m^2 | |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

| Field Name | Length (Bytes) | Data Type | Range of Values | Units | Comments |
|---|---|---|---|---|---|
| **File Size** | **528 Bytes** | | | | |

## Appendix A. Data Mnemonic to Interface Mapping

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


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

## Appendix B. DQTT Quality Flag Mapping

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

**Table: B-1 DQTT Quality Flag Mapping**

| Algorithm | Product | TestID | Quality Flag |
|---|---|---|---|
| Surface Albedo | VIIRS-SA-EDR | 100 | Albedo Summary Quality |
| Surface Albedo | VIIRS-SA-EDR | 101 | Albedo Exclusion Summary |
| Surface Albedo | VIIRS-SA-EDR | 102 | Summary Range Check |
| Net Heat Flux | VIIRS-NHF-EDR | 5600 | Total Net Heat Flux Product Quality |
| Net Heat Flux | VIIRS-NHF-EDR | 5601 | Exclusion Summary |

*Note: There are no requirements for NHF operation within the system.


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.

## Appendix C. Abbreviations and Acronyms

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

# Attachment A. XML Formats for Related Data Products

**Table: ATT-1 XML Formats for Related Products**

| File Number | XML Filename |
|---|---|
| 1 | 474-00448-02-20_JPSS-SA-DD-Part-20_0200C_VIIRS-SA-EDR-PP.xml |
| 2 | 474-00448-02-20_JPSS-SA-DD-Part-20_0200C_VIIRS-NHF-EDR-PP.xml |
| 3 | 474-00448-02-20_JPSS-SA-DD-Part-20_0200C_VIIRS-NHF-EDR-GEO.xml |


Check the JPSS MIS Server at https://jpssmis.gsfc.nasa.gov/frontmenu_dsp.cfm to verify that this is the correct version prior to use.