Effective Date: September 13, 2012
Block/Revision: 0122D

**GSFC JPSS CMO**
**September 17, 2012**
**Released**

**Joint Polar Satellite System (JPSS) Ground Project**
**Code 474**
**474-00001-04-03-B0122**

# Joint Polar Satellite System (JPSS) Common Data Format Control Book – External (CDFCB-X) Volume IV - Part III - Land and Ocean/Water EDRs

## For Public Release

The information provided herein does not contain technical data as defined in the International Traffic in Arms Regulations (ITAR) 22 CFC 120.10. This document has been approved For Public Release to the NOAA Comprehensive Large Array-data Stewardship System (CLASS).

# Block 1.2.2

National Aeronautics
and
Space Administration

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

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.

# JPSS Common Data Format Control Book - External Volume IV Part 3 - Land and Ocean/Water EDRs

**JPSS Electronic Signature Page**

**Prepared By:**

Thomas Jennings
JPSS Ground Project System Engineer
(Electronic Approvals available online at https://jpssmis.gsfc.nasa.gov/mainmenu_dsp.cfm )

**Approved By:**

Nicholas Speciale
JPSS Ground Project Systems Manager
(Electronic Approvals available online at https://jpssmis.gsfc.nasa.gov/mainmenu_dsp.cfm )

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

# Preface

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

Any questions should be addressed to:

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

# Change History Log

| Revision | Effective Date | Description of Changes (Reference the CCR & CCB/ERB Approval Date; for first Block Version Release, identify origin of document source) | Sections Affected |
|---|---|---|---|
| 0122- | 02/02/2012 | This version incorporates Rev A of 474-00001-04-03 dated November 30, 2011 to create the baseline for Block 122, Rev-.<br><br>This version incorporates 474-CCR-11-0169 (ECR-CGS-0056) and 474-CCR-11-0284 (ECR-CGS-0068).<br><br>This was approved by the JPSS Ground ERB on February 2, 2012. | All<br>Section 5.4.6<br>Table 5.5.5.2-2<br>Table 5.5.1.2.2-2 |
| 0122A | 03/15/2012 | This version incorporates 474-CCR-12-0344 [ECR-CGS-0101].<br><br>This was approved by the JPSS Ground ERB on March 15, 2012. | Table 5.5.5.2-2 |
| 0122B | 05/17/2012 | This version incorporates 474-CCR-12-0398 [ECR-CGS-0122].<br><br>This was approved by the JPSS Ground ERB on May 17, 2012. | Change History Log<br>Table 5.5.5.2-2 |
| 0122C | 07/12/2012 | This version incorporates 474-CCR-12-0461 (ECR-CGS-0142).<br>This was approved by the JPSS Ground ERB on July 12, 2012. | Table 5.5.4.6-2 |
| 0122D | Sept 13, 2012 | This version incorporates 474-CCR-12-0591 [ECR-CGS-0154].<br>This was approved by the JPSS Ground ERB via 474-CCR-12-0591 on the effective date shown. | Table 5.5.5.2-1<br>Table 5.4.5.2.1.2-2<br>Table 5.4.5.2.2.2-2 |
| | | | |


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.

Northrop Grumman Space & Mission Systems Corp.
**Space Technology**
One Space Park
Redondo Beach, CA 90278

**Engineering & Manufacturing Development (EMD) Phase**
**Acquisition & Operations Contract**

**CAGE NO. 11982**

# NPOESS Common Data Format Control Book - External Volume IV - Part III - Land and Ocean/Water EDRs

**Document Date: 04/16/2010**

**Document Number: D34862-04-03**
**Revision: F**

**CDRL A014**

**Point of Contact:** _____
Ron Andrews, SE&I IPT

**ELECTRONIC APPROVAL SIGNATURES:**

| | |
|---|---|
| Clark Snodgrass, SEITO Director | Fabrizio Pela, SE&I IPT Lead |
| Bill Sullivan, Ground Segments IPT Lead | Mary Ann Chory Space Segment IPT Lead |
| Ben James Operations and Support IPT Lead | Dave Vandervoet, NPOESS Program Manager |

Prepared by
**Northrop Grumman Space Technology**
One Space Park
Redondo Beach, CA 90278

Under
**Contract No. F04701-02-C-0502**

Prepared for
**Department of the Air Force**
NPOESS Integrated Program Office
C/O SMC/CIK
2420 Vela Way, Suite 1467-A8
Los Angeles AFB, CA 90245-4659

**DISTRIBUTION STATEMENT F: Distribution statement "F" signifies that further dissemination should only be made as directed by the controlling DoD Office (NPOESS IPO). Ref DODD 5230.24.**


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.

| Northrop Grumman Space & Mission Systems Corp.<br>Space Technology<br>One Space Park<br>Redondo Beach, CA 90278 | NORTHROP GRUMMAN<br>Raytheon |
|---|---|

| Revision/Change Record | For Document No. D34862-04-03 |
|---|---|

| Revision | Document Date | Revision/Change Description | Pages Affected |
|---|---|---|---|
| --- | 10/21/2005 | Incorporation of the following ECRs:<br>ECR 446C provides the Revision --- (initial submission) of this document. The following ECRs are included in this revision:<br>• D34659 CIS ICD ECR 216C - Initial "Draft" Release<br>• D31400-10 SARSAT System OPSCON SYS-020-060 ECR 229B - Rev A<br>• SY15-0007 System Specification ECR 274A - Active Fires classification to an ARP<br>• D34659 CIS ICD ECR 290C - Rev A<br>• D37005 NPP EDR-PR v1.8 ECR 431B - Requirements Updates<br>• D34862-01 CDFCB-X Vol. I ECR 445B - Rev A<br>• D34862-04-03 CDFCB-X Vol. IV Part 3 ECR 446C - Initial Release | All |
| A | 09/10/2007 | Incorporation of the following DCOs and ECRs:<br>ECR 617A provides the Revision A of this document. The following ECRs/DCOs are included in this revision:<br>• ECR 515B, NPOESS Restructure Baseline<br>• DCO A1 D34862-04-03 CDFCB-X Vol. IV Part 3 ECR 501C - Net Heat Flux EDR<br>• ECR 530C, Two Sensor EDRs<br>• DCO A2 D34862-04-03 CDFCB-X Vol. IV Part 3 ECR 588 - VIIRS Vegetation Index and Surface Type EDR<br>• DCO A3 D34862-04-03 CDFCB-X Vol. IV Part 3 ECR 593A - OCC and SIC EDR<br>• DCO A4 D34862-04-03 CDFCB-X Vol. IV Part 3 ECR 599A - VIIRS IST, LST, and SST EDR<br>• DCO A5 D34862-04-03 CDFCB-X Vol. IV Part 3 ECR 611B - VIIRS Snow Cover EDRs<br>  ○ Incorporated ECR A-121A, VIIRS Snow Cover Update<br>• ECR 617A CIDP CDFCB-X Vol. III and Vol. IV<br>This revision also incorporates updates to the following:<br>• Product Profile consistency updates | All |



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.

| Northrop Grumman Space & Mission Systems Corp.<br>Space Technology<br>One Space Park<br>Redondo Beach, CA 90278 | NORTHROP GRUMMAN<br>Raytheon |
|---|---|

| Revision/Change Record | For Document No. D34862-04-03 |
|---|---|

| Revision | Document Date | Revision/Change Description | Pages Affected |
|---|---|---|---|
| B | 07/07/2008 | Incorporation of the following DCOs and ECRs:<br>ECR 779A provides the Revision B of this document. The following ECRs/DCOs are included in this revision:<br>• DCO B1 D34862-04-03 CDFCB-X Vol. IV Part 3 ECR 677B - SST and OCC EDR Updates<br>• DCO B2 D34862-04-03 CDFCB-X Vol. IV Part 3 ECR 708B - Update of the VIIRS & CrIMSS EDR Geo Prod. Profile XML for the CDFCB-X Vol. IV<br>• DCO B3 D34862-04-03 CDFCB-X Vol. IV Part3 ECR 751A - Update of the VIIRS EDR Prod. Profile XML | All |
| C | 01/23/2009 | Incorporation of the following DCOs and ECRs:<br>ECR 898B provides Rev C. This rev incorporates the following DCO and ECR:<br>• DCO C1 D34862-04-03 CDFCB-X Vol. IV Part 3 ECR 876 - Clean up of Clerical Error | All |
| D | 06/04/2009 | ECR 959A provides Rev D of this document. No DCOs have been incorporated into this revision. | All |
| E | 12/09/2009 | ECR 1014A incorporates the following changes:<br>• Incorporated ECR A-251B, VIIRS SDR Cal & Geolocation Updates<br>• Added (N=Number of Granules) to Aggregate Dimension column in the Product Data Content Summary tables throughout the document based on user request for clarity as to what 'N' is<br>• Updated NHF QF definition to reference MIS in lieu of CMIS<br>• Updated XML Product Profiles based on redlines to accompany document<br>  ○ D34862-04-03_NPOESS-CDFCB-X-Vol-IV-Part-3_E_VIIRS-NHF-EDR-PP.xml<br>  ○ D34862-04-03_NPOESS-CDFCB-X-Vol-IV-Part-3_E_VIIRS-NHF-EDR-GEO-PP.xml | 4, 17, 25, 36, 45, 56, 68, 78, 90, 91, 95, 97, 102, 103, 107, 131 |


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.

| Northrop Grumman Space & Mission Systems Corp.<br>Space Technology<br>One Space Park<br>Redondo Beach, CA 90278 | NORTHROP GRUMMAN<br>Raytheon |
|---|---|

| Revision/Change Record | For Document No. D34862-04-03 |
|---|---|

| Revision | Document Date | Revision/Change Description | Pages Affected |
|---|---|---|---|
| F | 04/16/2010 | ECR 1061D incorporates the following updates:<br>• Removal of Availability Conditions throughout<br>• Updated valid RangeMin/Max values for scaled products to align with CDFCB-X Volume I<br>○ VIIRS Land Surface Temperature EDR<br>○ VIIRS Snow Cover Fraction EDR<br>○ VIIRS Surface Type EDR<br>○ VIIRS Vegetation Index EDR<br>○ VIIRS Sea Surface Temperature<br>○ VIIRS Ice Surface Temperature<br>• Updates to various quality flag descriptions, values, and Quality Summary metadata based on IPAC/Bubble testing results<br>○ VIIRS Land Surface Temperature EDR<br>○ VIIRS Snow Cover Binary Map<br>○ VIIRS Snow Cover Fraction<br>○ VIIRS Surface Type EDR<br>○ VIIRS Vegetation Index EDR<br>○ VIIRS Sea Surface Temperature EDR<br>○ VIIRS Ice Surface Temperature EDR<br>○ VIIRS Net Heat Flux EDR<br>○ VIIRS Ocean Color/Chlorophyll EDR<br>○ VIIRS Sea Ice Characterization EDR<br>• Updated Net Heat Flux fill values - these fill values do not follow the standard convention as the convention conflicts with valid data values<br>• Made Granule Size nomenclature consistent - 'Estimated Granule Size' throughout<br>• Updated XML Product Profiles to match the redlines<br>• Incorporation of Algorithm ECR A-277E, Sea Ice Age EDR Update - Table 5.5.7.2.2-2, VIIRS Sea Ice Characterization Product Profile - Quality Flags - updated Input data QF desciption in QF1<br>• Updated QF2 description for VIIRS SST EDR and VIIRS NHF EDR based on EDRPR approved updates, ECR A-297E | pp. 3, 14, 34, 44, 53, 55, 65, 76, 106, 130<br>pp. 5, 26, 38, 45, 57, 69<br>pp. 10-11, 23, 32-33, 40, 43, 52, 63, 74-75, 87-91, 93, 119-120, 124-125, 132, 137<br>pp. 77, 81-84<br>pp. 3, 16, 24, 34, 44, 55, 67, 76, 98, 106, 130<br>p. 133<br>p. 59 |


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 of Contents

**5.4** Land Environmental Data Records ....1
**5.4.1** DELETED ....2
**5.4.2** Land Surface Temperature ....3
**5.4.3** DELETED ....12
**5.4.4** DELETED ....13
**5.4.5** Snow Cover/Depth ....14
**5.4.6** VIIRS Surface Type EDR ....34
**5.4.7** VIIRS Vegetation Index ....45
**5.5** Ocean/Water Environmental Data Records ....54
**5.5.1** Sea Surface Temperature ....54
**5.5.2** DELETED ....66
**5.5.3** Ice Surface Temperature ....67
**5.5.4** Net Heat Flux ....78
**5.5.5** Ocean Color/Chlorophyll ....112
**5.5.6** DELETED ....135
**5.5.7** Sea Ice Characterization ....136
**5.5.8** DELETED ....146


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.

## List of Figures

Figure 5.4.2.3-1, VIIRS Land Surface Temperature EDR HDF5 UML Diagram ..... 10
Figure 5.4.5.2.1.3-1, VIIRS Snow Cover Binary Map HDF5 UML Diagram ..... 22
Figure 5.4.5.2.2.3-1, VIIRS Snow Cover Fraction HDF5 UML Diagram ..... 32
Figure 5.4.6.3-1, VIIRS Surface Type EDR HDF5 UML Diagram ..... 43
Figure 5.4.7.3-1, VIIRS Vegetation Index HDF5 UML Diagram ..... 52
Figure 5.5.1.2.3-1, VIIRS Sea Surface Temperature EDR HDF5 UML Diagram..... 64
Figure 5.5.3.2.3-1, VIIRS Ice Surface Temperature EDR HDF5 UML Diagram ..... 76
Figure 5.5.4.3-1, VIIRS Net Heat Flux UML Diagram..... 96
Figure 5.5.4.7-1, VIIRS Net Heat Flux Geolocation UML Diagram..... 110
Figure 5.5.5.3-1, VIIRS Ocean Color Chlorophyll HDF5 UML Diagram ..... 131
Figure 5.5.7.2.3-1, VIIRS Sea Ice Characterization HDF5 UML Diagram ..... 144


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.

## List of Tables

Table 5.4.2.2-1, VIIRS Land Surface Temperature EDR Product Profile ..... 5
Table 5.4.2.2-2, VIIRS Land Surface Temperature EDR Product Profile - Quality Flags 6
Table 5.4.2.2-3, VIIRS Land Surface Temperature EDR Product Profile - Factors ..... 9
Table 5.4.2.4-1, VIIRS Land Surface Temperature EDR N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values ..... 10
Table 5.4.5.2.1.1-1, VIIRS Snow Cover Binary Map Data Content Summary ..... 16
Table 5.4.5.2.1.2-1, VIIRS Snow Cover Binary Map Product Profile ..... 18
Table 5.4.5.2.1.2-2, VIIRS Snow Cover Binary Map Product Profile - Quality Flags ..... 19
Table 5.4.5.2.1.4-1, VIIRS Snow Cover Binary Map N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values ..... 22
Table 5.4.5.2.2.1-1, VIIRS Snow Cover Fraction Data Content Summary ..... 25
Table 5.4.5.2.2.2-1, VIIRS Snow Cover Fraction Product Profile ..... 26
Table 5.4.5.2.2.2-2, VIIRS Snow Cover Fraction Product Profile - Quality Flags ..... 28
Table 5.4.5.2.2.2-3, VIIRS Snow Cover Fraction Product Profile - Factors ..... 31
Table 5.4.5.2.2.4-1, VIIRS Snow Cover Fraction N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values ..... 32
Table 5.4.6-1, Land Cover Classifications ..... 35
Table 5.4.6.1-1, VIIRS Surface Type EDR Data Content Summary ..... 36
Table 5.4.6.2-1, VIIRS Surface Type EDR Product Profile ..... 37
Table 5.4.6.2-2, VIIRS Surface Type EDR Product Profile - Quality Flags ..... 40
Table 5.4.6.2-3, VIIRS Surface Type EDR Product Profile - Factors ..... 42
Table 5.4.6.4-1, VIIRS Surface Type EDR N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values ..... 44
Table 5.4.7.1-1, VIIRS Vegetation Index Data Content Summary ..... 46
Table 5.4.7.2-1, VIIRS Vegetation Index Product Profile ..... 47
Table 5.4.7.2-2, VIIRS Vegetation Index Product Profile - Quality Flags ..... 48
Table 5.4.7.2-3, VIIRS Vegetation Index Product Profile - Factors ..... 51
Table 5.4.7.4-1, VIIRS Vegetation Index N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values ..... 52
Table 5.5.1.2.1-1, VIIRS Sea Surface Temperature EDR Data Content Summary ..... 57
Table 5.5.1.2.2-1, VIIRS Sea Surface Temperature EDR Product Profile ..... 58
Table 5.5.1.2.2-2, VIIRS Sea Surface Temperature EDR Product Profile - Quality Flags ..... 59
Table 5.5.1.2.2-3, VIIRS Sea Surface Temperature EDR Product Profile - Factors ..... 63
Table 5.5.1.2.4-1, VIIRS Sea Surface Temperature EDR N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values ..... 65
Table 5.5.3.2.1-1, VIIRS Ice Surface Temperature EDR Data Content Summary ..... 69
Table 5.5.3.2.2-1, VIIRS Ice Surface Temperature EDR Product Profile ..... 71


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 5.5.3.2.2-2, VIIRS Ice Surface Temperature EDR Product Profile - Quality Flags ..... 72
Table 5.5.3.2.2-3, VIIRS Ice Surface Temperature EDR Product Profile - Factors ..... 75
Table 5.5.3.2.4-1, VIIRS Ice Surface Temperature EDR N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values ..... 76
Table 5.5.4.1-1, Net Heat Flux Data Content Summary ..... 80
Table 5.5.4.2-1, Net Heat Flux Product Profile - Flux Values ..... 83
Table 5.5.4.2-2, Net Heat Flux Product Profile - Quality Flags ..... 91
Table 5.5.4.4-1, VIIRS NHF N_Quality_Summary Granule Level Metadata Values ..... 97
Table 5.5.4.5-1, Net Heat Flux Geolocation Data Content Summary ..... 99
Table 5.5.4.6-1, Net Heat Flux Geolocation Product Profile Summary ..... 102
Table 5.5.4.6-2, Net Heat Flux Geolocation Product Profile - Quality Flags ..... 108
Table 5.5.4.8-1, VIIRS NHF Geolocation N_Quality_Summary Granule Level Metadata Values ..... 111
Table 5.5.5.1-1, VIIRS Ocean Color Chlorophyll Data Content Summary ..... 113
Table 5.5.5.2-1, VIIRS Ocean Color Chlorophyll Product Profile ..... 115
Table 5.5.5.2-2, VIIRS Ocean Color Chlorophyll Product Profile - Quality Flags ..... 124
Table 5.5.5.4-1, VIIRS Ocean Color Chlorophyll N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values ..... 132
Table 5.5.7.2.1-1, VIIRS Sea Ice Characterization Data Content Summary ..... 138
Table 5.5.7.2.2-1, VIIRS Sea Ice Characterization Product Profile ..... 140
Table 5.5.7.2.2-2, VIIRS Sea Ice Characterization Product Profile - Quality Flags ..... 141
Table 5.5.7.2.4-1, VIIRS Sea Ice Characterization N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values ..... 145


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.

## 5.4 Land Environmental Data Records

For an overview of the CDFCB-X and the list of reference documents, see the JPSS CDFCB-X Vol. I - Overview, 474-00001-01 . For an introduction to this volume, see the JPSS CDFCB-X, Vol. IV, Pt. 1 - IPs, ARPs, and Geolocation Data, 474-00001-04-01.

### 5.4.1 DELETED

### 5.4.2 Land Surface Temperature

| | |
|---|---|
| **Data Mnemonic** | EDRE-VLST-C0030 (Official)<br>EDRE-VLST-C0031 (Substitute) |
| **Description/ Purpose** | The VIIRS LST algorithms are based on physical regression methods to retrieve skin LST. They use radiances sensed by VIIRS Infrared (IR) channels. Land Surface Temperature (LST) is defined as the skin temperature of the uppermost layer of the land surface.<br>The LST EDR is required only for horizontal cells that are categorized as “confidently clear” by the cloud mask.<br>Sensors:<br>VIIRS<br>Effectivity: NPP and NPOESS |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 11.72 MiB<br>This granule size includes VIIRS Land Surface Temperature EDR related fields and quality flags only. Geolocation and metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **File Format Type** | HDF5 |
| **Data Content and Data Format** | See Section 5.4.2.1, VIIRS Land Surface Temperature EDR Data Content Summary<br>See Section 5.4.2.2, VIIRS Land Surface Temperature EDR Product Profile<br>See Section 5.4.2.3, VIIRS Land Surface Temperature EDR HDF5 Details<br>See Section 5.4.2.4, VIIRS Land Surface Temperature EDR HDF5 Metadata Details<br>See Section 5.4.2.5, VIIRS Land Surface Temperature EDR Geolocation Details |

#### 5.4.2.1 VIIRS Land Surface Temperature EDR Data Content Summary

**Table 5.4.2.1-1, VIIRS Land Surface Temperature EDR Data Content Summary**

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|


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.

| | | | | | |
|---|---|---|---|---|---|
| LandSurfaceTemperature | Land Surface Temperature | unsigned 16-bit integer | [N*768, 3200] | [768, 3200] | kelvin |
| QF1_VIIRSLSTEDR | Pixel level Quality Flags | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF2_VIIRSLSTEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF3_VIIRSLSTEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| LSTFactors | Scale = First Array Element; Offset = 2nd Array Element | 32-bit floating point | [N*2] | [2] | scale = unitless; offset = kelvin |


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.

### 5.4.2.2 VIIRS Land Surface Temperature EDR Product Profile

**Table 5.4.2.2-1, VIIRS Land Surface Temperature EDR Product Profile**

| Fields | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | | | | | | |
| LandSurfaceTemperature | 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** | | | |
| | | Land Surface Temperature | 0 | 183.20 | 350.00 | kelvin | Yes | LSTFactors | unsigned 16-bit integer | **Name** | **Value** | | **Name** | **Value** | | |
| | | | | | | | | | | NA_UINT16_FILL | 65535 | | | | | |
| | | | | | | | | | | MISS_UINT16_FILL | 65534 | | | | | |
| | | | | | | | | | | ONBOARD_PT_UINT16_FILL | 65533 | | | | | |
| | | | | | | | | | | ONGROUND_PT_UINT16_FILL | 65532 | | | | | |
| | | | | | | | | | | ERR_UINT16_FILL | 65531 | | | | | |
| | | | | | | | | | | ELINT_UINT16_FILL | 65530 | | | | | |
| | | | | | | | | | | VDNE_UINT16_FILL | 65529 | | | | | |
| | | | | | | | | | | SOUB_UINT16_FILL | 65528 | | | | | |



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 5.4.2.2-2, VIIRS Land Surface Temperature EDR Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSLSTEDR | 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 (Name / Value) | Legend Entries (Name / Value) |
|---|---|---|---|---|---|---|---|---|---|
| LST Quality (Indicates the quality of the pixel level retrieval) | 0 | | | unitless | No | | 2 bit(s) | | High: 0<br>Medium: 1<br>Low: 2<br>No Retrieval: 3 |
| Algorithm (Indicates which algorithm branch was implemented) | 2 | | | unitless | No | | 1 bit(s) | | 4-Band Dual Split Window: 0<br>2-Band Split Window: 1 |
| Day/Night | 3 | | | unitless | No | | 1 bit(s) | | Night (Solar Zenith Angle > 85 Degrees): 0<br>Day (Solar Zenith Angle <= 85 degrees): 1 |
| Bad SWIR Pixel (M12 and M13 band data not available) | 4 | | | unitless | No | | 1 bit(s) | | Both Available: 0<br>At least one not available: 1 |
| Bad LWIR Pixel (M15 and M16 band data not available) | 5 | | | unitless | No | | 1 bit(s) | | Both Available: 0<br>At least one not available: 1 |



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.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Exclusion - Fire detected in pixel (from the VIIRS Cloud Mask) | 6 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Exclusion - Thin Cirrus (Retrieval performance exclusion due to thin cirrus detection by VIIRS Cloud Mask) | 7 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| QF2_VIIRSLSTEDR | 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 |
|---|---|---|---|---|---|---|---|---|---|
| Degradation - Sensor Zenith Angle > 40 degrees | 0 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Out of Expected Range - The LST derived from the algorithm is outside of the NPOESS System Specification Validated Range defined by 213K < BT(M16) < 343K | 1 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Cloud Confidence Indicator | 2 | | | 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 |
| Exclusion: AOT > 1.0 (AOT in horizontal cell > 1.0 on the slant path (AOT @550nm)) | 4 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Exclusion - Horizontal Cell Size > 1.3km (HCS > 1.3 km, swath width > 1700 km, Sensor Zenith Angle > 53.0 degrees) | 5 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Sun Glint in pixel (as indicated in the VIIRS Cloud | 6 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0 |



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.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mask) | | | | | | | | | True | 1 |
| | | Inside Terminator (85 deg < Solar Zenith Angle <= 100 deg) | 7 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 | |

**QF3_VIIRSLSTEDR** — 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 |
|---|---|---|---|---|---|---|---|---|---|
| Land/Water Background | 0 | | | unitless | No | | 3 bit(s) | Name / Value | Name / Value: Land and Desert 0; Land/No Desert 1; Inland Water 2; Sea Water 3; Coastal 5 |
| Surface Type (of the LST Retrieval) | 3 | | | unitless | No | | 5 bit(s) | Name / Value | Name / Value: Evergreen Needleleaf Forests 1; Evergreen Broadleaf Forests 2; Deciduous Needleleaf Forests 3; Deciduous Broadleaf Forests 4; Mixed Forests 5; Closed Shrublands 6; Open Shrublands 7; Woody Savannahs 8; Savannahs 9; Grasslands 10; Permanent Wetlands 11; Croplands 12; Urban and Build-up 13; Cropland/Natural Vegetation Mosaics 14; Snow and Ice 15; Barren 16; Water 17; Fill 31 |



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 5.4.2.2-3, VIIRS Land Surface Temperature EDR Product Profile - Factors

| Fields | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | |
| LSTFactors | 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 | | | scale = unitless; offset = kelvin | No | | 32-bit floating point | **Name** **Value** | **Name** **Value** |

### 5.4.2.3 VIIRS Land Surface Temperature EDR HDF5 Details

Figure 5.4.2.3-1, VIIRS Land Surface Temperature EDR UML Diagram, provides details on the contents and data types of the Land Surface Temperature EDR product. This UML provides details at the product level detail only. In addition to this UML, refer to the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01 , Figure 1.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

| VIIRS-LST-EDR |
|---|
| +LandSurfaceTemperature : H5T_NATIVE_USHORT<br>+QF1_VIIRSLSTEDR : H5T_NATIVE_UCHAR<br>+QF2_VIIRSLSTEDR : H5T_NATIVE_UCHAR<br>+QF3_VIIRSLSTEDR : H5T_NATIVE_UCHAR<br>+LSTFactors : H5T_NATIVE_FLOAT |
| |

**Figure 5.4.2.3-1, VIIRS Land Surface Temperature EDR HDF5 UML Diagram**

### 5.4.2.4 VIIRS Land Surface Temperature EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Land Surface Temperature EDR are listed in the JPSS CDFCB-X Vol. V, 474-00001-05 . The VIIRS 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 5.4.2.4-1, VIIRS Land Surface Temperature 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 Land Surface Temperature EDR.

**Table 5.4.2.4-1, VIIRS Land Surface Temperature EDR N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Land Surface Temperature EDR Summary Quality | 0 - 100 | Percent of pixels within granule with high quality of retrieval | |

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Exclusion Summary | 0 - 100 | Percent of pixels with excluded conditions | |
| Summary Range Check | 0 - 100 | Percent of retrieved pixels outside of expected range (213K to 343K) | |
| SDR Input Data Quality | 0 - 100 | Percent of pixels with high quality input values of brightness temperature in VIIRS SDR | |
| Surface Type Input Data Quality | 0 - 100 | Percent of pixels with high quality input values for Surface Type | |
| VCM Input Data Quality | 0 - 100 | Percent of pixels with high quality input values for the VIIRS Cloud Mask | |
| AOT Input Data Quality | 0 - 100 | Percent of pixels with high quality input values for AOT (valid only during day) | |
| No Land Coverage | 0 | At least one land pixel in granule | |
| | 1 | No land pixels in granule | |

### 5.4.2.5 VIIRS Land Surface Temperature EDR Geolocation Details

VIIRS Land Surface Temperature is produced on the VIIRS Moderate Resolution Geolocation - Terrain Corrected. See the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01 , Section 4.9.5, VIIRS Moderate Resolution Geolocation - Terrain Corrected for details.

### 5.4.3 DELETED

### 5.4.4 DELETED

### 5.4.5 Snow Cover/Depth

The Snow Cover/Depth EDR provides the horizontal and vertical extent of snow cover. In addition, a binary product will give a “snow/no snow” flag.

A cell is clear for the Snow Cover/Depth EDR if it is classified as “confidently clear” by the cloud mask.

| | |
|---|---|
| **Sensors** | VIIRS |
| **Effectivity** | For NPP, only the VIIRS EDR is available |
| **EDR Contents** | For each pixel, the Snow Cover/Depth EDR contains:<br>Snow fraction data<br>Weight data<br>Quality flags |


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.

#### 5.4.5.1 DELETED

### 5.4.5.2 VIIRS Snow Cover

The VIIRS Snow Cover data product is separated into two deliverable EDRs, the VIIRS Snow Cover Binary Map and the VIIRS Snow Cover Fraction EDRs. The data format definitions for these two products are provided in the following sections.

#### 5.4.5.2.1 VIIRS Snow Cover Binary Map

| | |
|---|---|
| **Data Mnemonic** | EDRE-SNCD-C1035 (Official)<br>EDRE-SNCD-C1036 (Substitute) |
| **Description/ Purpose** | The Snow Cover Binary Map EDR is a snow/no snow binary map which classifies a pixel as snow or no snow from its values of Normalized Difference Snow Index (NDSI) and Normalized Difference Vegetation Index (NDVI).<br>The Snow Cover Binary Map is at the VIIRS imagery resolution. |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 37.5 MiB<br>This granule size includes VIIRS Snow Cover Binary Map related fields and quality flags only. Geolocation and metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **File Format Type** | HDF5 |
| **Production Frequency** | As per request |
| **Data Content and Data Format** | See Section 5.4.5.2.1.1, VIIRS Snow Cover Binary Map Data Content Summary<br>See Section 5.4.5.2.1.2, VIIRS Snow Cover Binary Map Product Profile<br>See Section 5.4.5.2.1.3, VIIRS Snow Cover Binary Map HDF5 Details<br>See Section 5.4.5.2.1.4, VIIRS Snow Cover Binary Map HDF5 Metadata Details<br>See Section 5.4.5.2.1.5, VIIRS Snow Cover Binary Map Geolocation Details |

##### 5.4.5.2.1.1 VIIRS Snow Cover Binary Map Data Content Summary

**Table 5.4.5.2.1.1-1, VIIRS Snow Cover Binary Map Data Content Summary**

| Name | Description | Data Type | Aggregate | Granule Dimensio | Units |
|---|---|---|---|---|---|


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.

| | | | **Dimension (N = Number of Granules)** | **n** | |
|---|---|---|---|---|---|
| SnowCoverBinaryMap | Snow Cover Binary Map | unsigned 8-bit char | [N*1536, 6400] | [1536, 6400] | unitless |
| QF1_VIIRSSCDBINARYSNOWMAPEDR | Pixel Level Quality Flags | unsigned 8-bit char | [N*1536, 6400] | [1536, 6400] | unitless |
| QF2_VIIRSSCDBINARYSNOWMAPEDR | | unsigned 8-bit char | [N*1536, 6400] | [1536, 6400] | unitless |
| QF3_VIIRSSCDBINARYSNOWMAPEDR | | unsigned 8-bit char | [N*1536, 6400] | [1536, 6400] | unitless |

### 5.4.5.2.1.2 VIIRS Snow Cover Binary Map Product Profile

**Table 5.4.5.2.1.2-1, VIIRS Snow Cover Binary Map Product Profile**

| Fields | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | | | | |
| SnowCoverBinaryMap | 1byte(s) | **Name** | **Granule Boundary** | **Dynamic** | **Min Array Size** | **Max Array Size** | | | | | | | | |
| | | AlongTrack | Yes | No | 1536 | 1536 | | | | | | | | |
| | | CrossTrack | No | No | 6400 | 6400 | | | | | | | | |
| | | **Datum** | | | | | | | | | | | | |
| | | **Description** | **Datum Offset** | **Unscaled Valid Range Min** | **Unscaled Valid Range Max** | **Measurement Units** | **Scaled** | **Scale Factor Name** | **Data Type** | **Fill Values** | | **Legend Entries** | | |
| | | Snow Cover Binary Map | 0 | | | unitless | No | | unsigned 8-bit char | **Name** | **Value** | **Name** | **Value** | |
| | | | | | | | | | | NA_UINT8_FILL | 255 | Not a Snow Pixel | 0 | |
| | | | | | | | | | | MISS_UINT8_FILL | 254 | | | |
| | | | | | | | | | | ONBOARD_PT_UINT8_FILL | 253 | | | |
| | | | | | | | | | | ONGROUND_PT_UINT8_FILL | 252 | Snow Pixel | 1 | |
| | | | | | | | | | | ERR_UINT8_FILL | 251 | | | |
| | | | | | | | | | | ELINT_UINT8_FILL | 250 | | | |
| | | | | | | | | | | VDNE_UINT8_FILL | 249 | | | |

## Table 5.4.5.2.1.2-2, VIIRS Snow Cover Binary Map Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSSCDBINARYSNOWMAPEDR | 1byte(s) | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 1536 | 1536 |
| CrossTrack | No | No | 6400 | 6400 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Overall Pixel Quality | 0 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value<br>High (Green) 0<br>Medium (Yellow) 1<br>Low (Red) 2<br>No Retrieval 3 |
| Input SDR Quality (I1, I2, I3) | 2 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value<br>Good 0<br>Bad 1 |
| Cloud Confidence | 3 | | | 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 |
| Solar Zenith Angle Exclusion<br><br>(based on solar zenith angle > tunable threshold) | 5 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value<br>No (no exclusion) 0<br>Yes (exclusion condition) 1 |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Aerosol Optical Thickness Exclusion<br><br>(based on slant path AOT > tunable threshold) | 6 | | | unitless | No | | 1 bit(s) | Name / Value | Name | Value | |
| | | | | | | | | | | | No (no exclusion) | 0 | |
| | | | | | | | | | | | Yes (exclusion condition) | 1 | |
| | | Snow Fraction Exclusion<br><br>(based on snow fraction between tunable thresholds) | 7 | | | unitless | No | | 1 bit(s) | Name / Value | Name | Value | |
| | | | | | | | | | | | No (no exclusion) | **0** | |
| | | | | | | | | | | | Yes (exclusion condition) | **1** | |
| QF2_VIIRSSCDBINARYSNOWMAPEDR | 1byte(s) | | | | | | | | | | | | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 1536 | 1536 |
| CrossTrack | No | No | 6400 | 6400 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Thin Cirrus (based on VCM thin cirrus quality flag) | 0 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: No 0; Yes (thin cirrus detected) 1 |
| Cloud Shadow | 1 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: No Cloud Shadow 0; Cloud Shadow 1 |
| Cloud Phase | 2 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value: Clear 0; Water 1; Ice 2; Mixed 3 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Forest (VCM indicates Boreal/Conifer forest within the horizontal cell) | 4 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>No 0<br>Yes 1 |
| | | Land/Water | 5 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Land 0<br>Coastal 1<br>Inland Water 2<br>Ocean 3 |
| | | Sun Glint | 7 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>No 0<br>Yes 1 |

QF3_VIIRSSCDBINARYSNOWMAPEDR — 1byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 1536 | 1536 |
| CrossTrack | No | No | 6400 | 6400 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Thermal Threshold Exceeded<br><br>(based on brightness temperature > tunable threshold) | 0 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>No 0<br>Yes 1 |
| NDSI Quality | 1 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>Good 0<br>Bad 1 |
| NDVI Quality | 2 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>Good 0<br>Bad 1 |
| Fire | 3 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>No 0<br>Yes 1 |
| Spare | 4 | | | unitless | No | | 4 bit(s) | Name Value | Name Value |

#### 5.4.5.2.1.3 VIIRS Snow Cover Binary Map HDF5 Details

Figure 5.4.5.2.1.3-1, VIIRS Snow Cover Binary Map UML Diagram, provides details on the contents and data types of the Snow Cover Binary Map product. This UML provides details at the product level detail only. In addition to this UML, refer to the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01 , Figure 1.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

| VIIRS-SCD-BINARY-SNOW-MAP-EDR |
|---|
| +SnowCoverBinaryMap : H5T_NATIVE_UCHAR<br>+QF1_VIIRSSCDBINARYSNOWMAPEDR : H5T_NATIVE_UCHAR<br>+QF2_VIIRSSCDBINARYSNOWMAPEDR : H5T_NATIVE_UCHAR<br>+QF3_VIIRSSCDBINARYSNOWMAPEDR : H5T_NATIVE_UCHAR |
| |

**Figure 5.4.5.2.1.3-1, VIIRS Snow Cover Binary Map HDF5 UML Diagram**

#### 5.4.5.2.1.4 VIIRS Snow Cover Binary Map HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Snow Cover Binary Map EDR are listed in the JPSS CDFCB-X Vol. V , 474-00001-05 . The VIIRS 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 5.4.5.2.1.4-1, VIIRS Snow Cover Binary Map 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 Snow Cover Binary Map.

**Table 5.4.5.2.1.4-1, VIIRS Snow Cover Binary Map N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| SnowCoverBinaryMap - Summary Quality | 0 - 100 | Percent of pixels within granule with high quality of retrieval | |
| Exclusion Summary | 0 - 100 | Percent of pixels with exclusion conditions | |

#### 5.4.5.2.1.5 VIIRS Snow Cover Binary Map Geolocation Details

VIIRS Snow Cover Binary Map is produced on the VIIRS Imagery Resolution Geolocation - Terrain Corrected. See the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Section 4.9.5, VIIRS Moderate Resolution Geolocation - Terrain Corrected, for details.

#### 5.4.5.2.2 VIIRS Snow Cover Fraction

| | |
|---|---|
| **Data Mnemonic** | EDRE-SNCD-C1030 (Official)<br>EDRE-SNCD-C1031 (Substitute) |
| **Description/ Purpose** | The VIIRS Snow Cover Fraction EDR is output at the VIIRS moderate resolution. The snow cover fraction is based off of the VIIRS Snow Cover Binary Map and is calculated using a 2x2 pixel aggregation of the Snow Binary Map. Up to four imagery resolution snow/no snow pixels are used to calculate the snow fraction for a single moderate resolution pixel. The number of pixels used is provided in the “numberOfAggregatedPixels” field.<br>Only those imagery resolution pixels that are designated as “snow” or “no snow” are used in the calculation. Those snow/no snow imagery resolution pixels that are filled (cloudy condition or other exclusion exists) are not used in the snow fraction calculation and are not counted in the “numberOfAggregatedPixels” field. |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 14.06 MiB<br>This granule size includes VIIRS Snow Cover Fraction related fields and quality flags only. Geolocation and metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **File Format Type** | HDF5 |
| **Production Frequency** | As per request |
| **Data Content and Data Format** | See Section 5.4.5.2.2.1, VIIRS Snow Cover Fraction Data Content Summary<br>See Section 5.4.5.2.2.2, VIIRS Snow Cover Fraction Product Profile<br>See Section 5.4.5.2.2.3, VIIRS Snow Cover Fraction HDF5 Details<br>See Section 5.4.5.2.2.4, VIIRS Snow Cover Fraction HDF5 Metadata Details<br>See Section 5.4.5.2.2.5, VIIRS Snow Cover Fraction Geolocation Details |

#### 5.4.5.2.2.1 VIIRS Snow Cover Fraction Data Content Summary

**Table 5.4.5.2.2.1-1, VIIRS Snow Cover Fraction Data Content Summary**

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| SnowCoverFraction | Snow Cover Fraction calculated using the Snow Binary Map | unsigned 16-bit integer | [N*768, 3200] | [768, 3200] | unitless |
| NumberOfAggregatedPixels | Number of imagery resolution pixels from the snow binary map used to calculate the snow fraction (ranges from 0 to 4) | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF1_VIIRSSCDBINARYSNOWFRACEDR | Pixel Level Quality Flags | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF2_VIIRSSCDBINARYSNOWFRACEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF3_VIIRSSCDBINARYSNOWFRACEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| SnowCoverFractionFactors | Scale = First Array Element; Offset = 2nd Array Element | 32-bit floating point | [N*2] | [2] | 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.

### 5.4.5.2.2.2 VIIRS Snow Cover Fraction Product Profile

**Table 5.4.5.2.2.2-1, VIIRS Snow Cover Fraction Product Profile**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| SnowCoverFraction | 2byte(s) | |
| NumberOfAggregatedPixels | 1byte(s) | |

**SnowCoverFraction — Dimensions**

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

**SnowCoverFraction — 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 |
| Snow Cover Fraction calculated using the Snow Binary Map | 0 | 0.00 | 1.00 | unitless | Yes | SnowCoverFractionFactors | unsigned 16-bit integer | NA_UINT16_FILL | 65535 | | |
| | | | | | | | | MISS_UINT16_FILL | 65534 | | |
| | | | | | | | | ONBOARD_PT_UINT16_FILL | 65533 | | |
| | | | | | | | | ONGROUND_PT_UINT16_FILL | 65532 | | |
| | | | | | | | | ERR_UINT16_FILL | 65531 | | |
| | | | | | | | | ELINT_UINT16_FILL | 65530 | | |
| | | | | | | | | VDNE_UINT16_FILL | 65529 | | |
| | | | | | | | | SOUB_UINT16_FILL | 65528 | | |

**NumberOfAggregatedPixels — Dimensions**

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

**NumberOfAggregatedPixels — 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 |
| Number of imagery | 0 | | | unitless | No | | unsigned 8-bit | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | resolution pixels from the snow binary map used to calculate the snow fraction (ranges from 0 to 4) | | | | | | | char | NA_UINT8_FILL | 255 | |
| | | | | | | | | | | MISS_UINT8_FILL | 254 | |
| | | | | | | | | | | ONBOARD_PT_UINT8_FILL | 253 | |
| | | | | | | | | | | ONGROUND_PT_UINT8_FILL | 252 | |
| | | | | | | | | | | ERR_UINT8_FILL | 251 | |
| | | | | | | | | | | ELINT_UINT8_FILL | 250 | |
| | | | | | | | | | | VDNE_UINT8_FILL | 249 | |

## Table 5.4.5.2.2.2-2, VIIRS Snow Cover Fraction Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSSCDBINARYSNOWFRACEDR | 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 |
|---|---|---|---|---|---|---|---|---|---|
| Overall Pixel Quality | 0 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value: High (Green) 0; Medium (Yellow) 1; Low (Red) 2; No Retrieval 3 |
| Input SDR Quality (I1, I2, I3) | 2 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: Good 0; Bad 1 |
| Cloud Confidence | 3 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value: Confidently Clear 0; Probably Clear 1; Probably Cloudy 2; Confidently Cloudy 3 |
| Solar Zenith Angle Degradation (based on solar zenith angle between tunable thresholds) | 5 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: No (no degradation) 0; Yes (degradation) 1 |



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.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Forest Exclusion (VCM indicates Boreal/Conifer forest within the horizontal cell) | 6 | | | unitless | No | | 1 bit(s) | Name \| Value | | Name | Value | | |
| | | | | | | | | | | | | No | 0 | | |
| | | | | | | | | | | | | Yes | 1 | | |
| | | Solar Zenith Angle Exclusion (based on solar zenith angle > tunable threshold) | 7 | | | unitless | No | | 1 bit(s) | Name \| Value | | Name | Value | | |
| | | | | | | | | | | | | No (no exclusion) | 0 | | |
| | | | | | | | | | | | | Yes (exclusion condition) | 1 | | |
| QF2_VIIRSSCDBINARYSNOWFRACEDR | 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 | | | |
| | | Aerosol Optical Thickness Exclusion (based on slant path AOT > tunable threshold) | 0 | | | unitless | No | | 1 bit(s) | Name \| Value | | Name | Value | | |
| | | | | | | | | | | | | No (no exclusion) | 0 | | |
| | | | | | | | | | | | | Yes (exclusion condition) | 1 | | |
| | | Thin Cirrus (based on VCM thin cirrus quality flag) | 1 | | | unitless | No | | 1 bit(s) | Name \| Value | | Name | Value | | |
| | | | | | | | | | | | | No | 0 | | |
| | | | | | | | | | | | | Yes | 1 | | |
| | | Cloud Shadow | 2 | | | unitless | No | | 1 bit(s) | Name \| Value | | Name | Value | | |
| | | | | | | | | | | | | No Cloud Shadow | 0 | | |
| | | | | | | | | | | | | Cloud Shadow | 1 | | |



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.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cloud Phase | 3 | | | unitless | No | | 2 bit(s) | Name Value | | Name | Value | | |
| | | | | | | | | | | | | Clear | 0 | | |
| | | | | | | | | | | | | Water | 1 | | |
| | | | | | | | | | | | | Ice | 2 | | |
| | | | | | | | | | | | | Mixed | 3 | | |
| | | Land/Water | 5 | | | unitless | No | | 2 bit(s) | Name Value | | Name | Value | | |
| | | | | | | | | | | | | Land | 0 | | |
| | | | | | | | | | | | | Coastal | 1 | | |
| | | | | | | | | | | | | Inland Water | 2 | | |
| | | | | | | | | | | | | Ocean | 3 | | |
| | | Sun Glint | 7 | | | unitless | No | | 1 bit(s) | Name Value | | Name | Value | | |
| | | | | | | | | | | | | No | 0 | | |
| | | | | | | | | | | | | Yes | 1 | | |
| QF3_VIIRSSCDBINARYSNOWFRACEDR | 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 | | | |
| | | Spare | 0 | | | unitless | No | | 3 bit(s) | Name Value | | Name | Value | | |
| | | Fire | 3 | | | unitless | No | | 1 bit(s) | Name Value | | Name | Value | | |
| | | | | | | | | | | | | No | 0 | | |
| | | | | | | | | | | | | Yes | 1 | | |
| | | Spare | 4 | | | 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.

## Table 5.4.5.2.2.2-3, VIIRS Snow Cover Fraction Product Profile - Factors

| Fields | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | | |
| SnowCoverFractionFactors | 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 | | | unitless | No | | 32-bit floating point | **Name** | **Value** | **Name** | **Value** |

#### 5.4.5.2.2.3 VIIRS Snow Cover Fraction HDF5 Details

Figure 5.4.5.2.2.3-1, VIIRS Snow Cover Fraction UML Diagram, provides details on the contents and data types of the Snow Cover Fraction product. This UML provides details at the product level detail only. In addition to this UML, refer to the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Figure 1.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

| VIIRS-SCD-BINARY-SNOW-FRAC-EDR |
|---|
| +SnowCoverFraction : H5T_NATIVE_USHORT<br>+NumberOfAggregatedPixels : H5T_NATIVE_UCHAR<br>+QF1_VIIRSSCDBINARYSNOWFRACEDR : H5T_NATIVE_UCHAR<br>+QF2_VIIRSSCDBINARYSNOWFRACEDR : H5T_NATIVE_UCHAR<br>+QF3_VIIRSSCDBINARYSNOWFRACEDR : H5T_NATIVE_UCHAR<br>+SnowCoverFractionFactors : H5T_NATIVE_FLOAT |
| |

**Figure 5.4.5.2.2.3-1, VIIRS Snow Cover Fraction HDF5 UML Diagram**

#### 5.4.5.2.2.4 VIIRS Snow Cover Fraction HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Snow Cover Fraction EDR are listed in the JPSS CDFCB-X Vol. V , 474-00001-05 . The VIIRS 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 5.4.5.2.2.4-1, VIIRS Snow Cover Fraction 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 Snow Cover Fraction.

**Table 5.4.5.2.2.4-1, VIIRS Snow Cover Fraction N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Snow Cover Fraction - Summary Quality | 0 - 100 | Percent of pixels within granule with high quality of retrieval | |

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Exclusion Summary | 0 - 100 | Percent of pixels with exclusion conditions | |
| Degradation Summary | 0 - 100 | Percent of pixels with degradation conditions | |

#### 5.4.5.2.2.5 VIIRS Snow Cover Fraction Geolocation Details

VIIRS Snow Cover Fraction is produced on the VIIRS Imagery Resolution Geolocation with terrain correction applied. See the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Section 4.9.5, VIIRS Moderate Resolution Geolocation - Terrain Corrected, for details.

### 5.4.6 VIIRS Surface Type EDR

| | |
|---|---|
| **Data Mnemonic** | EDRE-VSTV-C0030 (Official)<br>EDRE-VSTV-C0031 (Substitute) |
| **Description/ Purpose** | Surface type is defined as one of the seventeen International Geosphere Biosphere Program (IGBP) classes; see Table 5.4.6-1, Land Cover Classifications.<br>The Surface Type EDR consists of the Surface Type product and the Vegetation Fraction product. The Surface Type Product is the granulation of the IGBP surface type tiles. The vegetation product is produced when the solar zenith angle is less than 70 degrees and where it is not confidently cloudy.<br>The confidence value is provided in percent ranging from 0 - 100. The value of 247 in this field indicates that the surface type is defined by the NIMA Vector Map (VMap) Level 0.<br><br>Sensors:<br>VIIRS<br>Effectivity: NPP and NPOESS |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 11.7 MiB<br>This granule size includes VIIRS Surface Type EDR related fields and quality flags only. Geolocation and metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **File Format Type** | HDF5 |
| **Data Content and Data Format** | See Section 5.4.6.1, VIIRS Surface Type EDR Data Content Summary<br>See Section 5.4.6.2, VIIRS Surface Type EDR Product Profile<br>See Section 5.4.6.3, VIIRS Surface Type EDR HDF5 Details<br>See Section 5.4.6.4, VIIRS Surface Type EDR HDF5 Metadata Details<br>See Section 5.4.6.5, VIIRS Surface Type EDR Geolocation Details |


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 5.4.6-1, Land Cover Classifications

| Land Cover Class | Definition |
|---|---|
| Evergreen Needleleaf Forests | Lands dominated by woody vegetation with a percent cover >60% and height exceeding 2 meters. Almost all trees remain green all year. Canopy is never without green foliage. |
| Deciduous Needleleaf Forests | Lands dominated by woody vegetation with a percent cover >60% and height exceeding 2 meters. Consists of seasonal, needleleaf tree communities with an annual cycle of leaf-on and leaf-off periods. |
| Evergreen Broadleaf Forests | Lands dominated by woody vegetation with a percent cover >60% and height exceeding 2 meters. Almost all trees and shrubs remain green all year. Canopy is never without green foliage. |
| Deciduous Broadleaf Forests | Lands dominated by woody vegetation with a percent cover >60% and height exceeding 2 meters. Consists of broadleaf tree communities with an annual cycle of leaf-on and leaf-off periods. |
| Mixed Forests | Lands dominated by woody vegetation with a percent cover >60% and height exceeding 2 meters. Consists of tree communities with interspersed mixtures or mosaics of the other four forest types. None of the forest types exceeds 60% of landscape. |
| Closed Shrublands | Lands with woody vegetation less than 2 meters tall and with shrub canopy cover >60%. The shrub foliage can be either evergreen or deciduous. |
| Open Shrublands | Lands with woody vegetation less than 2 meters tall and with shrub canopy cover between 10-60%. The shrub foliage can be either evergreen or deciduous. |
| Woody Savannas | Lands with herbaceous and other understory systems and with forest canopy cover between 30-60%. The forest cover height exceeds 2 meters. |
| Savannas | Lands with herbaceous and other understory systems and with forest canopy cover between 10-30%. The forest cover height exceeds 2 meters. |
| Grasslands | Lands with herbaceous types of cover. Tree and shrub cover is less than 10%. |
| Permanent Wetlands | Lands with a permanent mixture of water and herbaceous or woody vegetation. The vegetation can be present in either salt, brackish, or fresh water. |
| Croplands | Lands covered with temporary crops followed by harvest and a bare soil period (e.g., single and multiple cropping systems). Note that perennial woody crops will be classified as the appropriate forest or shrubland cover type. |
| Urban and Built-Up | Land covered by buildings and other man-made structures. |
| Cropland/Natural Vegetation Mosaics | Lands with a mosaic of croplands, forests, shrubland, and grasslands in which no one component comprises more than 60% of the landscape. |
| Snow and Ice | Lands under snow/ice cover. |


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.

| Land Cover Class | Definition |
|---|---|
| Barren | Lands with exposed soil, sand, rocks, or snow and never having more than 10% vegetative cover during any time of the year. |
| Water Bodies | Oceans, seas, lakes, reservoirs, and rivers. Can be either fresh or salt-water bodies. |

### 5.4.6.1 VIIRS Surface Type EDR Data Content Summary

**Table 5.4.6.1-1, VIIRS Surface Type EDR Data Content Summary**

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| SurfaceType | Surface Type | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| VegetationFraction | Vegetation Fraction | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF1_VIIRSSTEDR | Pixel Level Quality Flags | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF2_VIIRSSTEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| Confidence | QST IP Pixel Confidence (Pixel level confidence in percent for each of the Surface Types). Quality flowed down from QST IP Surface Type Confidence. Confidence associated with IGBP Surface Type Classification. Values 0 - 100 = percent confidence. 247 = Surface Type defined by NIMA Vector Map (VMap) Level 0 | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | percent |
| VegetationFractionFactors | Scale = First Array Element; Offset = 2nd Array Element | 32-bit floating point | [N*2] | [2] | unitless |

### 5.4.6.2 VIIRS Surface Type EDR Product Profile

**Table 5.4.6.2-1, VIIRS Surface Type EDR Product Profile**

| Fields | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | |
| SurfaceType | 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** |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Surface Type | 0 | | | unitless | No | | unsigned 8-bit char | | | | |

| Name | Value |
|---|---|
| NA_UINT8_FILL | 255 |
| MISS_UINT8_FILL | 254 |
| ONBOARD_PT_UINT8_FILL | 253 |
| ONGROUND_PT_UINT8_FILL | 252 |
| ERR_UINT8_FILL | 251 |
| ELINT_UINT8_FILL | 250 |
| VDNE_UINT8_FILL | 249 |
| SOUB_UINT8_FILL | 248 |

| Name | Value |
|---|---|
| Evergreen Needleleaf Forests | 1 |
| Evergreen Broadleaf Forests | 2 |
| Deciduous Needleleaf Forests | 3 |
| Deciduous Broadleaf Forests | 4 |
| Mixed Forests | 5 |
| Closed Shrublands | 6 |
| Open Shrublands | 7 |
| Woody Savannas | 8 |
| Savannas | 9 |
| Grasslands | 10 |
| Permanent Wetlands | 11 |
| Croplands | 12 |
| Urban and Built-up | 13 |
| Cropland/Natural Vegetation Mosaics | 14 |
| Snow and Ice | 15 |
| Barren or sparsely vegetated | 16 |
| Water | 17 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VegetationFraction | 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 |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Vegetation Fraction | 0 | 0 | 1 | unitless | Yes | VegetationFractionFactors | unsigned 8-bit char | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | NA_UINT8_FILL | 255 | | |
| | | | | | | | | | | MISS_UINT8_FILL | 254 | | |
| | | | | | | | | | | ONBOARD_PT_UINT8_FILL | 253 | | |
| | | | | | | | | | | ONGROUND_PT_UINT8_FILL | 252 | | |
| | | | | | | | | | | ERR_UINT8_FILL | 251 | | |
| | | | | | | | | | | ELINT_UINT8_FILL | 250 | | |
| | | | | | | | | | | VDNE_UINT8_FILL | 249 | | |
| | | | | | | | | | | SOUB_UINT8_FILL | 248 | | |

## Table 5.4.6.2-2, VIIRS Surface Type EDR Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSSTEDR | 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 |
|---|---|---|---|---|---|---|---|---|---|
| Fire detected in pixel (from the VIIRS Cloud Mask) | 0 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Snow or Ice in Pixel (fraction detected within the pixel exceeded threshold). Applies up to SZA<=85 deg. | 1 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Vegetation in Pixel (Vegetation fraction detected within the pixel exceeded threshold) | 2 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Cloud Confidence Indicator (Indication of whether 'M' band pixel confidently clear, probably clear, probably cloudy or confidently cloudy) | 3 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value: Confidently Clear 0; Probably Clear 1; Probably Cloudy 2; Confidently Cloudy 3 |
| Exclusion - Sun Glint in pixel (as indicated in the VIIRS Cloud Mask) | 5 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Input Data Quality degraded/bad (Quality of Surface Type is degraded or not retrieved due to bad surface reflectance data in horizontal cell) | 6 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Spare | 7 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value |

| QF2_VIIRSSTEDR | 1byte(s) | Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|---|---|



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.

| | | | | | |
|---|---|---|---|---|---|
| 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 |
|---|---|---|---|---|---|---|---|---|---|
| Exclusion: AOT > 1.0 (AOT in horizontal cell > 1.0 on the slant path (AOT @550nm)) | 0 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Vegetation fraction out of range (Veg Frac < 0 or Veg Frac > 1)) | 1 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Exclusion: Solar Zenith Angle (Solar Zenith Angle at center of Horizontal Cell.) | 2 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Solar Zenith Angle < 70 Degrees 0<br>70 degrees <= Solar Zenith Angle <= 85 degrees 1<br>Solar Zenith Angle > 85 2 |
| Spare | 4 | | | unitless | No | | 4 bit(s) | Name Value | Name Value |

Confidence 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 |
|---|---|---|---|---|---|---|---|---|---|
| QST IP Pixel Confidence (Pixel level confidence in percent for each of the Surface Types). Quality flowed down from QST IP Surface Type Confidence. | 0 | 0 | 247 | percent | No | | unsigned 8-bit char | Name Value<br>NA_UINT8_FILL 255<br>MISS_UINT8_FILL 254<br>ONBOARD_PT_UINT8_FILL 253<br>ONGROUND_PT_UINT8_FILL 252<br>ERR_UINT8_FILL 251<br>ELINT_UINT8_FILL 250<br>VDNE_UINT8_FILL 249<br>SOUB_UINT8_FILL 248 | 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.

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Confidence associated with IGBP Surface Type Classification. Values 0 - 100 = percent confidence. 247 = Surface Type defined by NIMA Vector Map (VMap) Level 0 | | | | | | | | | |

## Table 5.4.6.2-3, VIIRS Surface Type EDR Product Profile - Factors

| Fields | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | |
| VegetationFractionFactors | 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 | | | unitless | No | | 32-bit floating point | **Name** **Value** | **Name** **Value** |

### 5.4.6.3 VIIRS Surface Type EDR HDF5 Details

Figure 5.4.6.3-1, VIIRS Surface Type EDR UML Diagram, provides details on the contents and data types of the Surface Type EDR product. This UML provides details at the product level detail only. In addition to this UML, refer to the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Figure 1.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

| VIIRS-ST-EDR |
| --- |
| +SurfaceType : H5T_NATIVE_UCHAR<br>+VegetationFraction : H5T_NATIVE_UCHAR<br>+QF1_VIIRSSTEDR : H5T_NATIVE_UCHAR<br>+QF2_VIIRSSTEDR : H5T_NATIVE_UCHAR<br>+Confidence : H5T_NATIVE_UCHAR<br>+VegetationFractionFactors : H5T_NATIVE_FLOAT |
| |

**Figure 5.4.6.3-1, VIIRS Surface Type EDR HDF5 UML Diagram**

### 5.4.6.4 VIIRS Surface Type EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Surface Type EDR are listed in the JPSS CDFCB-X Vol. V , 474-00001-05

. The VIIRS 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 5.4.6.4-1, VIIRS Surface Type 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 Type EDR.

**Table 5.4.6.4-1, VIIRS Surface Type EDR N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Surface Type EDR Summary Quality | 0 - 100 | Percent of pixels not classified as snow or fire within the current granule | |
| Surface Type EDR Exclusion Summary | 0 - 100 | Percent of pixels with one or more exclusion criteria flags | |

### 5.4.6.5 VIIRS Surface Type EDR Geolocation Details

VIIRS Surface Type EDR is produced on the VIIRS Moderate Resolution Geolocation - Terrain Corrected. See the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01 , Section 4.9.5, VIIRS Moderate Resolution Geolocation - Terrain Corrected for details.


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.

### 5.4.7 VIIRS Vegetation Index

| | |
|---|---|
| **Data Mnemonic** | EDRE-VRVI-C0030 (Official)<br>EDRE-VRVI-C0031 (Substitute) |
| **Description/ Purpose** | Normalized Difference Vegetation Index (NDVI) - Top of the Atmosphere (TOA) is most directly related to absorption of photosynthetically active radiation, but is often correlated with biomass or primary productivity. Red spectral measurements are sensitive to the chlorophyll content of vegetation and the near IR to the mesophyll structure of leaves. The normalized ratio (IR-Red)/(IR+ Red) has a close relationship with the photosynthetic capacity of specific vegetation types.<br>NDVI is defined as follows:<br>$NDVI = (I2_{TOA} - I1_{TOA}) / (I2_{TOA} + I1_{TOA})$<br>Spectral bands I1 and I2 are 600 - 680 nm and 845.5 - 884.5 nm respectively. TOA subscripts indicate that the values used are TOA reflectance in the respective bands.<br>The Vegetation Index EDR also contains a Top of the Canopy (TOC) Enhanced Vegetation Index (EVI) which is defined as<br>$EVI = (1 + L) * [(r_{NIR} - r_{Red}) / (r_{NIR} + C_1 r_{Red} - C_2 r_{Blue} + L)]$<br>Where L is a constant to adjust for soil moisture background and $C_1$ and $C_2$ are constants derived from minimizing feedback and errors from soil and atmospheric effects. For VIIRS, $C_1 = 6$, $C_2 = 7.5$, and L=1.<br>$r_{NIR}$ is the I2 Band reflectance at 865nm<br>$r_{Red}$ is the I1 Band reflectance at 640nm<br>$r_{Blue}$ is the M3 Band reflectance at 488nm<br>The M3 band has twice the cell size as the I1 and I2 bands, so its value is applied to the 4 horizontal cells.<br>Sensors:<br>VIIRS<br>Effectivity: NPP and NPOESS |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 65.6 MiB<br>This granule size includes VIIRS Vegetation Index related fields and quality flags only. Geolocation and metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **File Format Type** | HDF5 |


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.

| | |
|---|---|
| **Data Content and Data Format** | See Section 5.4.7.1, VIIRS Vegetation Index Data Content Summary<br>See Section 5.4.7.2, VIIRS Vegetation Index Product Profile<br>See Section 5.4.7.3, VIIRS Vegetation Index HDF5 Details<br>See Section 5.4.7.4, VIIRS Vegetation Index HDF5 Metadata Details<br>See Section 5.4.7.5, VIIRS Vegetation Index Geolocation Details |

### 5.4.7.1 VIIRS Vegetation Index Data Content Summary

**Table 5.4.7.1-1, VIIRS Vegetation Index Data Content Summary**

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| TOA_NDVI | Normalized Difference Vegetation Index - Top of Atmosphere | unsigned 16-bit integer | [N*1536, 6400] | [1536, 6400] | unitless |
| TOC_EVI | Enhanced Vegetation Index - Top of Canopy | unsigned 16-bit integer | [N*1536, 6400] | [1536, 6400] | unitless |
| QF1_VIIRSVIEDR | Pixel Level Quality Flags | unsigned 8-bit char | [N*1536, 6400] | [1536, 6400] | unitless |
| QF2_VIIRSVIEDR | | unsigned 8-bit char | [N*1536, 6400] | [1536, 6400] | unitless |
| QF3_VIIRSVIEDR | | unsigned 8-bit char | [N*1536, 6400] | [1536, 6400] | unitless |
| TOA_NDVI_Factors | Scale = First Array Element; Offset = 2nd Array Element | 32-bit floating point | [N*2] | [2] | unitless |
| TOC_EVI_Factors | Scale = First Array Element; Offset = 2nd Array Element | 32-bit floating point | [N*2] | [2] | unitless |

### 5.4.7.2 VIIRS Vegetation Index Product Profile

**Table 5.4.7.2-1, VIIRS Vegetation Index Product Profile**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| TOA_NDVI | 2byte(s) | |
| TOC_EVI | 2byte(s) | |

**TOA_NDVI — Dimensions**

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 1536 | 1536 |
| CrossTrack | No | No | 6400 | 6400 |

**TOA_NDVI — 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 |
| Normalized Difference Vegetation Index - Top of Atmosphere | 0 | -1.00 | 1.00 | unitless | Yes | TOA_NDVI_Factors | unsigned 16-bit integer | NA_UINT16_FILL | 65535 | | |
| | | | | | | | | MISS_UINT16_FILL | 65534 | | |
| | | | | | | | | ONBOARD_PT_UINT16_FILL | 65533 | | |
| | | | | | | | | ONGROUND_PT_UINT16_FILL | 65532 | | |
| | | | | | | | | ERR_UINT16_FILL | 65531 | | |
| | | | | | | | | ELINT_UINT16_FILL | 65530 | | |
| | | | | | | | | VDNE_UINT16_FILL | 65529 | | |
| | | | | | | | | SOUB_UINT16_FILL | 65528 | | |

**TOC_EVI — Dimensions**

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 1536 | 1536 |
| CrossTrack | No | No | 6400 | 6400 |

**TOC_EVI — 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 |
| Enhanced Vegetation Index - Top | 0 | -1.00 | 4.00 | unitless | Yes | TOC_EVI_Factors | unsigned 16-bit integer | NA_UINT16_FILL | 6553 | | |



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.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | of Canopy | | | | | | | | | 5 | |
| | | | | | | | | | | MISS_UINT16_FILL | 65534 | |
| | | | | | | | | | | ONBOARD_PT_UINT16_FILL | 65533 | |
| | | | | | | | | | | ONGROUND_PT_UINT16_FILL | 65532 | |
| | | | | | | | | | | ERR_UINT16_FILL | 65531 | |
| | | | | | | | | | | ELINT_UINT16_FILL | 65530 | |
| | | | | | | | | | | VDNE_UINT16_FILL | 65529 | |
| | | | | | | | | | | SOUB_UINT16_FILL | 65528 | |

## Table 5.4.7.2-2, VIIRS Vegetation Index Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSVIEDR | 1byte(s) | |

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 1536 | 1536 |
| CrossTrack | No | No | 6400 | 6400 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Overall NDVI Quality | 0 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Low | 0 |
| | | | | | | | | | | High | 1 |
| Overall EVI Quality | 1 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Low | 0 |
| | | | | | | | | | | High | 1 |
| I1 TOA Reflectance is NOT available | 2 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | False | 0 |
| | | | | | | | | | | True | 1 |
| I2 TOA Reflectance is NOT available | 3 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | False | 0 |
| | | | | | | | | | | True | 1 |
| I1 Surface Reflectance | 4 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | is NOT available | | | | | | | | | False | 0 |
| | | | | | | | | | | | True | 1 |
| | | I2 Surface Reflectance is NOT available | 5 | | | unitless | No | | 1 bit(s) | **Name** **Value** | **Name** | **Value** |
| | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | True | 1 |
| | | M3 Surface Reflectance is NOT available | 6 | | | unitless | No | | 1 bit(s) | **Name** **Value** | **Name** | **Value** |
| | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | True | 1 |
| | | EVI Range is out of range (EVI < -1.0 or EVI > 4.0) | 7 | | | unitless | No | | 1 bit(s) | **Name** **Value** | **Name** | **Value** |
| | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | True | 1 |

QF2_VIIRSVIEDR — 1byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 1536 | 1536 |
| CrossTrack | No | No | 6400 | 6400 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Land/Water | 0 | | | unitless | No | | 3 bit(s) | **Name** **Value** | **Name** **Value**<br>Land & Desert 0<br>Land/No Desert 1<br>Inland Water 2<br>Sea Water 3<br>Coastal 5 |
| Cloud Confidence | 3 | | | 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 |
| Sun Glint in pixel (as indicated in the VIIRS Cloud Mask) | 5 | | | unitless | No | | 2 bit(s) | **Name** **Value** | **Name** **Value**<br>None 0<br>Geometry Based 1<br>Wind-Speed Based 2<br>Geometry & 3 |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Wind | |
| | | Thin Cirrus detected in pixel (from VIIRS Cloud Mask) | 7 | | | unitless | No | | 1 bit(s) | Name / Value | | Name | Value |
| | | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | | True | 1 |

QF3_VIIRSVIEDR — 1byte(s)

| Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|
| AlongTrack | Yes | No | 1536 | 1536 |
| CrossTrack | No | No | 6400 | 6400 |

**Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|
| Degradation Condition: Solar Zenith Angle within Range (65 Deg <= Solar Zenith Angle <= 85 Deg) | 0 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Exclusion: AOT > 1.0 (AOT in horizontal cell > 1.0 on the slant path (AOT @550nm)) | 1 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Exclusion: Solar Zenith Angle > 85 Deg | 2 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Spare | 3 | | | unitless | No | | 5 bit(s) | Name / Value | Name / Value |

## Table 5.4.7.2-3, VIIRS Vegetation Index Product Profile - Factors

| Fields | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | |
| TOA_NDVI_Factors | 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 | | | unitless | No | | 32-bit floating point | **Name Value** | **Name Value** |
| TOC_EVI_Factors | 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 | | | unitless | No | | 32-bit floating point | **Name Value** | **Name Value** |

### 5.4.7.3 VIIRS Vegetation Index HDF5 Details

Figure 5.4.7.3-1, VIIRS Vegetation Index UML Diagram, provides details on the contents and data types of the Vegetation Index product. This UML provides details at the product level detail only. In addition to this UML, refer to the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Figure 1.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

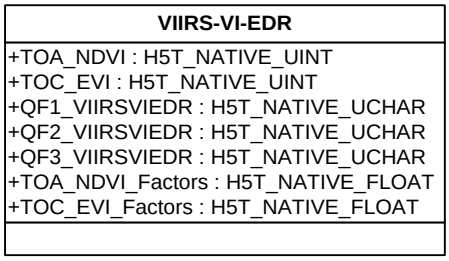


**Figure 5.4.7.3-1, VIIRS Vegetation Index HDF5 UML Diagram**

### 5.4.7.4 VIIRS Vegetation Index HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Vegetation Index EDR are listed in the JPSS CDFCB-X Vol. V , 474-00001-05. The VIIRS 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 5.4.7.4-1, VIIRS Vegetation Index 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 Vegetation Index.

**Table 5.4.7.4-1, VIIRS Vegetation Index N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| EVI Summary Quality | 0 - 100 | Percent of cells with high quality | |
| NDVI Summary Quality | 0 - 100 | Percent of cells with high quality | |

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| EVI Exclusion Summary | 0 - 100 | Percent of pixels with one or more EVI exclusion criteria flags | |
| NDVI Exclusion Summary | 0 - 100 | Percent of pixels with one or more NDVI exclusion criteria flags | |
| No Land in Granule | 0 | Land in Granule | |
| | 1 | No Land in Granule | |

#### 5.4.7.5 VIIRS Vegetation Index Geolocation Details

VIIRS Vegetation Index is produced on the VIIRS Imagery Resolution Geolocation - Terrain Corrected. See the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Section 4.9.6, VIIRS Imagery Resolution Geolocation - Terrain Corrected for details.

## 5.5 Ocean/Water Environmental Data Records

### 5.5.1 Sea Surface Temperature

Sea Surface Temperature (SST) is defined as a measurement of the temperature of the surface layer (skin) and upper 1 meter (bulk) of ocean water.

A horizontal cell is considered clear for this EDR if the cloud mask indicates "confidently clear" for that cell. Cloud cover for a horizontal cell is considered to be negligible if the following criteria are met:

- The cloud mask indicates "confidently clear" for a horizontal cell and the cells adjacent to it.
- The "thin cirrus" detection flag is not set for that horizontal cell.

The skin temperature is retrieved directly from the satellite radiances and the bulk temperature is derived from the skin.

| | |
|---|---|
| **Sensors** | VIIRS |
| **Effectivity** | NPP/NPOESS |
| **EDR Contents** | For each pixel, the SST EDR contains:<br>Skin temperature<br>Bulk temperature<br>Quality Flags<br>Scale/Offset Factors |


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.

#### 5.5.1.1 DELETED

#### 5.5.1.2 VIIRS Sea Surface Temperature

| | |
|---|---|
| **Data Mnemonic** | EDRE-SSTE-C1030 (Official)<br>EDRE-SSTE-C1031 (Substitute) |
| **Description/ Purpose** | The overall scientific objective of the VIIRS SST retrievals is to provide improved operational measurements of both skin and bulk SST fields by using statistical methods. The VIIRS SST EDR requires a 0.1 K measurement accuracy and a 0.5 K measurement uncertainty.<br>Sea Surface Temperature (SST) is defined as a measurement of the temperature of the surface layer (skin) and upper 1 meter (bulk) of ocean water.<br>The skin temperature is retrieved directly from the satellite radiances and the bulk temperature is derived from the skin.<br><br>Sensors:<br>VIIRS<br>Effectivity: NPP and NPOESS |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 18.8 MiB<br>This granule size includes VIIRS Sea Surface Temperature EDR related fields and quality flags only. Geolocation and metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **File Format Type** | HDF5 |
| **Data Content and Data Format** | See Section 5.5.1.2.1, VIIRS Sea Surface Temperature EDR Data Content Summary<br>See Section 5.5.1.2.2, VIIRS Sea Surface Temperature EDR Product Profile<br>See Section 5.5.1.2.3, VIIRS Sea Surface Temperature EDR HDF5 Details<br>See Section 5.5.1.2.4, VIIRS Sea Surface Temperature EDR HDF5 Metadata Details<br>See Section 5.5.1.2.5, VIIRS Sea Surface Temperature EDR Geolocation Details |

#### 5.5.1.2.1 VIIRS Sea Surface Temperature EDR Data Content Summary

**Table 5.5.1.2.1-1, VIIRS Sea Surface Temperature EDR Data Content Summary**

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| SkinSST | Sea Surface Skin Temperature | unsigned 16-bit integer | [N*768, 3200] | [768, 3200] | kelvin |
| BulkSST | Sea Surface Bulk Temperature | unsigned 16-bit integer | [N*768, 3200] | [768, 3200] | kelvin |
| QF1_VIIRSSSTEDR | Pixel level Quality Flags | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF2_VIIRSSSTEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF3_VIIRSSSTEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF4_VIIRSSSTEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| SkinSSTFactors | Scale = First Array Element; Offset = 2nd Array Element | 32-bit floating point | [N*2] | [2] | scale = unitless; offset = kelvin |
| BulkSSTFactors | Scale = First Array Element; Offset = 2nd Array Element | 32-bit floating point | [N*2] | [2] | scale = unitless; offset = kelvin |

### 5.5.1.2.2 VIIRS Sea Surface Temperature EDR Product Profile

**Table 5.5.1.2.2-1, VIIRS Sea Surface Temperature EDR Product Profile**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| SkinSST | 2byte(s) | |
| BulkSST | 2byte(s) | |

**SkinSST — Dimensions**

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

**SkinSST — 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 |
| Sea Surface Skin Temperature | 0 | 265.00 | 320.00 | kelvin | Yes | SkinSSTFactors | unsigned 16-bit integer | NA_UINT16_FILL | 65535 | | |
| | | | | | | | | MISS_UINT16_FILL | 65534 | | |
| | | | | | | | | ONBOARD_PT_UINT16_FILL | 65533 | | |
| | | | | | | | | ONGROUND_PT_UINT16_FILL | 65532 | | |
| | | | | | | | | ERR_UINT16_FILL | 65531 | | |
| | | | | | | | | ELINT_UINT16_FILL | 65530 | | |
| | | | | | | | | VDNE_UINT16_FILL | 65529 | | |
| | | | | | | | | SOUB_UINT16_FILL | 65528 | | |

**BulkSST — Dimensions**

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

**BulkSST — 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 |
| Sea Surface Bulk Temperature | 0 | 265.00 | 320.00 | kelvin | Yes | BulkSSTFactors | unsigned 16-bit integer | NA_UINT16_FILL | 65535 | | |
| | | | | | | | | MISS_UINT16_FILL | 65534 | | |
| | | | | | | | | ONBOARD_PT_UINT16_FILL | 65533 | | |
| | | | | | | | | ONGROUND_PT_UINT16_FILL | 65532 | | |
| | | | | | | | | ERR_UINT16_FILL | 65531 | | |
| | | | | | | | | ELINT_UINT16_FILL | 65530 | | |
| | | | | | | | | VDNE_UINT16_FILL | 65529 | | |
| | | | | | | | | SOUB_UINT16_FILL | 65528 | | |


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 5.5.1.2.2-2, VIIRS Sea Surface Temperature EDR Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSSSTEDR | 1byte(s) | |
| QF2_VIIRSSSTEDR | 1byte(s) | |

**QF1_VIIRSSSTEDR — Dimensions**

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

**QF1_VIIRSSSTEDR — Datum**

| Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values (Name / Value) | Legend Entries (Name / Value) |
|---|---|---|---|---|---|---|---|---|---|
| Skin SST Quality (Indicates the quality of the pixel level retrieval) | 0 | | | unitless | No | | 2 bit(s) | | Not Retrieved: 0<br>Excluded: 1<br>Degraded: 2<br>High Quality: 3 |
| Bulk SST Quality (Indicates the quality of the pixel level retrieval) | 2 | | | unitless | No | | 2 bit(s) | | Not Retrieved: 0<br>Excluded: 1<br>Degraded: 2<br>High Quality: 3 |
| SST State | 4 | | | unitless | No | | 2 bit(s) | | Dry/None: 0<br>Moist: 1<br>Average: 2 |
| Algorithm | 6 | | | unitless | No | | 1 bit(s) | | Non-linear Split Window: 0<br>Triple Window: 1 |
| Day/Night | 7 | | | unitless | No | | 1 bit(s) | | Night: 0<br>Day: 1 |

**QF2_VIIRSSSTEDR — Dimensions**

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



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.

| | | Datum | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Description** | **Datum Offset** | **Unscaled Valid Range Min** | **Unscaled Valid Range Max** | **Measurement Units** | **Scaled** | **Scale Factor Name** | **Data Type** | **Fill Values** | | **Legend Entries** | |
| | | SST not retrieved due to bad LWIR in M15 or M16. | 0 | | | unitless | No | | 1 bit(s) | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | | | Both Available | 0 |
| | | | | | | | | | | | | At Least One Not Available | 1 |
| | | Single non-linear split-window algorithm used due to bad SWIR in M12 | 1 | | | unitless | No | | 1 bit(s) | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | | | M12 available | 0 |
| | | | | | | | | | | | | M12 not available | 1 |
| | | Cloud Confidence | 2 | | | unitless | No | | 2 bit(s) | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | | | Confidently Clear | 0 |
| | | | | | | | | | | | | Probably Clear | 1 |
| | | | | | | | | | | | | Probably Cloudy | 2 |
| | | | | | | | | | | | | Confidently Cloudy | 3 |
| | | Cloud Adjacency Cloud Confidence Value | 4 | | | unitless | No | | 2 bit(s) | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | | | Confidently Clear | 0 |
| | | | | | | | | | | | | Probably Clear | 1 |
| | | | | | | | | | | | | Probably Cloudy | 2 |
| | | | | | | | | | | | | Confidently Cloudy | 3 |
| | | Thin Cirrus detected in pixel | 6 | | | unitless | No | | 1 bit(s) | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | | True | 1 |
| | | Ice Concentration Threshold Exceeded (SST not retrieved due to ice concentration exceeding threshold in System Spec) | 7 | | | unitless | No | | 1 bit(s) | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | | True | 1 |
| QF3_VIIRSSSTEDR | 1byte(s) | **Name** | **Granule Boundary** | **Dynamic** | **Min Array Size** | **Max Array Size** | | | | | | | |
| | | AlongTrack | Yes | No | 768 | 768 | | | | | | | |
| | | CrossTrack | No | No | 3200 | 3200 | | | | | | | |
| | | **Datum** | | | | | | | | | | | |



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.

| | | Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sun Glint present in pixel | 0 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Exclusion: AOT > 1.0 (AOT in horizontal cell > 1.0 on the slant path (AOT @550nm)) | 1 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Degradation: AOT > 0.6 (AOT in horizontal cell > 0.6 on the slant path (AOT @550nm)) | 2 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Exclusion: No Ocean in pixel | 3 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Degradation - Horizontal Cell Size > 1.3km (HCS > 1.3 km, swath width > 1700 km, Sensor Zenith Angle > 53.0 degrees) | 4 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Sensor Zenith Angle > 40 Degrees (Pixel is not within 40 degrees of Nadir and therefore is not of high quality) | 5 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Skin SST outside of validation range | 6 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Bulk SST outside of validation range | 7 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| QF4_VIIRSSSTEDR | 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 |
|---|---|---|---|---|---|---|---|---|---|
| Skin SST Degraded, T > 305K | 0 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Bulk SST Degraded, T > 305K | 1 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Spare | 2 | | | unitless | No | | 6 bit(s) | **Name** | **Value** | **Name** | **Value** |

## Table 5.5.1.2.2-3, VIIRS Sea Surface Temperature EDR Product Profile - Factors

| Fields | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | |
| SkinSSTFactors | 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 | | | scale = unitless; offset = kelvin | No | | 32-bit floating point | **Name Value** | **Name Value** |
| BulkSSTFactors | 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 | | | scale = unitless; offset = kelvin | No | | 32-bit floating point | **Name Value** | **Name Value** |

#### 5.5.1.2.3 VIIRS Sea Surface Temperature EDR HDF5 Details

Figure 5.5.1.2.3-1, VIIRS Sea Surface Temperature EDR UML Diagram, provides details on the contents and data types of the Sea Surface Temperature EDR product. This UML provides details at the product level detail only. In addition to this UML, refer to the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01 , Figure 1.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

| VIIRS-SST-EDR |
| --- |
| +SkinSST : H5T_NATIVE_UINT<br>+BulkSST : H5T_NATIVE_UINT<br>+QF1_VIIRSSSTEDR : H5T_NATIVE_UCHAR<br>+QF2_VIIRSSSTEDR : H5T_NATIVE_UCHAR<br>+QF3_VIIRSSSTEDR : H5T_NATIVE_UCHAR<br>+QF4_VIIRSSSTEDR : H5T_NATIVE_UCHAR<br>+SkinSSTFactors : H5T_NATIVE_FLOAT<br>+BulkSSTFactors : H5T_NATIVE_FLOAT |
| |

**Figure 5.5.1.2.3-1, VIIRS Sea Surface Temperature EDR HDF5 UML Diagram**

#### 5.5.1.2.4 VIIRS Sea Surface Temperature EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Sea Surface Temperature EDR are listed in the JPSS CDFCB-X Vol. V , 474-00001-05. The VIIRS 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 5.5.1.2.4-1, VIIRS Sea Surface Temperature 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 Sea Surface Temperature EDR.


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 5.5.1.2.4-1, VIIRS Sea Surface Temperature EDR N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Skin Summary Quality | 0 - 100 | Percent of pixels with High Quality Skin SST retrievals | |
| Bulk Summary Quality | 0 - 100 | Percent of pixels with High Quality Bulk SST retrievals | |
| Skin Exclusion Summary | 0 - 100 | Percent of pixels with one or more Skin SST exclusion criteria flags | |
| Bulk Exclusion Summary | 0 - 100 | Percent of pixels with one or more Bulk SST exclusion criteria flags | |
| Skin Degraded Summary | 0 - 100 | Percent of pixels with Skin SST Degraded Quality | |
| Bulk Degraded Summary | 0 - 100 | Percent of pixels with Bulk SST Degraded Quality | |
| Skin Summary Range Check | 0 - 100 | Percent of Skin SST retrievals excluded due to Skin SST value being outside of the range required by the System Spec. | |
| Bulk Summary Range Check | 0 - 100 | Percent of Bulk SST retrievals excluded due to Skin SST value being outside of the range required by the System Spec. | |

### 5.5.1.2.5 VIIRS Sea Surface Temperature EDR Geolocation Details

VIIRS Sea Surface Temperature is produced on the VIIRS Moderate Resolution Geolocation - Terrain Corrected. See the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Section 4.9.5, VIIRS Moderate Resolution Geolocation - Terrain Corrected for details.


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.

### 5.5.2 DELETED

### 5.5.3 Ice Surface Temperature

Clear for the Ice Surface Temperature EDR is when the cloud mask classifies a particular horizontal cell as “confidently clear.”

| | |
|---|---|
| **Sensors** | VIIRS |
| **Effectivity** | NPP/NPOESS |
| **EDR Contents** | For each pixel, the Ice Surface Temperature EDR contains:<br>Ice surface temperature<br>Quality Flags |


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.

#### 5.5.3.1 DELETED

### 5.5.3.2 VIIRS Ice Surface Temperature EDR

| | |
|---|---|
| **Data Mnemonic** | EDRE-ICST-C1030 (Official)<br>EDRE-ICST-C1031 (Substitute) |
| **Description/ Purpose** | The Ice Surface Temperature EDR using VIIRS data. The overall scientific objective of the VIIRS IST retrievals is to provide improved measures of global and regional IST fields. The VIIRS IST EDR requires a 0.5 K measurement uncertainty. The requirements are met, provided accurate cloud/ice discrimination is available. |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 11.7 MiB<br>This granule size includes VIIRS Ice Surface Temperature EDR related fields and quality flags only. Geolocation and metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **File Format Type** | HDF5 |
| **Data Content and Data Format** | See Section 5.5.3.2.1, VIIRS Ice Surface Temperature EDR Data Content Summary<br>See Section 5.5.3.2.2, VIIRS Ice Surface Temperature EDR Product Profile<br>See Section 5.5.3.2.3, VIIRS Ice Surface Temperature EDR HDF5 Details<br>See Section 5.5.3.2.4, VIIRS Ice Surface Temperature EDR HDF5 Metadata Details<br>See Section 5.5.3.2.5, VIIRS Ice Surface Temperature EDR Geolocation Details |

#### 5.5.3.2.1 VIIRS Ice Surface Temperature EDR Data Content Summary

**Table 5.5.3.2.1-1, VIIRS Ice Surface Temperature EDR Data Content Summary**

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| IceSurfaceTemperature | Ice Surface | unsigned 16-bit | [N*768, | [768, 3200] | kelvin |


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 Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| | Temperature | integer | 3200] | | |
| QF1_VIIRSISTEDR | Pixel level quality flags | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF2_VIIRSISTEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF3_VIIRSISTEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| ISTFactors | Scale = First Array Element; Offset = 2nd Array Element | 32-bit floating point | [N*2] | [2] | scale = unitless; offset = kelvin |

### 5.5.3.2.2 VIIRS Ice Surface Temperature EDR Product Profile

**Table 5.5.3.2.2-1, VIIRS Ice Surface Temperature EDR Product Profile**

| Fields | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | | | | | | |
| IceSurfaceTemperature | 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** | | | | |
| | | Ice Surface Temperature | 0 | 183.20 | 275.00 | kelvin | Yes | ISTFactors | unsigned 16-bit integer | **Name** | **Value** | **Name** | **Value** | | | |
| | | | | | | | | | | NA_UINT16_FILL | 65535 | | | | | |
| | | | | | | | | | | MISS_UINT16_FILL | 65534 | | | | | |
| | | | | | | | | | | ONBOARD_PT_UINT16_FILL | 65533 | | | | | |
| | | | | | | | | | | ONGROUND_PT_UINT16_FILL | 65532 | | | | | |
| | | | | | | | | | | ERR_UINT16_FILL | 65531 | | | | | |
| | | | | | | | | | | ELINT_UINT16_FILL | 65530 | | | | | |
| | | | | | | | | | | VDNE_UINT16_FILL | 65529 | | | | | |
| | | | | | | | | | | SOUB_UINT16_FILL | 65528 | | | | | |

## Table 5.5.3.2.2-2, VIIRS Ice Surface Temperature EDR Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSISTEDR | 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 |
|---|---|---|---|---|---|---|---|---|---|
| IST Quality (Indicates the quality of the pixel level retrieval) | 0 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value: High 0; Medium 1; Low 2; No Retrieval 3 |
| Algorithm (Indicates which algorithm branch was implemented) | 2 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: 2-Band Split Window 0; Single Band (12-micrometer) Retrieval 1 |
| Day/Night | 3 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: Night (Solar Zenith Angle > 85 Degrees) 0; Day (Solar Zenith Angle <= 85 degrees) 1 |
| Band M15 Brightness Temperature is out of System Spec Range (BT(M15) <= 190K or BT(M15) >= 343K) | 4 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Band M16 Brightness Temperature is out of System Spec Range (BT(M16) <= 190K or BT(M16) >= 340K) | 5 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Fire detected in pixel | 6 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pixel is outside of Ice Coverage Zone (Ice Coverage Zone is defined to be: Latitude is North of 36N or Latitude is South of 50S) | 7 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |

QF2_VIIRSISTEDR — 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 |
|---|---|---|---|---|---|---|---|---|---|
| Ice Fraction | 0 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Ice Fraction = 1.00 0<br>0.95 <= Ice Fraction < 1.00 1<br>0.00 < Ice Fraction < 0.95 2<br>Ice Fraction = 0.00 3 |
| Cloud Confidence Indicator | 2 | | | 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 |
| Adjacent Pixel Cloud Confidence Indicator | 4 | | | 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 |
| Exclusion - Thin Cirrus Detected | 6 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Spare | 7 | | | unitless | No | | 1 | 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.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | bit(s) | | |

**QF3_VIIRSISTEDR** — 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 (Name / Value) | Legend Entries (Name / Value) |
|---|---|---|---|---|---|---|---|---|---|
| Exclusion - Land/Water Background (Identifies the type of Earth surface that lies along the instrument's line of sight. All land types except Sea Water are excluded from processing) | 0 | | | unitless | No | | 3 bit(s) | | Land and Desert: 0<br>Land/No Desert: 1<br>Inland Water: 2<br>Sea Water: 3<br>Coastal: 5<br>Invalid Land/Water: 7 |
| Snow or Ice detected in pixel | 3 | | | unitless | No | | 1 bit(s) | | False: 0<br>True: 1 |
| Shadow detected in pixel | 4 | | | unitless | No | | 1 bit(s) | | False: 0<br>True: 1 |
| Exclusion: AOT > 1.0 (AOT in horizontal cell > 1.0 on the slant path (AOT @550nm)) | 5 | | | unitless | No | | 1 bit(s) | | False: 0<br>True: 1 |
| Ice Surface Temperature is Out of the System Spec Validated Range. (IST < 213K or IST > 275K) | 6 | | | unitless | No | | 1 bit(s) | | False: 0<br>True: 1 |
| Spare | 7 | | | unitless | No | | 1 bit(s) | | |



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 5.5.3.2.2-3, VIIRS Ice Surface Temperature EDR Product Profile - Factors

| Fields | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Data Size** | **Dimensions** | | | | | | | | | |
| ISTFactors | 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 | | | scale = unitless; offset = kelvin | No | | 32-bit floating point | **Name** **Value** | **Name** **Value** |

#### 5.5.3.2.3 VIIRS Ice Surface Temperature EDR HDF5 Details

Figure 5.5.3.2.3-1, VIIRS Ice Surface Temperature EDR UML Diagram, provides details on the contents and data types of the Ice Surface Temperature EDR product. This UML provides details at the product level detail only. In addition to this UML, refer to the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Figure 1.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

| VIIRS-IST-EDR |
|---|
| +IceSurfaceTemperature : H5T_NATIVE_USHORT<br>+QF1_VIIRSISTEDR : H5T_NATIVE_UCHAR<br>+QF2_VIIRSISTEDR : H5T_NATIVE_UCHAR<br>+QF3_VIIRSISTEDR : H5T_NATIVE_UCHAR<br>+ISTFactors : H5T_NATIVE_FLOAT |
| |

**Figure 5.5.3.2.3-1, VIIRS Ice Surface Temperature EDR HDF5 UML Diagram**

#### 5.5.3.2.4 VIIRS Ice Surface Temperature EDR HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Ice Surface Temperature EDR are listed in the JPSS CDFCB-X Vol. V , 474-00001-05. The VIIRS 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 5.5.3.2.4-1, VIIRS Ice Surface Temperature 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 Ice Surface Temperature EDR.

**Table 5.5.3.2.4-1, VIIRS Ice Surface Temperature EDR N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Ice Surface Temperature EDR Summary Quality | 0 - 100 | Percent of pixels within granule with high quality of retrieval | |
| Exclusion Summary | 0 - 100 | Percent of pixels with excluded conditions | |

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Summary Range Check | 0 - 100 | Percent of retrieved pixels outside of expected range (213K to 275K) | |
| SDR Input Data Quality | 0 - 100 | Percent of pixels with high quality input values of brightness temperature in VIIRS SDR | |
| Ice Concentration IP Input Data Quality | 0 - 100 | Percent of pixels with high quality input values for Ice Concentration IP | |
| VCM Input Data Quality | 0 - 100 | Percent of pixels with high quality input values for the VIIRS Cloud Mask | |
| AOT Input Data Quality | 0 - 100 | Percent of pixels with high quality input values for AOT (valid for day only) | |
| No Ocean Coverage | 0 | At least one ocean pixel in granule | |
| | 1 | No Ocean pixels in granule | |
| No Land Coverage | 0 | At least one land pixel in granule | |
| | 1 | No land pixels in granule | |

#### 5.5.3.2.5 VIIRS Ice Surface Temperature EDR Geolocation Details

VIIRS Ice Surface Temperature is produced on the VIIRS Moderate Resolution Geolocation - Terrain Corrected. See the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Section 4.9.5, VIIRS Moderate Resolution Geolocation - Terrain Corrected for details.

### 5.5.4 Net Heat Flux

| | |
|---|---|
| **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.<br>Sensors:<br>VIIRS<br>Effectivity: NPP and NPOESS |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 0.7 MiB<br>This granule size includes Net Heat Flux related fields and quality flags only. Geolocation and metadata attributes are not included. Additional size added by HDF5 packaging is also not included.<br>Geolocation Estimated Granule Size: 0.39 MiB |
| **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 5.5.4.1, Net Heat Flux Data Content Summary<br>See Section 5.5.4.2 Net Heat Flux Product Profile<br>See Section 5.5.4.3, Net Heat Flux HDF5 Details<br>See Section 5.5.4.4 Net Heat Flux HDF5 Metadata<br>See Section 5.5.4.5, Net Heat Flux Geolocation Details<br>See Section 5.5.4.6, Net Heat Flux Geolocation Product Profile<br>See Section 5.5.4.7, Net Heat Flux Geolocation HDF5 Details<br>See Section 5.5.4.8, Net Heat Flux Geolocation HDF5 Metadata Details |

### 5.5.4.1 Net Heat Flux Data Content Summary

**Table 5.5.4.1-1, Net Heat Flux Data Content Summary**

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | 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 | 32-bit | [N*48, | [48, 254] | W/m^2 |

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| | heat flux (positive = transfer from surface to atmosphere) from water surfaces | floating point | 254] | | |
| 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 surface to atmosphere) from water surfaces | 32-bit floating point | [N*48, 254] | [48, 254] | W/m^2 |
| 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 |

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| 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 8 | [N*48, 254] | [48, 254] | 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.

### 5.5.4.2 Net Heat Flux Product Profile

**Table 5.5.4.2-1, Net Heat Flux Product Profile - Flux Values**

| 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** | | | | |
| | | 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 | **Name** | **Value** | **Name** | **Value** | | | |
| | | | | | | | | | | NA_FLOAT32_FILL | -9999.9 | | | | | |
| | | | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | | | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | | | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -9999.4 | | | | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | | | | |
| 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** | | | | |
| | | Total net heat flux (positive = transfer from | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | **Name** | **Value** | **Name** | **Value** | | | |
| | | | | | | | | | | NA_FLOAT32_FILL | -9999.9 | | | | | |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | surface to atmosphere ) from water surfaces | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |
| 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** | |
| | | Total net heat 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 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |
| 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** | |
| | | Latent heat | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit | **Name** | **Value** | **Nam** | **Valu** |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | flux (positive = transfer from surface to atmosphere) from water surfaces | | | | | | | floating point | NA_FLOAT32_FILL | -9999.9 | e | e |
| | | | | | | | | | | MISS_FLOAT32_FILL | -9999.8 | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -9999.5 | | |
| | | | | | | | | | | ELINT_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 | | |
| | | | | | | | | ELINT_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 | Unscaled Valid | Unscaled Valid | Measurement Units | Scaled | Scale Facto | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|



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.

| | | | Offset | Range Min | Range Max | | | r Name | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sensible heat flux (positive = transfer from surface to atmosphere) from water surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | Name: NA_FLOAT32_FILL; Value: -9999.9<br>Name: MISS_FLOAT32_FILL; Value: -9999.8<br>Name: ERR_FLOAT32_FILL; Value: -9999.5<br>Name: ELINT_FLOAT32_FILL; Value: -9999.4<br>Name: VDNE_FLOAT32_FILL; Value: -9999.3 | Name | Value |
| 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 | |
| Sensible heat flux (positive = transfer from surface to atmosphere) from ice surfaces | 0 | -2000 | 2000 | W/m^2 | No | | 32-bit floating point | Name: NA_FLOAT32_FILL; Value: -9999.9<br>Name: MISS_FLOAT32_FILL; Value: -9999.8<br>Name: ERR_FLOAT32_FILL; Value: -9999.5<br>Name: ELINT_FLOAT32_FILL; Value: -9999.4<br>Name: VDNE_FLOAT32_FILL; Value: -9999.3 | | Name | Value |

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 |



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.

| | | 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** |
| | | Longwave 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 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |
| 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** | |
| | | | | | | | | | | **Name** | **Value** | **Name** | **Value** |
| | | Longwave 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 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |



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.

**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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Shortwave 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 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -9999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -9999.3 | | |

**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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Shortwave 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 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -9999.4 | | |



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.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | 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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Total number of pixels included in the aggregated cell (nTotal) | 0 | | | pixels | No | | 16-bit integer | NA_INT16_FILL | -999 | | |
| | | | | | | | | MISS_INT16_FILL | -998 | | |
| | | | | | | | | ERR_INT16_FILL | -995 | | |
| | | | | | | | | ELINT_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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Number of clear pixels included in the aggregated cell (nClear) | 0 | | | pixels | No | | 16-bit integer | NA_INT16_FILL | -999 | | |
| | | | | | | | | MISS_INT16_FILL | -998 | | |
| | | | | | | | | ERR_INT16_FILL | -995 | | |
| | | | | | | | | ELINT_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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Number of pixels over water included in | 0 | | | pixels | No | | 16-bit integer | NA_INT16_FILL | -999 | | |
| | | | | | | | | MISS_INT16_FILL | -998 | | |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | the aggregated cell (nWater) | | | | | | | | ERR_INT16_FILL | -995 | | |
| | | | | | | | | | | ELINT_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** | | | | | | | | | | | |
| | | **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 | | | pixels | No | | 16-bit integer | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | NA_INT16_FILL | -999 | | |
| | | | | | | | | | | MISS_INT16_FILL | -998 | | |
| | | | | | | | | | | ERR_INT16_FILL | -995 | | |
| | | | | | | | | | | ELINT_INT16_FILL | -994 | | |
| | | | | | | | | | | VDNE_INT16_FILL | -993 | | |


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 5.5.4.2-2, 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 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Invalid 1<br>Out of Range 2<br>Exclusion 3 |
| Net Heat Flux Over Water Quality (Indicates quality of retrieved value) | 2 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Invalid 1<br>Out of Range 2<br>Exclusion 3 |
| Net Heat Flux Over Ice Quality (Indicates quality of retrieved value) | 4 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Invalid 1<br>Out of Range 2<br>Exclusion 3 |
| Latent Heat Flux Over Water Quality (Indicates quality of retrieved value) | 6 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Good 0<br>Invalid 1<br>Out of Range 2<br>Exclusion 3 |



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.

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | **Name** | **Value** | **Name** | **Value** |
| Latent Heat Flux Over Ice Quality (Indicates quality of retrieved value) | 0 | | | unitless | No | | 2 bit(s) | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |
| Sensible Heat Flux Over Water Quality (Indicates quality of retrieved value) | 2 | | | unitless | No | | 2 bit(s) | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |
| Sensible Heat Flux Over Ice Quality (Indicates quality of retrieved value) | 4 | | | unitless | No | | 2 bit(s) | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |
| Shortwave Flux Over Water Quality (Indicates quality of retrieved value) | 6 | | | unitless | No | | 2 bit(s) | | | Good | 0 |
| | | | | | | | | | | Invalid | 1 |
| | | | | | | | | | | Out of Range | 2 |
| | | | | | | | | | | Exclusion | 3 |


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.

| 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 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value: Good 0; Invalid 1; Out of Range 2; Exclusion 3 |
| Longwave Flux Over Water Quality (Indicates quality of retrieved value) | 2 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value: Good 0; Invalid 1; Out of Range 2; Exclusion 3 |
| Longwave Flux Over Ice Quality (Indicates quality of retrieved value) | 4 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value: Good 0; Invalid 1; Out of Range 2; Exclusion 3 |
| Sea Surface Temperature Input is of poor quality | 6 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |
| Ice Surface Temperature Input is of poor quality | 7 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: False 0; True 1 |


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.

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 | | | 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 | | | unitless | No | | 1 bit(s) | **Name** **Value** | **Name** **Value**<br>False 0<br>True 1 |
| Chlorophyll Input is of poor quality | 3 | | | unitless | No | | 1 bit(s) | **Name** **Value** | **Name** **Value**<br>False 0<br>True 1 |
| Sea Ice Age Input is of poor quality | 4 | | | unitless | No | | 1 bit(s) | **Name** **Value** | **Name** **Value**<br>False 0<br>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 | | | unitless | No | | 2 bit(s) | **Name** **Value** | **Name** **Value**<br>Clear Ocean (Water or Ice) Fraction >= 0.8 0<br>0.8 > Clear Ocean Fraction > 0.1 1<br>Clear Ocean Fraction <= 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.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | 0.1 or Land |
| | | Sun Glint detected in horizontal cell (sun glint in horizontal cell < 36 degrees for more than 50% of aggregated pixels) | 7 | | | 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 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value: Not Used 0; NWP 1; Exclusion (> 25 m/s) 2; MIS 3 |
| Exclusion: If average AOT in horizontal cell > 1.0 (AOT @550nm), the exclusion condition is exceeded | 2 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value: AOT within Range 0; AOT out of range 1 |
| Spare | 3 | | | unitless | No | | 5 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.

### 5.5.4.3 Net Heat Flux HDF5 Details

Figure 5.5.4.3-1, 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 the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01 , Figure 1.2.1-1, 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<br>+NetHeatFlux_Water : H5T_NATIVE_FLOAT<br>+NetHeatFlux_Ice : H5T_NATIVE_FLOAT<br>+LatentHeatFlux_Water : H5T_NATIVE_FLOAT<br>+LatentHeatFlux_Ice : H5T_NATIVE_FLOAT<br>+SensibleHeatFlux_Water : H5T_NATIVE_FLOAT<br>+SensibleHeatFlux_Ice : H5T_NATIVE_FLOAT<br>+LW_Flux_Water : H5T_NATIVE_FLOAT<br>+LW_Flux_Ice : H5T_NATIVE_FLOAT<br>+SW_Flux_Water : H5T_NATIVE_FLOAT<br>+SW_Flux_Ice : H5T_NATIVE_FLOAT<br>+Total_Number_Pixels_In_Cell : H5T_NATIVE_SHORT<br>+Number_Clear_Pixels_In_Cell : H5T_NATIVE_SHORT<br>+Number_Water_Pixels_In_Cell : H5T_NATIVE_SHORT<br>+Number_Ice_Pixels_In_Cell : H5T_NATIVE_SHORT<br>+QF1_VIIRSNHFEDR : H5T_NATIVE_UCHAR<br>+QF2_VIIRSNHFEDR : H5T_NATIVE_UCHAR<br>+QF3_VIIRSNHFEDR : H5T_NATIVE_UCHAR<br>+QF4_VIIRSNHFEDR : H5T_NATIVE_UCHAR<br>+QF5_VIIRSNHFEDR : H5T_NATIVE_UCHAR |
| |

**Figure 5.5.4.3-1, VIIRS Net Heat Flux UML Diagram**

### 5.5.4.4 Net Heat Flux HDF5 Metadata Details

The HDF5 metadata elements associated with the Net Heat Flux EDR are listed in the JPSS CDFCB-X Vol. V , 474-00001-05, Section 4.3, 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 5.5.4.4-1, VIIRS NHF N_Quality_Summary Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Total Net Heat Flux Product Quality | 0 - 100% | Percent of cells within this granule with a high quality of retrieval | |
| Exclusion Summary | 0 - 100% | Percent of cells in this granule that have one or more of the exclusion criteria met | |
| Exclusion - No Ocean Coverage | 0 = “Ocean Present in Granule” | This horizontal cell is/is not characterized as over ocean | |
| | 1 = “No Ocean Present in Granule” | | |

### 5.5.4.5 Net Heat Flux Geolocation Details

| | |
|---|---|
| **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** | Geolocation Estimated Granule Size: 395.77 KiB<br>This granule size includes Net Heat Flux related fields and quality flags only. Geolocation and metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **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 5.5.4.5, Net Heat Flux Geolocation Data Details<br>See Section 5.5.4.6, Net Heat Flux Geolocation Product Profile<br>See Section 5.5.4.7, Net Heat Flux Geolocation HDF5 Details<br>See Section 5.5.4.8, Net Heat Flux Geolocation HDF5 Metadata Details |


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 5.5.4.5-1, Net Heat Flux Geolocation Data Content Summary

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | 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 |


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 Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| 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 |


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 Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| 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_VIIRSNHFGEO | Scan Level Geolocation Quality Flags | unsigned 8-bit char | [N*48] | [48] | unitless |
| QF2_VIIRSNHFGEO | Cell Level Geolocation Quality Flags | unsigned 8-bit char | [N*48, N*254] | [48, 254] | 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.

### 5.5.4.6 Net Heat Flux Geolocation Product Profile

**Table 5.5.4.6-1, Net Heat Flux Geolocation Product Profile Summary**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| StartTime | 8byte(s) | |
| MidTime | 8byte(s) | |
| Latitude | 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 | | | 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 | | | 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 | | | degree | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | |
| | | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | |
| | | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | |

**Longitude** — 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 |
| Longitude of each cell (positive East) | 0 | | | degree | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Zenith angle of sun at each cell position | 0 | | | degree | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_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 | Unscaled | Unscaled | Measurement | Scaled | Scale | Data | Fill Values | Legend |
|---|---|---|---|---|---|---|---|---|---|



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.

| | | | Offset | Valid Range Min | Valid Range Max | Units | | Factor Name | Type | | | Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Azimuth angle of sun (measured clockwise positive from North) at each cell position | 0 | | | 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 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

| | | Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|---|---|
| SatelliteZenithAngle | 4byte(s) | 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 | | | 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 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

| | | Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|---|---|
| SatelliteAzimuthAngle | 4byte(s) | 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 | 0 | | | degree | No | | 32-bit floating point | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |



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.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | from North) to Satellite at each cell position | | | | | | | | MISS_FLOAT32_FILL | -999.8 | |
| | | | | | | | | | | 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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Height above Mean Sea Level | 0 | | | meter | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Line of sight distance from the ellipsoid intersection to the satellite | 0 | | | meter | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_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 |


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.

| | | | | | | |
|---|---|---|---|---|---|---|
| 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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Spacecraft position in ECR Coordinates (X, Y, Z) at the mid-time of scan | 0 | | | meter | 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 | | |

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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Spacecraft velocity in ECR Coordinates (dx/dt, dy/dt, dz/dt) at the mid-time of scan | 0 | | | m/s | 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 | | |

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 | 0 | | | arcsecond | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |



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.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Reference Frame Coordinates (roll, pitch, yaw) at the midtime of scan | | | | | | | | 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 | | | 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 | | | 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 | | |

## Table 5.5.4.6-2, 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 |
|---|---|---|---|---|---|---|---|---|---|
| Attitude and Ephemeris Availability Status | 0 | | | unitless | No | | 2 bit(s) | Name / Value | Name / Value<br>Nominal - E&A data available / 0<br>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 | | | 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 | | | unitless | No | | 1 bit(s) | Name / Value | Name / Value<br>False / 0<br>True / 1 |
| Solar Eclipse during Earth view | 5 | | | unitless | No | | 1 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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | scan | | | | | | | | | | False | 0 |
| | | | | | | | | | | | | True | 1 |
| | | Spare | 6 | | | unitless | No | | 1 bit(s) | Name Value | | Name | Value |
| | | Half Angle Mirror side | 7 | | | unitless | No | | 1 bit(s) | Name Value | | Name | Value |
| | | | | | | | | | | | | Mirror Side A | 0 |
| | | | | | | | | | | | | Mirror Side B | 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 | | | 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 | | | 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 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Invalid Solar Angles | 3 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Spare | 4 | | | unitless | No | | 4 bit(s) | Name Value | Name Value |

### 5.5.4.7 Net Heat Flux 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 5.5.4.7-1, 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_FLOAT<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 5.5.4.7-1, VIIRS Net Heat Flux Geolocation UML Diagram**

### 5.5.4.8 Net Heat Flux Geolocation HDF5 Metadata Details

The HDF5 metadata elements associated with the Net Heat Flux Geolocation EDR are listed in the JPSS CDFCB-X Vol. V , 474-00001-05, Section 4.3, 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":


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 5.5.4.8-1, VIIRS NHF Geolocation N_Quality_Summary Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| QA Percent Missing Data | 0 - 100% | Contains the percentage of missing data equal to the quotient of the number of pixels with 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. | |
| Automatic Quality Flag | 0 = “Retrieval Successful”<br>1 = “Retrieval not Successful” (one or more geolocation subroutines failed) | String containing “Retrieval Successful” or “Retrieval not Successful” depending on granule level quality assurance metadata retrieval success | |


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.

### 5.5.5 Ocean Color/Chlorophyll

| | |
|---|---|
| **Data Mnemonic** | EDRE-VROC-C0030 (Official)<br>EDRE-VROC-C0031 (Substitute) |
| **Description/ Purpose** | Ocean color is defined as the spectrum of normalized water-leaving radiances ($nL_W$). All geophysical quantities of interest, e.g., the concentration of phytoplankton pigment chlorophyll-$\alpha$ and the inherent optical properties of absorption and backscattering of surface waters (ocean optical properties), are derived from these nLw values.<br>Normalized water-leaving radiances are measured in $W*m^{-2}*sr^{-1}*\mu m^{-1}$<br>Ocean optical properties, absorption and backscattering, are estimated at each measured visible wavelength, and have units of $m^{-1}$ while chlorophyll-$\alpha$ is measured in mg $m^{-3}$.<br>The Ocean Color/Chlorophyll EDR is required under clear, daytime conditions only. “Clear” for this EDR is a cloud mask indicator of “confidently clear” for the horizontal cell of interest.<br>Day condition for this EDR is when the solar zenith angle is less than or equal to 70 degrees and when the cloud mask does not indicate that the cell of interest is in a shadow.<br>Sensors:<br>VIIRS<br>Effectivity: NPP and NPOESS |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 166.4 MiB<br>This granule size includes OCC related fields only and is based on a VIIRS granule size consisting of 48 scans. Metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **File Format Type** | HDF5 |
| **Data Content and Data Format** | See Section 5.5.5.1, VIIRS Ocean Color Chlorophyll Data Content Summary<br>See Section 5.5.5.2, VIIRS Ocean Color Chlorophyll Product Profile<br>See Section 5.5.5.3, VIIRS Ocean Color Chlorophyll HDF5 Details<br>See Section 5.5.5.4, VIIRS Ocean Color Chlorophyll HDF5 Metadata Details<br>See Section 5.5.5.5, VIIRS Ocean Color Chlorophyll Geolocation |

| | |
|---|---|
| | Details |

### 5.5.5.1 VIIRS Ocean Color Chlorophyll Data Content Summary

**Table 5.5.5.1-1, VIIRS Ocean Color Chlorophyll Data Content Summary**

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| Chlorophyll_a | Concentration of chlorophyll in a vertical column of the surface layer in the ocean | 32-bit floating point | [N*768, 3200] | [768, 3200] | mg/m^3 |
| IOP_a_412nm | Inherent Optical Properties - Absorption at 412nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |
| IOP_a_445nm | Inherent Optical Properties - Absorption at 445nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |
| IOP_a_488nm | Inherent Optical Properties - Absorption at 488nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |
| IOP_a_555nm | Inherent Optical Properties - Absorption at 555nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |
| IOP_a_672nm | Inherent Optical Properties - Absorption at 672nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |
| IOP_s_412nm | Inherent Optical Properties - Backscattering at 412nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |
| IOP_s_445nm | Inherent Optical Properties - Backscattering at 445nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |
| IOP_s_488nm | Inherent Optical Properties - Backscattering at 488nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |
| IOP_s_555nm | Inherent Optical Properties - Backscattering at 555nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| IOP_s_672nm | Inherent Optical Properties - Backscattering at 672nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | m^-1 |
| nLw_412nm | Normalized Water Leaving Radiance at 412nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | W/($m^2$ sr μm) |
| nLw_445nm | Normalized Water Leaving Radiance at 445nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | W/($m^2$ sr μm) |
| nLw_488nm | Normalized Water Leaving Radiance at 488nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | W/($m^2$ sr μm) |
| nLw_555nm | Normalized Water Leaving Radiance at 555nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | W/($m^2$ sr μm) |
| nLw_672nm | Normalized Water Leaving Radiance at 672nm | 32-bit floating point | [N*768, 3200] | [768, 3200] | W/($m^2$ sr μm) |
| QF1_VIIRSOCCEDR | Pixel Level Quality Flags | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF2_VIIRSOCCEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF3_VIIRSOCCEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF4_VIIRSOCCEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF5_VIIRSOCCEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF6_VIIRSOCCEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF7_VIIRSOCCEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | 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.

### 5.5.5.2 VIIRS Ocean Color Chlorophyll Product Profile

**Table 5.5.5.2-1, VIIRS Ocean Color Chlorophyll Product Profile**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| Chlorophyll_a | 4byte(s) | |
| IOP_a_412nm | 4byte(s) | |

**Chlorophyll_a — Dimensions**

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

**Chlorophyll_a — 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 |
| Concentration of chlorophyll in a vertical column of the surface layer in the ocean | 0 | 0.05 | 50 | mg/m^3 | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

**IOP_a_412nm — Dimensions**

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

**IOP_a_412nm — 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 |
| Inherent Optical Properties - Absorption at 412nm | 0 | 0.01 | 10 | m^-1 | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

**IOP_a_445nm** — 4byte(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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Inherent Optical Properties - Absorption at 445nm | 0 | 0.01 | 10 | m^-1 | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

**IOP_a_488nm** — 4byte(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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Inherent Optical Properties - | 0 | 0.01 | 10 | m^-1 | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Absorption at 488nm | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | | |
| | | | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | | |
| | | | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | | |
| IOP_a_555nm | 4byte(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** | | |
| | | Inherent Optical Properties - Absorption at 555nm | 0 | 0.01 | 10 | m^-1 | No | | 32-bit floating point | **Name** | **Value** | **Name** | **Value** | |
| | | | | | | | | | | NA_FLOAT32_FILL | -999.9 | | | |
| | | | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | | |
| | | | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | | |
| | | | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | | |
| IOP_a_672nm | 4byte(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** | | |
| | | Inherent | 0 | 0.01 | 10 | m^-1 | No | | 32-bit | **Name** | **Value** | **Name** | **Value** | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Optical Properties - Absorption at 672nm | | | | | | | floating point | NA_FLOAT32_FILL | -999.9 | |
| | | | | | | | | | | MISS_FLOAT32_FILL | -999.8 | |
| | | | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | |
| | | | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | |

**IOP_s_412nm** — 4byte(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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Inherent Optical Properties - Backscattering at 412nm | 0 | 0.01 | 50 | m^-1 | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

**IOP_s_445nm** — 4byte(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 | Unscaled Valid Range | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|

| | | | | Min | Max | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Inherent Optical Properties - Backscattering at 445nm | 0 | 0.01 | 50 | m^-1 | No | | 32-bit floating point | Name | Value | Name | Value |
| | | | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

IOP_s_488nm — 4byte(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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inherent Optical Properties - Backscattering at 488nm | 0 | 0.01 | 50 | m^-1 | No | | 32-bit floating point | Name | Value | Name | Value |
| | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

IOP_s_555nm — 4byte(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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Inherent Optical Properties - Backscattering at 555nm | 0 | 0.01 | 50 | m^-1 | No | | 32-bit floating point | Name | Value | Name | Value |
| | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |
| IOP_s_672nm | 4byte(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 | |
| | | | | | | | | Name | Value | Name | Value |
| Inherent Optical Properties - Backscattering at 672nm | 0 | 0.01 | 50 | m^-1 | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| nLw_412nm | 4byte(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 | |
| | | | | | | | | Name | Value | Name | Value |
| Normalized | 0 | 0.1 | 40 | $W/(m^2*sr*\mu m)$ | No | | 32-bit | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Water Leaving Radiance at 412nm | | | | | | | floating point | NA_FLOAT32_FILL | -999.9 | |
| | | | | | | | | | | MISS_FLOAT32_FILL | -999.8 | |
| | | | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | |
| | | | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | |

**nLw_445nm** — 4byte(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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Normalized Water Leaving Radiance at 445nm | 0 | 0.1 | 40 | W/(m$^2$*sr*µm) | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

**nLw_488nm** — 4byte(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 | Unscaled Valid Range | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | Legend Entries |
|---|---|---|---|---|---|---|---|---|---|



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.

| | | | | Min | Max | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normalized Water Leaving Radiance at 488nm | 0 | 0.1 | 40 | W/(m$^2$*sr*µm) | No | | 32-bit floating point | Name | Value | Name | Value |
| | | | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

| | | Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|---|---|
| nLw_555nm | 4byte(s) | 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 | |
| Normalized Water Leaving Radiance at 555nm | 0 | 0.1 | 40 | W/(m$^2$*sr*µm) | No | | 32-bit floating point | Name | Value | Name | Value |
| | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

| | | Name | Granule Boundary | Dynamic | Min Array Size | Max Array Size |
|---|---|---|---|---|---|---|
| nLw_672nm | 4byte(s) | AlongTrack | Yes | No | 768 | 768 |
| | | CrossTrack | No | No | 3200 | 3200 |

| Datum | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Description | Datum | Unscaled | Unscaled | Measurement | Scaled | Scale | Data | Fill Values | Legend |

| | | | Offset | Valid Range Min | Valid Range Max | Units | | Factor Name | Type | | | Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Normalized Water Leaving Radiance at 672nm | 0 | 0.1 | 40 | $W/(m^2*sr*\mu m)$ | No | | 32-bit floating point | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

## Table 5.5.5.2-2, VIIRS Ocean Color Chlorophyll Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSOCCEDR | 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 (Name / Value) | Legend Entries (Name / Value) |
|---|---|---|---|---|---|---|---|---|---|
| Indicates pixel level Normalized Water-Leaving Radiance quality at M1 | 0 | | | unitless | No | | 1 bit(s) | | Good 0<br>Poor 1 |
| Indicates pixel level Normalized Water-Leaving Radiance quality at M2 | 1 | | | unitless | No | | 1 bit(s) | | Good 0<br>Poor 1 |
| Indicates pixel level Normalized Water-Leaving Radiance quality at M3 | 2 | | | unitless | No | | 1 bit(s) | | Good 0<br>Poor 1 |
| Indicates pixel level Normalized Water-Leaving Radiance quality at M4 | 3 | | | unitless | No | | 1 bit(s) | | Good 0<br>Poor 1 |
| Indicates pixel level Normalized Water-Leaving Radiance quality at M5 | 4 | | | unitless | No | | 1 bit(s) | | Good 0<br>Poor 1 |
| Indicates pixel level chlorophyll a concentration quality | 5 | | | unitless | No | | 1 bit(s) | | Good 0<br>Poor 1 |
| Indicates pixel level IOP-a (Inherent Optical Properties-Absorption) quality at M1 | 6 | | | unitless | No | | 1 bit(s) | | Good 0<br>Poor 1 |
| Indicates pixel level IOP-s (Inherent Optical Properties-Scattering) quality at M1 | 7 | | | unitless | No | | 1 bit(s) | | Good 0<br>Poor 1 |

| Name | Data Size | Dimensions |
|---|---|---|
| QF2_VIIRSOCCEDR | 1byte(s) | |

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

**Datum**



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.

| | | Description | Datum Offset | Unscaled Valid Range Min | Unscaled Valid Range Max | Measurement Units | Scaled | Scale Factor Name | Data Type | Fill Values | | Legend Entries | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Indicates pixel level IOP-a (Inherent Optical Properties-Absorption) quality at M2 | 0 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | | | Good | 0 |
| | | | | | | | | | | | | Poor | 1 |
| | | Indicates pixel level IOP-s (Inherent Optical Properties-Scattering) quality at M2 | 1 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | | | Good | 0 |
| | | | | | | | | | | | | Poor | 1 |
| | | Indicates pixel level IOP-a (Inherent Optical Properties-Absorption) quality at M3 | 2 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | | | Good | 0 |
| | | | | | | | | | | | | Poor | 1 |
| | | Indicates pixel level IOP-s (Inherent Optical Properties-Scattering)quality at M3 | 3 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | | | Good | 0 |
| | | | | | | | | | | | | Poor | 1 |
| | | Indicates pixel level IOP-a (Inherent Optical Properties-Absorption) quality at M4 | 4 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | | | Good | 0 |
| | | | | | | | | | | | | Poor | 1 |
| | | Indicates pixel level IOP-s (Inherent Optical Properties-Scattering) quality at M4 | 5 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | | | Good | 0 |
| | | | | | | | | | | | | Poor | 1 |
| | | Indicates pixel level IOP-a (Inherent Optical Properties-Absorption) quality at M5 | 6 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | | | Good | 0 |
| | | | | | | | | | | | | Poor | 1 |
| | | Indicates pixel level IOP-s (Inherent Optical Properties-Scattering) quality at M5 | 7 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | | | Good | 0 |
| | | | | | | | | | | | | Poor | 1 |

QF3_VIIRSOCCEDR — 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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SDR quality for bands M1 to M7 (Any one band out of range is considered poor quality) | 0 | | | unitless | No | | 1 bit(s) | Name | Value | Name | Value |
| | | | | | | | | | | Good for all 7 bands | 0 |
| | | | | | | | | | | Poor (any band greater than thresholds) | 1 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Input Total Ozone Column Quality | 1 | | | unitless | No | | 1 bit(s) | Name Value | Name | Value | Name | Value |
| | | | | | | | | | | | | | Good | 0 |
| | | | | | | | | | | | | | Poor | 1 |
| | | Wind speed exceeds threshold of 8 m/s (Whitecap formation) | 2 | | | unitless | No | | 1 bit(s) | Name Value | Name | Value | Name | Value |
| | | | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | | | True | 1 |
| | | Epsilon value is out of aerosol model range (eps <= 0.85 or eps >= 1.35) | 3 | | | unitless | No | | 1 bit(s) | Name Value | Name | Value | Name | Value |
| | | | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | | | True | 1 |
| | | Atmospheric Correction Failure (Indicates at which correction step the algorithm first fails) | 4 | | | unitless | No | | 3 bit(s) | Name Value | Name | Value | Name | Value |
| | | | | | | | | | | | | | Correction successful | 0 |
| | | | | | | | | | | | | | Ozone failed | 1 |
| | | | | | | | | | | | | | Whitecap failed | 2 |
| | | | | | | | | | | | | | Polarization failed | 3 |
| | | | | | | | | | | | | | Rayleigh failed | 4 |
| | | | | | | | | | | | | | Aerosol failed | 5 |
| | | | | | | | | | | | | | Zero diffuse trans | 6 |
| | | | | | | | | | | | | | No Correction Possible | 7 |
| | | Spare | 7 | | | unitless | No | | 1 bit(s) | Name Value | Name | Value | | |
| QF4_VIIRSOCCEDR | 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 |
|---|---|---|---|---|---|---|---|---|---|
| Land/ Water Mask (Identifies the type of Earth surface that lies along the instruments line of sight - obtained from VIIRS Cloud Mask) | 0 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Sea water 0<br>Coastal water 1<br>Inland water 2<br>Land 3 |
| Snow or Ice in Pixel (from the VIIRS Cloud Mask) | 2 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Solar Zenith Angle=>70 deg (Day/Night Exclusion - Horizontal cell contains only nighttime. Solar Zenith Angle => 70 deg at center of horizontal cell) | 3 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Sun Glint detected in pixel as indicated in the VIIRS Cloud Mask | 4 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Exclusion - Horizontal Cell Size (HCS) > 1.3km (HCS > 1.3km, swath width > 1700 km or Sensor Zenith Angle > 53.0 degrees) | 5 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Degradation - Horizontal cell contains shallow water; Depth < 50 meters | 6 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Spare | 7 | | | unitless | No | | 1 bit(s) | Name Value | Name Value |

QF5_VIIRSOCCEDR — 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 Indicator (Indicator of whether 'M' band pixel confidently clear, probably clear, probably cloudy or confidently cloudy, from VIIRS Cloud Mask) | 0 | | | 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 |
| Adjacent Pixel is not confidently clear (as determined by the VIIRS Cloud Mask) | 2 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Thin Cirrus Cloud Detected in Pixel as determined by the VIIRS Cloud Mask | 3 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |


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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Exclusion: Cloud Shadow detected in Pixel (as determined by the VIIRS Cloud Mask | 4 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Non-Cloud Obstruction detected in Pixel (Heavy Aerosol) - as determined by the VIIRS Cloud Mask | 5 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Exclusion: Strongly absorbing aerosol detected in pixel (Single scattering albedo at M4 wavelength (555nm) <0.7) | 6 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Exclusion: AOT > 0.3 (AOT in horizontal cell > 0.3 on the slant path (AOT @865nm, M7)) | 7 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| QF6_VIIRSOCCEDR | 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 |
|---|---|---|---|---|---|---|---|---|---|
| Exclusion: Turbid Water detected in Pixel (Remote Sensing Reflectance (M5) > 0.0012) | 0 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Coccolithophores detected in Pixel : (nLw(M2)>=1.1 & nLw(M4)>=0.81 & Laero(M6)<= 1.1 & 0.6<=nLw(M2)/nLw(M4)<=1.1) | 1 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Exclusion: Dissolved organic matter absorption at 410nm > 2/meter | 2 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Range of Chlorophyll Concentration | 3 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>No Chlorophyll Retrieval 0<br>Chlorophyll<1mg/m^3 1<br>1.0<=Chlorophyll<10mg/m^3 2<br>Chlorophyll>=10mg/m^3 3 |



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.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Carder Bio-Optics Algorithm Branching (The various branching and model mixing within the Carder bio-optics algorithm) | 5 | | | unitless | No | | 3 bit(s) | Name / Value | Name | Value |
| | | | | | | | | | | | Carder empirical | 1 |
| | | | | | | | | | | | Unpackaged phytoplankton | 2 |
| | | | | | | | | | | | Weighted global-unpackaged | 3 |
| | | | | | | | | | | | Weighted packaged-global | 4 |
| | | | | | | | | | | | Weighted fully packaged-packaged | 5 |
| | | | | | | | | | | | Fully packaged phytoplankton | 6 |
| | | | | | | | | | | | No OCC Retrieval | 7 |

**QF7_VIIRSOCCEDR** — 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 (Name / Value) | Legend Entries (Name / Value) |
|---|---|---|---|---|---|---|---|---|---|
| Ocean Color values (any band) out of range; 0= (1.0 <= nLw <= 40 W/m^2 micrometer sr); 1= out of range | 0 | | | unitless | No | | 1 bit(s) | | False: 0<br>True: 1 |
| Chlorophyll-a values out of range (Chlorophyll-a < 0.05 or Chlorophyll-a > 50) | 1 | | | unitless | No | | 1 bit(s) | | False: 0<br>True: 1 |
| IOP-a values (any band) out of range (IOP-a < 0.01 or IOP-a > 10.0) | 2 | | | unitless | No | | 1 bit(s) | | False: 0<br>True: 1 |
| IOP-s values (any band) out of range (IOP-s < 0.01 or IOP-s > 50.0) | 3 | | | unitless | No | | 1 bit(s) | | False: 0<br>True: 1 |
| Input Skin SST EDR Quality (Input Skin SST EDR Quality) | 4 | | | unitless | No | | 1 bit(s) | | Good: 0<br>Poor: 1 |
| Exclusion - Bright Target Flag (The fraction of light into or out of cell exceeds threshold) | 5 | | | unitless | No | | 1 bit(s) | | Not Bright (bpflag <= 0.002): 0<br>Bright: 1 |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Chlorophyll Algorithm Branching | 6 | | | unitless | No | | 2 bit(s) | **Name** | **Value** | **Name** | **Value** |
| | | | | | | | | | | | | Carder algorithm with Carder empirical | 0 |
| | | | | | | | | | | | | Carder algorithm with OC3V default | 1 |
| | | | | | | | | | | | | OC3V algorithm | 2 |
| | | | | | | | | | | | | No Retrieval | 3 |


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.

### 5.5.5.3 VIIRS Ocean Color Chlorophyll HDF5 Details

Figure 5.5.5.3-1, VIIRS Ocean Color Chlorophyll UML Diagram, provides details on the contents and data types of the Ocean Color Chlorophyll product. This UML provides details at the product level detail only. In addition to this UML, refer to the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Figure 1.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

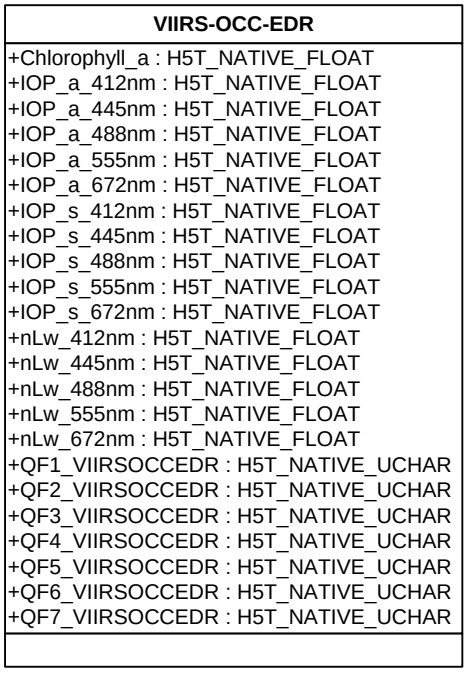


**Figure 5.5.5.3-1, VIIRS Ocean Color Chlorophyll HDF5 UML Diagram**

### 5.5.5.4 VIIRS Ocean Color Chlorophyll HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Ocean Color Chlorophyll are listed in the JPSS CDFCB-X Vol. V , 474-00001-05. The VIIRS 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 5.5.5.4-1, VIIRS Ocean Color Chlorophyll 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 Type EDR.


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 5.5.5.4-1, VIIRS Ocean Color Chlorophyll N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Overall Ocean Color Quality for M1 (412nm) | 0 - 100 | Percentage of high quality Ocean Color retrievals at M1 (412nm) within the granule | |
| Overall Ocean Color Quality for M2 (445nm) | 0 - 100 | Percentage of high quality Ocean Color retrievals at M2 (445nm) within the granule | |
| Overall Ocean Color Quality for M3 (488nm) | 0 - 100 | Percentage of high quality Ocean Color retrievals at M3 (488nm) within the granule | |
| Overall Ocean Color Quality for M4 (555nm) | 0 - 100 | Percentage of high quality Ocean Color retrievals at M4 (555nm) within the granule | |
| Overall Ocean Color Quality for M5 (672nm) | 0 - 100 | Percentage of high quality Ocean Color retrievals at M5 (672nm) within the granule | |
| Overall Chlorophyll a Concentration Quality | 0 - 100 | Percent of high quality Chlorophyll a Concentration retrievals within the granule | |
| Overall IOP-a Quality at M1 (412nm) | 0 - 100 | Percent of high quality IOP-a (Inherent Optical Properties - Absorption) retrievals at M1 (412nm) within the granule | |
| Overall IOP-a Quality at M2 (445nm) | 0 - 100 | Percent of high quality IOP-a (Inherent Optical Properties - Absorption) retrievals at M2 (445nm) within the granule | |
| Overall IOP-a Quality at M3 (488nm) | 0 - 100 | Percent of high quality IOP-a (Inherent Optical Properties - Absorption) retrievals at M3 (488nm) within the granule | |
| Overall IOP-a Quality at M4 (555nm) | 0 - 100 | Percent of high quality IOP-a (Inherent Optical Properties - Absorption) retrievals at M4 (555nm) within the granule | |
| Overall IOP-a Quality at M5 (672nm) | 0 - 100 | Percent of high quality IOP-a (Inherent Optical Properties - Absorption) retrievals at M5 (672nm) within 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.

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Overall IOP-s Quality at M1 (412nm) | 0 - 100 | Percent of high quality IOP-s (Inherent Optical Properties - Backscattering) retrievals at M1 (412nm) within the granule | |
| Overall IOP-s Quality at M2 (445nm) | 0 - 100 | Percent of high quality IOP-s (Inherent Optical Properties - Backscattering) retrievals at M2 (445nm) within the granule | |
| Overall IOP-s Quality at M3 (488nm) | 0 - 100 | Percent of high quality IOP-s (Inherent Optical Properties - Backscattering retrievals at M3 (488nm) within the granule | |
| Overall IOP-s Quality at M4 (555nm) | 0 - 100 | Percent of high quality IOP-s (Inherent Optical Properties - Backscattering) retrievals at M4 (555nm) within the granule | |
| Overall IOP-s Quality at M5 (672nm) | 0 - 100 | Percent of high quality IOP-s (Inherent Optical Properties - Backscattering) retrievals at M5 (672nm) within the granule | |
| Exclusion Summary | 0 - 100 | Percent of pixels in one or more exclusion conditions | |
| Summary Ocean Color Range Check | 0 - 100 | Percent of Ocean Color Retrievals (all bands) that are out of expected range | |
| Summary Chlorophyll Concentration Range Check | 0 - 100 | Percent of Chlorophyll retrievals that are out of expected range | |
| Summary IOP-a Range Check | 0 - 100 | Percent of IOP-a (Inherent Optical Properties-Absorption) retrievals (all bands) that are out of expected range | |
| Summary IOP-s Range Check | 0 - 100 | Percent of IOP-s (Inherent Optical Properties-Backscattering) retrievals (all bands) that are out of expected range | |
| Exclusion - No Ocean Present | 0 or 1 | Granule contains no ocean coverage | 0 = Ocean present<br>1 = No ocean present |


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.

#### 5.5.5.5 VIIRS Ocean Color Chlorophyll EDR Geolocation Details

VIIRS Ocean Color Chlorophyll EDR is produced on the VIIRS Moderate Resolution Geolocation - Terrain Corrected. See the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Section 4.9.5, VIIRS Moderate Resolution Geolocation - Terrain Corrected for details.

### 5.5.6 DELETED

### 5.5.7 Sea Ice Characterization

Sea ice age is defined as the time that has passed since the formation of the surface layer of an ice covered region of the ocean. The content of the Sea Ice Characterization EDR is the typing of areas of sea ice by age.


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.

### 5.5.7.1 DELETED

### 5.5.7.2 VIIRS Sea Ice Characterization

| | |
|---|---|
| **Data Mnemonic** | EDRE-SICH-C1030 (Official)<br>EDRE-SICH-C1031 (Substitute) |
| **Description/ Purpose** | Sea ice age is defined as the time that has passed since the formation of the surface layer of an ice covered region of the ocean. The content of the Sea Ice Characterization EDR is the typing of areas of sea ice by age.<br>Sensors:<br>VIIRS<br>Effectivity: NPP and NPOESS |
| **File-Naming Construct** | See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details. |
| **File Size** | Estimated Granule Size: 18.75 MiB<br>This granule size includes Sea Ice Age related fields only and is based on a VIIRS granule size consisting of 48 scans. Metadata attributes are not included. Additional size added by HDF5 packaging is also not included. |
| **File Format Type** | HDF5 |
| **Data Content and Data Format** | See Section 5.5.7.2.1, VIIRS Sea Ice Characterization Data Content Summary<br>See Section 5.5.7.2.2, VIIRS Sea Ice Characterization Product Profile<br>See Section 5.5.7.2.3, VIIRS Sea Ice Characterization HDF5 Details<br>See Section 5.5.7.2.4, VIIRS Sea Ice Characterization HDF5 Metadata Details<br>See Section 5.5.7.2.5, VIIRS Sea Ice Characterization Geolocation Data Content Summary |

#### 5.5.7.2.1 VIIRS Sea Ice Characterization Data Content Summary

**Table 5.5.7.2.1-1, VIIRS Sea Ice Characterization Data Content Summary**

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| IceAgeWeight | Ice Age Weighting Factors derived from Ice Age LUT and scene conditions (fire, clouds, sunglint, I-Band quality, | 32-bit floating point | [N*768, 3200] | [768, 3200] | unitless |

| Name | Description | Data Type | Aggregate Dimension (N = Number of Granules) | Granule Dimension | Units |
|---|---|---|---|---|---|
| | etc.) | | | | |
| IceAge | Various classifications of ice for I1, I2, Surface Temperature IP, and weighted cell total | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF1_VIIRSSICEDR | Pixel level quality flags | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF2_VIIRSSICEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | unitless |
| QF3_VIIRSSICEDR | | unsigned 8-bit char | [N*768, 3200] | [768, 3200] | 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.

### 5.5.7.2.2 VIIRS Sea Ice Characterization Product Profile

**Table 5.5.7.2.2-1, VIIRS Sea Ice Characterization Product Profile**

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| IceAgeWeight | 4byte(s) | |
| IceAge | 1byte(s) | |

**IceAgeWeight — Dimensions**

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

**IceAgeWeight — 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 |
| Ice Age Weighting Factors derived from Ice Age LUT and scene conditions (fire, clouds, sunglint, I-Band quality, etc.) | 0 | | | unitless | No | | 32-bit floating point | NA_FLOAT32_FILL | -999.9 | | |
| | | | | | | | | MISS_FLOAT32_FILL | -999.8 | | |
| | | | | | | | | ONBOARD_PT_FLOAT32_FILL | -999.7 | | |
| | | | | | | | | ONGROUND_PT_FLOAT32_FILL | -999.6 | | |
| | | | | | | | | ERR_FLOAT32_FILL | -999.5 | | |
| | | | | | | | | ELINT_FLOAT32_FILL | -999.4 | | |
| | | | | | | | | VDNE_FLOAT32_FILL | -999.3 | | |

**IceAge — Dimensions**

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

**IceAge — 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 |
| Various classifications of ice for I1, I2, Surface Temperature IP, and | 0 | | | unitless | No | | unsigned 8-bit char | NA_UINT8_FILL | 255 | Unclassified | 0 |
| | | | | | | | | MISS_UINT8_FILL | 254 | Ice Free | 1 |
| | | | | | | | | ONBOARD_PT_UINT8_FILL | 253 | New or Young Ice | 2 |
| | | | | | | | | ONGROUND_PT_UINT8_FILL | 252 | | |



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.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | weighted cell total | | | | | | | | ERR_UINT8_FILL | 251 | All Other Ice | 4 |
| | | | | | | | | | | ELINT_UINT8_FILL | 250 | | |
| | | | | | | | | | | VDNE_UINT8_FILL | 249 | Land Fill | 10 |
| | | | | | | | | | | | | Cloud Fill | 12 |

## Table 5.5.7.2.2-2, VIIRS Sea Ice Characterization Product Profile - Quality Flags

**Fields**

| Name | Data Size | Dimensions |
|---|---|---|
| QF1_VIIRSSICEDR | 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 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Name | Value | Name | Value |
| Ice Age Overall Quality | 0 | | | unitless | No | | 2 bit(s) | | | Green (good quality) | 0 |
| | | | | | | | | | | Yellow (degraded quality) | 1 |
| | | | | | | | | | | Red (bad quality) | 2 |
| | | | | | | | | | | No Retrieval (Fill) | 3 |
| Input Data Quality | 2 | | | unitless | No | | 1 bit(s) | | | Good | 0 |
| | | | | | | | | | | Bad | 1 |
| Cloud Confidence | 3 | | | unitless | No | | 2 bit(s) | | | Confidently clear | 0 |
| | | | | | | | | | | Probably clear | 1 |
| | | | | | | | | | | Probably cloudy | 2 |
| | | | | | | | | | | Confidently cloudy | 3 |


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.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thermal Contrast Degradation: 1.5K < Thermal contrast < 2.2K | 5 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Sea Ice Valid Region: Pixel is outside of valid region. Valid region is latitude > 36 degrees N or latitude > 50 degrees S | 6 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| | | Exclusion: Aerosol Optical Thickness slant path at 550nm > 1.0 | 7 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |

QF2_VIIRSSICEDR — 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 |
|---|---|---|---|---|---|---|---|---|---|
| Exclusion: Thermal Contrast < 1.5K | 0 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| No Ice detected in horizontal cell (Ice concentration is <= 0.1) | 1 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Exclusion: No Ocean present in horizontal cell | 2 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Algorithm Branching | 3 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Unclassified 0<br>RT:Reflectance Threshold Method 1<br>THB:Thermal Heat Balance Method 2 |
| Heavy Aerosol present in horizontal cell | 5 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Spare | 6 | | | unitless | No | | 1 bit(s) | Name Value | Name Value |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Thin Cirrus detected in horizontal cell | 7 | | | unitless | No | | 1 bit(s) | Name Value | Name | Value |
| | | | | | | | | | | | False | 0 |
| | | | | | | | | | | | True | 1 |

QF3_VIIRSSICED R — 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 |
|---|---|---|---|---|---|---|---|---|---|
| Shadow detected in horizontal cell | 0 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Cloud Phase | 1 | | | unitless | No | | 2 bit(s) | Name Value | Name Value<br>Clear 0<br>Water 1<br>Ice 2<br>Mixed 3 |
| Fire detected in horizontal cell (from the VIIRS Cloud Mask) | 3 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Sun Glint detected in horizontal cell | 4 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Coast Line present within horizontal cell | 5 | | | unitless | No | | 1 bit(s) | Name Value | Name Value<br>False 0<br>True 1 |
| Spare | 6 | | | unitless | No | | 2 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.

#### 5.5.7.2.3 VIIRS Sea Ice Characterization HDF5 Details

Figure 5.5.7.2.3-1, VIIRS Sea Ice Characterization UML Diagram, provides details on the contents and data types of the Sea Ice Characterization product. This UML provides details at the product level detail only. In addition to this UML, refer to the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Figure 1.2.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

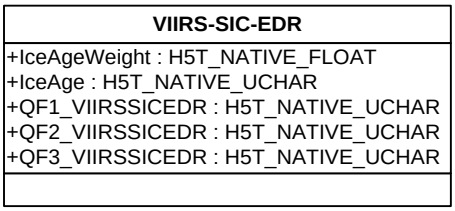


**Figure 5.5.7.2.3-1, VIIRS Sea Ice Characterization HDF5 UML Diagram**

#### 5.5.7.2.4 VIIRS Sea Ice Characterization HDF5 Metadata Details

The HDF5 metadata elements associated with the VIIRS Sea Ice Characterization are listed in the JPSS CDFCB-X Vol. V , 474-00001-05. The VIIRS 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 5.5.7.2.4-1, VIIRS Sea Ice Characterization 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 Type EDR.

**Table 5.5.7.2.4-1, VIIRS Sea Ice Characterization N_Quality_Summary_Name/N_Quality_Summary_Value Granule Level Metadata Values**

| N_Quality_Summary | | | |
|---|---|---|---|
| **Name** | **Value** | **Description** | **Notes** |
| Summary Ice Age Quality | 0 - 100 | Percent of horizontal cells within granule with high quality of retrieval | |
| Exclusion Summary | 0 - 100 | Percent of horizontal cells in exclusion conditions, | |
| Sea Ice Granule out of range | 0 | At least one pixel is in the valid region | |
| | 1 | Entire Granule is outside of valid region. Valid region is > +36 (36N) latitude OR < -50 (50S) latitude (Valid Region must also be over ocean) | |
| Exclusion - No Ocean Coverage | 0 | Ocean in horizontal cell | |
| | 1 | No Ocean in horizontal cell | |

### 5.5.7.2.5 VIIRS Sea Ice Characterization Geolocation Details

VIIRS Sea Ice Age EDR is produced on the VIIRS Moderate Resolution Geolocation - Terrain Corrected. See the JPSS CDFCB-X, Vol. IV, Pt. 1, 474-00001-04-01, Section 4.9.5, VIIRS Moderate Resolution Geolocation - Terrain Corrected for details.


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.

### 5.5.8 DELETED