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Block 2.0.0

Goddard Space Flight Center
Greenbelt, Maryland

National Aeronautics and
Space Administration

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

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Preface

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

Any questions should be addressed to:

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Change History Log

Revision	Effective Date	Description of Changes (Reference the CCR & CCB/ERB Approve Date)	Sections Affected
0200-	Aug 22, 2013	This version incorporates 474-CCR-13-1160 which was approved by JPSS Ground ERB on the effective date shown.	All
0200A	Jan 30, 2014	This version incorporates 474-CCR-13-1458 which was approved by JPSS Ground ERB on the effective date shown.	All
0200A1	Oct 23, 2014	This version incorporates 474-CCR-14-2091 which was approved by the JPSS Ground ERB for CO10 on the effective date shown.	All
0200B	Nov 20, 2014	This version incorporates 474-CCR-14-2102 which was approved by the JPSS Ground ERB on the effective date shown.	All

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List of TBx Items

TBx	Type	ID	Text	Action
None				

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Table of Contents

1 Introduction ... 1
1.1 Scope ... 1
1.2 Organization ... 1
2 Related Documentation ... 2
2.1 Parent Documents ... 2
2.2 Applicable Documents ... 2
2.3 Information Documents ... 2
3 UML for HDF5 Products ... 4
3.1 Intermediate Products and Environmental Data Records HDF5 Details - Statically Sized ... 4
3.2 Intermediate Products, Application Related Products and Environmental Data Records HDF5 Details - Dynamically Sized ... 6
4 Intermediate Products (IPs) ... 8
4.1 VIIRS Ice Concentration IP ... 8
4.1.1 VIIRS Ice Concentration IP Data Content Summary ... 9
4.1.2 VIIRS Ice Concentration IP Product Profile ... 9
4.1.3 VIIRS Ice Concentration IP HDF5 Details ... 11
4.1.4 VIIRS Ice Concentration IP Metadata Details ... 11
4.1.5 VIIRS Ice Concentration IP Geolocation Details ... 11
4.2 VIIRS Ice Quality Flags IP ... 11
4.2.1 VIIRS Ice Quality Flags IP Data Content Summary ... 12
4.2.2 VIIRS Ice Quality Flags IP Product Profile ... 12
4.2.3 VIIRS Ice Quality Flags IP HDF5 Details ... 15
4.2.4 VIIRS Ice Quality Flags IP Metadata Details ... 15
4.2.5 VIIRS Ice Quality Flags IP Geolocation Details ... 15
4.3 VIIRS Ice Reflectance/Temperature IP ... 15
4.3.1 VIIRS Ice Reflectance/Temperature IP Data Content Summary ... 16
4.3.2 VIIRS Ice Reflectance/Temperature IP Product Profile ... 17
4.3.3 VIIRS Ice Reflectance/Temperature IP HDF5 Details ... 23
4.3.4 VIIRS Ice Reflectance/Temperature IP Metadata Details ... 23
4.3.5 VIIRS Ice Reflectance/Temperature IP Geolocation Details ... 23
4.4 VIIRS Ice Weights IP ... 23
4.4.1 VIIRS Ice Weights Data Content Summary ... 25
4.4.2 VIIRS Ice Weights IP Product Profile ... 25
4.4.3 VIIRS Ice Weights IP HDF5 Details ... 27
4.4.4 VIIRS Ice Weights IP Metadata Details ... 27

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.

4.4.5 VIIRS Ice Weights IP Geolocation Details 27
4.5 VIIRS Ice Surface Temperature IP 27
4.5.1 VIIRS Surface Temperature IP Data Content Summary 28
4.5.2 VIIRS Surface Temperature IP Product Profile....28
4.5.3 VIIRS Surface Temperature HDF5 Details 30
4.5.4 VIIRS Surface Temperature Metadata Details 30
4.5.5 VIIRS Surface Temperature Geolocation Details....30
5 Environmental Data Records (EDRs).... 31
5.1 VIIRS Ice Surface Temperature EDR.... 31
5.1.1 VIIRS Ice Surface Temperature EDR Data Content Summary....32
5.1.2 VIIRS Ice Surface Temperature EDR Product Profile 32
5.1.3 VIIRS Ice Surface Temperature EDR HDF5 Details 36
5.1.4 VIIRS Ice Surface Temperature EDR HDF5 Metadata Details 36
5.1.5 VIIRS Ice Surface Temperature EDR Geolocation Details....37
5.2 VIIRS Sea Ice Characterization EDR 37
5.2.1 VIIRS Sea Ice Characterization EDR Data Content Summary 38
5.2.2 VIIRS Sea Ice Characterization EDR Product Profile....38
5.2.3 VIIRS Sea Ice Characterization EDR HDF5 Details....42
5.2.4 VIIRS Sea Ice Characterization EDR Metadata Details....42
5.2.5 VIIRS Sea Ice Characterization EDR Geolocation Details 43
6 Ancillary and Auxiliary Data Inputs.... 44
7 Look-up Tables and Processing Coefficient Tables 45
7.1 Look Up Tables.... 45
7.1.1 VIIRS Sea Ice Reflectance LUT....45
7.1.2 VIIRS Sea Ice Broadband Atmospheric Transmittance LUT....50
7.1.3 VIIRS Sea Ice Snow Depth/Ice Thickness LUT....53
7.2 Processing Coefficient Tables.... 56
7.2.1 Automated Processing Coefficients....56
7.2.1.1 Cryosphere Automated PCs 56
7.2.2 Manual Processing Coefficients 56
7.2.2.1 Cryosphere Initialization PCs.... 56
7.2.2.2 VIIRS Sea Ice Age Ephemeral PCT.... 69
7.2.2.3 VIIRS Ice Surface Temperature EDR Ephemeral PCT 73
Appendix A. Data Mnemonic to Interface Mapping.... 74
Appendix B. DQTT Quality Flag Mapping 75
Appendix C. Abbreviations and Acronyms 76
Attachment A. XML Formats for Related Data Products 77

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: 3.1-1 Generalized UML Diagram for statically sized HDF5 IP/EDR Files 5
Figure: 3.2-1 Generalized UML Diagram for dynamically sized HDF5 IP/EDR Files 7
Figure: 4.1.3-1 VIIRS Ice Concentration HDF5 UML Diagram 11
Figure: 4.2.3-1 VIIRS Ice Quality Flags HDF5 UML Diagram 15
Figure: 4.3.3-1 VIIRS Ice Reflectance/Temperature HDF5 UML Diagram 23
Figure: 4.4.3-1 VIIRS Ice Weights HDF5 UML Diagram 27
Figure: 4.5.3-1 VIIRS Surface Temperature HDF5 UML Diagram 30
Figure: 5.1.3-1 VIIRS Ice Surface Temperature EDR HDF5 UML Diagram 36
Figure: 5.2.3-1 VIIRS Sea Ice Characterization HDF5 UML Diagram 42

List of Tables

Table: 4.1.1-1 VIIRS Ice Concentration IP Data Content Summary 9
Table: 4.1.2-1 VIIRS Ice Concentration IP Product Profile 9
Table: 4.2.1-1 VIIRS Ice Quality Flags IP Data Content Summary 12
Table: 4.2.2-1 VIIRS Ice Quality Flags IP Product Profile 12
Table: 4.3.1-1 VIIRS Ice Reflectance/Temperature IP Data Content Summary 16
Table: 4.3.2-1 VIIRS Ice Reflectance/Temperature IP Product Profile 17
Table: 4.4.1-1 VIIRS Ice Weights Data Content Summary 25
Table: 4.4.2-1 VIIRS Ice Weights IP Product Profile 25
Table: 4.5.1-1 VIIRS SURF-TEMP IP Data Content Summary 28
Table: 4.5.2-1 VIIRS Surface Temperature Product Profile 28
Table: 5.1.1-1 VIIRS Ice Surface Temperature EDR Data Content Summary 32
Table: 5.1.2-1 VIIRS Ice Surface Temperature EDR Product Profile 32
Table: 5.1.4-1 VIIRS Ice Surface Temperature EDR Quality Summary Metadata Values 36
Table: 5.2.1-1 VIIRS Sea Ice Characterization EDR Data Content Summary 38
Table: 5.2.2-1 VIIRS Sea Ice Characterization Product Profile 38
Table: 5.2.4-1 VIIRS Sea Ice Characterization Quality Summary Metadata Values 42
Table: 7.1.1-1 VIIRS Sea Ice Reflectance LUT Data Format 47
Table: 7.1.2-1 VIIRS Sea Ice Broadband Atmospheric Transmittance LUT Data Format 51
Table: 7.1.3-1 VIIRS Sea Ice Snow Depth/Ice Thickness LUT Data Format 54
Table: 7.2.2.1.1-1 VIIRS Sea Ice Concentration PC Data Format 57
Table: 7.2.2.1.2-1 VIIRS Ice Surface Temperature PC Data Format 62
Table: 7.2.2.1.3-1 VIIRS Sea Ice Quality PC Data Format 64
Table: 7.2.2.1.4-1 VIIRS Surface Temperature PC Data Format 69
Table: 7.2.2.2-1 VIIRS Sea Ice Age Ephemeral PC 71
Table: 7.2.2.3-1 VIIRS Ice Surface Temperature EDR Ephemeral PC 73
Table: B-1 DQTT Quality Flag Mapping 75
Table: ATT-1 XML Formats for Related Products 77

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1 Introduction

1.1 Scope

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

1.2 Organization

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

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.

2 Related Documentation

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

2.1 Parent Documents

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

Document Number	Title
470-00067	Joint Polar Satellite System (JPSS) Ground System Requirements Document (GSRD)
470-00067-02	Joint Polar Satellite System (JPSS) Ground System Requirements Document (GSRD), Volume 2 – Science Product Specifications
474-00448-01-01	Joint Polar Satellite System (JPSS) Algorithm Specification Volume I: Software Requirements Specification (SRS) for the Common Algorithms

2.2 Applicable Documents

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

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

2.3 Information Documents

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

Document Number	Title
474-00047	Joint Polar Satellite System (JPSS) VIIRS Sea Ice Characterization Algorithm Theoretical Basis Document (ATBD)
474-00052	Joint Polar Satellite System (JPSS) VIIRS Ice Surface Temperature

Document Number	Title
	Algorithm Theoretical Basis Document (ATBD)
474-00333	Joint Polar Satellite System (JPSS) Ground System (GS) Architecture Description Document (ADD)
474-00054	Joint Polar Satellite System (JPSS) Ground System (GS) Concept of Operations (ConOps)
470-00041	Joint Polar Satellite System (JPSS) Program Lexicon
474-00448-03-17	Joint Polar Satellite System (JPSS) Algorithm Specification Volume III: Operational Algorithm Description (OAD) for the Cryosphere Products
474-00001-01	Joint Polar Satellite System (JPSS) Common Data Format Control Book, Volume I – Overview
474-00448-02-01	Joint Polar Satellite System (JPSS) Algorithm Specification Volume II: Data Dictionary for the Common Algorithms

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3 UML for HDF5 Products

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

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

Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, depicts the HDF5 IP/EDR organization as a Unified Modeling Language (UML) class diagram. Each HDF5 IP/EDR file contains an HDF5 Root Group, '/', a Data Products Group, Product Groups (Collection Short Name), an optional Geolocation Group (depending upon packaging option, see the JPSS CDFCB-X Vol. I, for a description of the geolocation packaging), and an All Data Group (dataset arrays). The Product Groups and Geolocation Group both contain datasets - an Aggregation Dataset (Collection Short Name_Agg) and Granule Datasets (Collection Short Name_Gran_n) - where n indicates the nth granule in a temporal aggregation of granules (1 .. n). A granule is a general term used to describe the minimum quanta of data collected per processing period, generally on the order of seconds. For the definition and organization of the metadata attributes contained in the HDF5 files, see the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. Attributes that are specific to a particular IP/EDR are listed with the specific IP/EDR's data format definition. For the generalized formats and packaging options for the Geolocation data, see the JPSS CDFCB-X Vol. I - Overview.

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

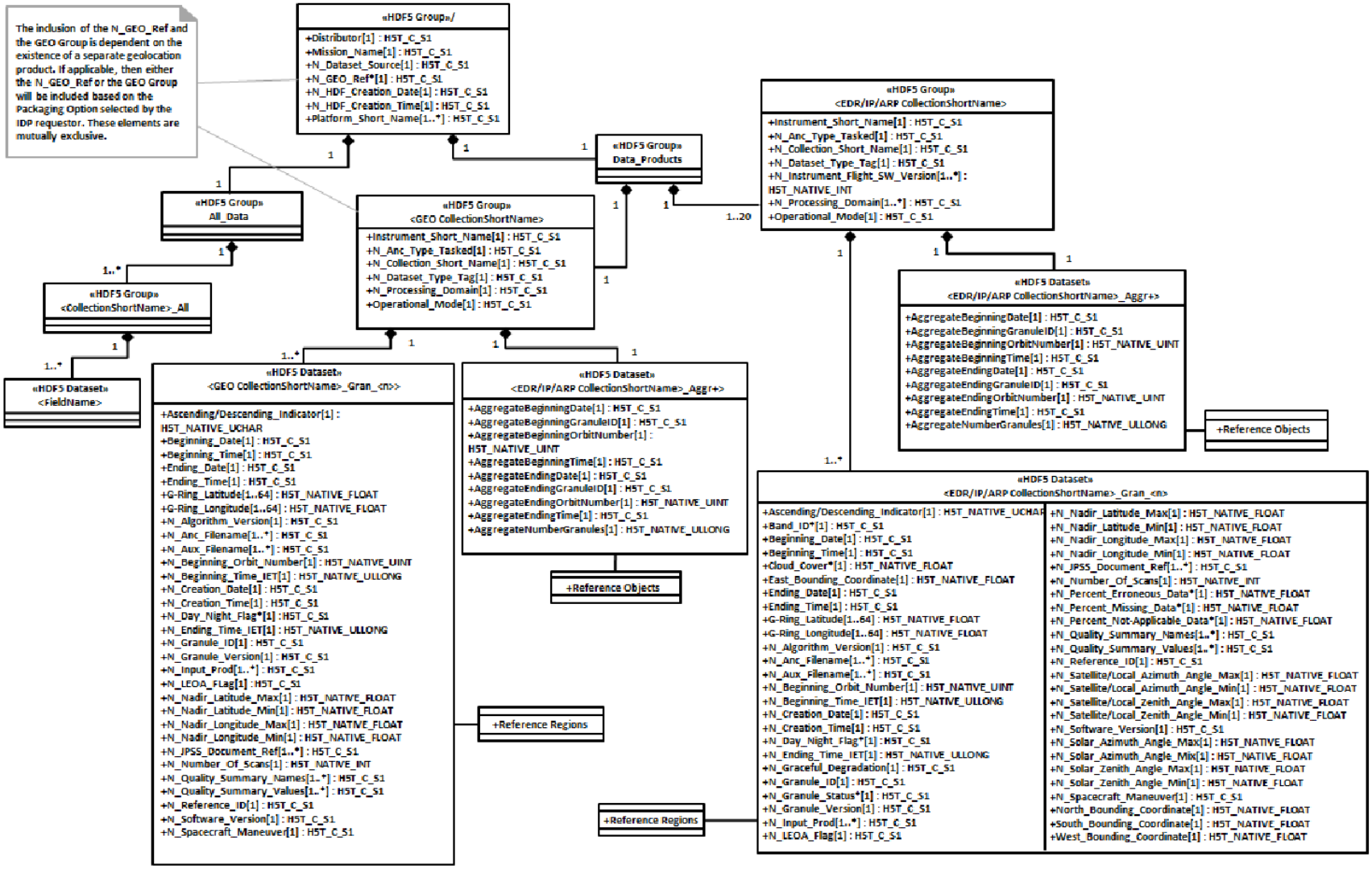

Figure: 3.1-1 Generalized UML Diagram for statically sized HDF5 IP/EDR Files

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

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

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

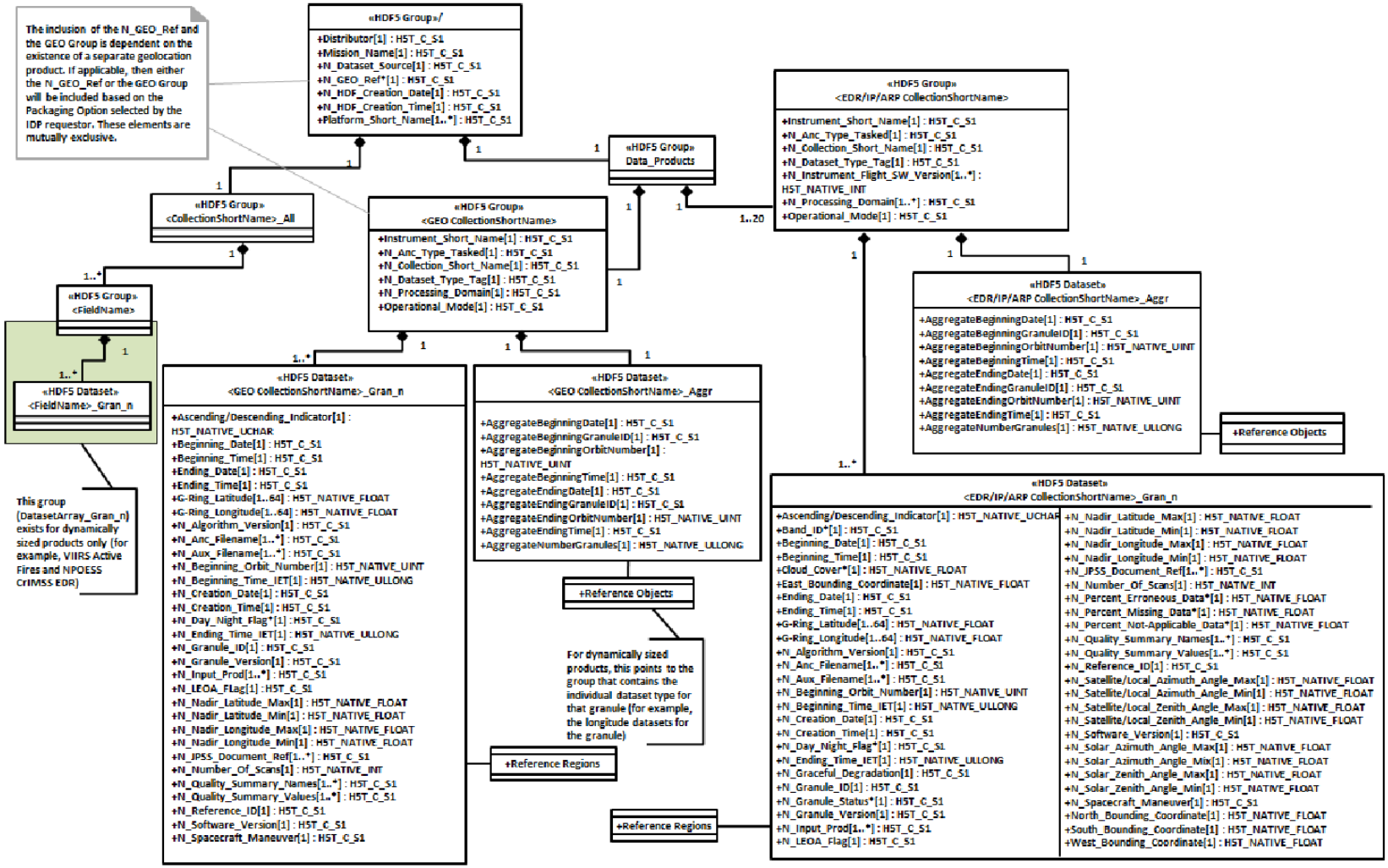

Figure: 3.2-1 Generalized UML Diagram for dynamically sized HDF5 IP/EDR Files

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4 Intermediate Products (IPs)

IPs are defined as a data subset or retrieval by-product that is required within another primary data product's generation sequence or is used as an input to secondary processing or analysis. The IPs defined here can be packaged and delivered to the end-user. Other IPs are generated during the creation of EDRs but are not deliverable and are thus not documented here.

4.1 VIIRS Ice Concentration IP

Data Mnemonic	IMPI_VIIC_R0100 (Official) IMPI_VIIC_R0110 (Substitute)
Description/ Purpose	The VIIRS Ice Concentration IP contains the ice fractions and summed concentration weights for each pixel. This product is available at the VIIRS Imagery Resolution. Effectivity: S-NPP and JPSS
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.0 for details. .
File Size	See Table: 4.1.1-1 VIIRS Ice Concentration Data Content Summary for size.
File Format Type	HDF5
Production Frequency	As requested
Data Content and Data Format	The VIIRS ice concentration IP contains ice fraction and ice concentration weight, both datasets with the described formatting as shown in the following product profile tables See Section 4.1.2 VIIRS Ice Concentration IP Product Profile See Section 4.1.4 VIIRS Ice Concentration IP Metadata Details See Section 4.1.5 VIIRS Ice Concentration IP Geolocation Details

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4.1.1 VIIRS Ice Concentration IP Data Content Summary

Table: 4.1.1-1 VIIRS Ice Concentration IP Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
iceFraction		32-bit floating point	[N*1536, 6400]	[1536, 6400]	unitless
iceConcWeights		32-bit floating point	[N*1536, 6400]	[1536, 6400]	unitless
File Size	**78,643,200 bytes**				

4.1.2 VIIRS Ice Concentration IP Product Profile

Table: 4.1.2-1 VIIRS Ice Concentration IP Product Profile

VIIRS Ice Concentration IP Product Profile

Fields												
Name	**Data Size**	**Dimensions**										
iceFraction	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**						
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536						
		I_VIIRS_SDR_COLS	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**	
		IceFraction	0	0.0	1.0	Unitless	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		
iceConcWeights	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**						
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536						
		I_VIIRS_SDR_COLS	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**	
		Ice Concentration Weights		0.0	1.0	Unitless	No		32-bit floating point	**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.

										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	
										ELLIPSOID_FLOAT32_FILL	-999.4	
										VDNE_FLOAT32_FILL	-999.3	
										SOUB_FLOAT32_FILL	-999.2	

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4.1.3 VIIRS Ice Concentration IP HDF5 Details

Figure 4.1.3-1, VIIRS Ice Concentration UML Diagram, provides details on the contents and data types of the Ice Concentration IP product. This UML provides details at the product level detail only. In addition to this UML, refer to Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

VIIRS-I-Conc-IP
+iceFraction : H5T_NATIVE_FLOAT +iceConcWeights : H5T_NATIVE_FLOAT

Figure: 4.1.3-1 VIIRS Ice Concentration HDF5 UML Diagram

4.1.4 VIIRS Ice Concentration IP Metadata Details

The product metadata elements contained in the VIIRS Ice Concentration IP are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, Sections 4 and 5. These metadata elements include all common metadata at the root, product, aggregation, and granule level. There are no granule level Quality Flags defined as metadata elements in the VIIRS Ice Concentration IP. Therefore, there are no entries in the N_Quality_Summary_Name/Value metadata attributes for this product.

4.1.5 VIIRS Ice Concentration IP Geolocation Details

The Geolocation for the Ice Concentration IP uses the VIIRS Imagery Resolution Geolocation – Terrain Corrected for its Geolocation details. See 474-00448-02-06, JPSS Algorithm Specification Vol. II - Data Dictionary for VIIRS RDR/SDR, Section 6.3.5, VIIRS I-Band SDR Geolocation for details.

4.2 VIIRS Ice Quality Flags IP

Data Mnemonic	IMPI_VIQF_R0100 (Official) IMPI_VIQF_R0110 (Substitute)
Description/ Purpose	The VIIRS Ice Quality Flags IP is output from the VIIRS Ice Quality unit. The Ice Quality Flags IP gives quality bit information at imagery resolution for each pixel and each band in the VIIRS granule. Effectivity: S-NPP and JPSS
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.0 for details.
File Size	Data Granule Size: See Table: 4.2.1-1 VIIRS Ice Quality Flags IP Data Content Summary. This granule size includes output 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 requested
Data Content and Data Format	See Section 4.2.2 VIIRS Ice Quality Flag IP Product Profile See Section 4.2.4 VIIRS Ice Quality Flags IP Metadata Details See Section 4.2.5 VIIRS Ice Quality Flags IP Geolocation Details

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4.2.1 VIIRS Ice Quality Flags IP Data Content Summary

Table: 4.2.1-1 VIIRS Ice Quality Flags IP Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
QF1_VIIRSIceQualityIP		Unsigned 8-bit Character	[N*1536, 6400]	[1536, 6400]	unitless
QF2_VIIRSIceQualityIP		Unsigned 8-bit Character	[N*1536, 6400]	[1536, 6400]	unitless
QF3_VIIRSIceQualityIP		Unsigned 8-bit Character	[N*1536, 6400]	[1536, 6400]	unitless
granuleNotInSeaIceRange		Unsigned 8-bit Integer	[N*1]	[1]	unitless
granuleNotInFWIceRange		Unsigned 8-bit Integer	[N*1]	[1]	unitless
File Size	**29,491,202 bytes**				

4.2.2 VIIRS Ice Quality Flags IP Product Profile

Table: 4.2.2-1 VIIRS Ice Quality Flags IP Product Profile

VIIRS-I-QUAL-FLAGS-IP Product Profile - Quality Flags

Fields												
Name	**Data Size**	**Dimensions**										
QF1_VIIRSIceQualityIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**						
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536						
		I_VIIRS_SDR_COLS	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**
		Sea Ice Range	0	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name** / **Value**: In Range 0; Not In Range 1
		Fresh Water Ice Range	1	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name** / **Value**: In Range 0; Not In Range 1
		Coastline	2	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name** / **Value**: No Coastline 0; Coastline 1
		Cloud Confidence Indicator	3	0	3	unitless	No		2 bit(s)	**Name**	**Value**	**Name** / **Value**: Conf. Clear 0; Prob. Clear 1; Prob. Cloudy 2; Conf. 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.

		Cirrus Confidence Indicator	5	0	3	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Conf. Clear	0
												Solar	1
												IR	2
												Solar & IR	3
		Cloud Shadow	7	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												No Shadow	0
												Shadow	1
QF2_VIIRSIce QualityIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		Cloud Phase	0	0	3	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Spare	0
												Water	1
												Ice	2
												Mixed	3
		Fire Detected	2	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												No Fire	0
												Fire	1
		Sun Glint	3	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												No Sun Glint	0
												Sun Glint	1
		I1 Band Quality	4	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												Good	0
												Bad	1
		I2 Band Quality	5	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												Good	0
												Bad	1
		I5, M15 or M16 Band Quality	6	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												Good	0
												Bad	1
		Ocean/No Ocean	7	0	1	unitless	No		1 bit(s)	**Value**	**Value**	**Value**	**Value**
												Ocean	0
												No Ocean	1
QF3_VIIRSIce QualityIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		I1 Overall Quality	0	0	3	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												High	0
												Medium	1
												Low	2
												Poor	3
		I2 Overall Quality	2	0	3	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												High	0
												Medium	1
												Low	2
												Poor	3

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		I5 Overall Quality	4	0	3	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												High	0
												Medium	1
												Low	2
												Poor	3
		Non Cloud Obstruction/Heavy Aerosol	6	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												No	0
												Yes	1
		Thin Cirrus	7	0	1	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												No	0
												Yes	1
granuleNotInSeaIceRange	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		Datum											
		Description	**Datum Offset**	**Unscaled Valid Range Min**	**Unscaled Valid Range Max**	**Measurement Units**	**Scaled**	**Scale Factor Name**	**Data Type**	**Fill Values**		**Legend Entries**	
		granuleNotInSeaIceRange	0	0	1	unitless	No		unsigned 8-bit char	**Name**	**Value**	**Name**	**Value**
												No	0
												Yes	1
granuleNotInFWIceRange	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		Datum											
		Description	**Datum Offset**	**Unscaled Valid Range Min**	**Unscaled Valid Range Max**	**Measurement Units**	**Scaled**	**Scale Factor Name**	**Data Type**	**Fill Values**		**Legend Entries**	
		granuleNotInFWIceRange	0	0	1	unitless	No		unsigned 8-bit char	**Name**	**Value**	**Name**	**Value**
												No	0
												Yes	1

4.2.3 VIIRS Ice Quality Flags IP HDF5 Details

Figure 4.2.3-1, VIIRS Ice Quality Flags UML Diagram, provides details on the contents and data types of the Ice Quality Flags IP product. This UML provides details at the product level detail only. In addition to this UML, refer to Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

VIIRS-I-Qual-Flags-IP
+QF1_VIIRSIceQualityIP : H5T_NATIVE_UCHAR +QF2_VIIRSIceQualityIP : H5T_NATIVE_UCHAR +QF3_VIIRSIceQualityIP : H5T_NATIVE_UCHAR +granuleNotInSeaIceRange : H5T_NATIVE_UCHAR +granuleNotInFWIceRange : H5T_NATIVE_UCHAR

Figure: 4.2.3-1 VIIRS Ice Quality Flags HDF5 UML Diagram

4.2.4 VIIRS Ice Quality Flags IP Metadata Details

The product metadata elements contained in the Ice Quality Flags IP are listed in the JPSS Algorithm Specification Vol. II Data Dictionary for the Common Algorithms, Sections 4 and 5. These metadata elements include all common metadata at the root, product, aggregation, and granule level. There are no granule level Quality Flags defined as metadata elements in the Ice Quality Flags IP. Therefore, there are no entries in the N_Quality_Summary_Name/Value metadata attributes for this product.

4.2.5 VIIRS Ice Quality Flags IP Geolocation Details

The Geolocation for the Ice Quality Flags IP uses the VIIRS Imagery Resolution Geolocation – Terrain Corrected for its Geolocation. See 474-00448-02-06, JPSS Algorithm Specification Vol. II: Data Dictionary for VIIRS RDR/SDR, Section 6.3.5, VIIRS I-Band SDR Geolocation for details.

4.3 VIIRS Ice Reflectance/Temperature IP

Data Mnemonic	IMPI_VIRT_R0100 (Official) IMPI_VIRT_R0110 (Substitute)
Description/ Purpose	The VIIRS Ice Reflectance IP contains ice tie points, local water tie points, and search window qualities computed for bands I1 and I2. Effectivity: S-NPP and JPSS
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.0 for details.
File Size	See Table 4.3.1-1, VIIRS Ice Reflectance/Temperature IP Data Content Summary for size.
File Format Type	HDF5
Production Frequency	As requested
Data Content and Data Format	See Section 4.3.2 VIIRS Ice Reflectance/Temperature IP Product Profile See Section 4.3.4 VIIRS Ice Reflectance/Temperature IP Metadata Details See Section 4.3.5 VIIRS Ice Reflectance/Temperature IP 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.

4.3.1 VIIRS Ice Reflectance/Temperature IP Data Content Summary

Table: 4.3.1-1 VIIRS Ice Reflectance/Temperature IP Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
iceTiePointsI1	Imagery Band 1 Ice Tie Points	32-bit floating point	[N*1536, 6400]	[1536, 6400]	Unitless
iceTiePointsI2	Imagery Band 2 Ice Tie Points	32-bit floating point	[N*1536, 6400]	[1536, 6400]	Unitless
iceTiePointsSt	Surface Temperature Ice Tie Points	32-bit floating point	[N*1536, 6400]	[1536, 6400]	Kelvin
localWaterTiePointsI1	Imagery Band 1 Local Water Tie Points	32-bit floating point	[N*1536, 6400]	[1536, 6400]	Unitless
localWaterTiePointsI2	Imagery Band 2 Local Water Tie Points	32-bit floating point	[N*1536, 6400]	[1536, 6400]	Unitless
localWaterTiePointsSt	Surface Temperature Local Water Tie Point	32-bit Floating Point	[N*1536, 6400]	[1536, 6400]	Kelvin
QF1_VIIRSIREFLTEMPIP	Quality Flags	unsigned 8-bit char	[N*1536, 6400]	[1536, 6400]	Unitless
QF2_VIIRSIREFLTEMPIP		unsigned 8-bit char	[N*1536, 6400]	[1536, 6400]	Unitless
QF3_VIIRSIREFLTEMPIP		unsigned 8-bit char	[N*1536, 6400]	[1536, 6400]	Unitless
QF4_VIIRSIREFLTEMPIP		unsigned 8-bit char	[N*1536, 6400]	[1536, 6400]	Unitless
QF5_VIIRSIREFLTEMPIP		unsigned 8-bit char	[N*1536, 6400]	[1536, 6400]	Unitless
QF6_VIIRSIREFLTEMPIP		unsigned 8-bit char	[N*1536, 6400]	[1536, 6400]	Unitless
QF7_VIIRSIREFLTEMPIP		unsigned 8-bit char	[N*1536, 6400]	[1536, 6400]	Unitless
QF8_VIIRSIREFLTEMPIP		unsigned 8-bit char	[N*1536, 6400]	[1536, 6400]	Unitless
QF9_VIIRSIREFLTEMPIP		unsigned 8-bit char	[N*1536, 6400]	[1536, 6400]	Unitless
File Size	**324,403,200 bytes**				

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

4.3.2 VIIRS Ice Reflectance/Temperature IP Product Profile

Table: 4.3.2-1 VIIRS Ice Reflectance/Temperature IP Product Profile

VIIRS-I-Refl-Temp-IP Product Profile

Fields													
Name	**Data Size**	**Dimensions**											
iceTiePointsI1	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		Imagery Band 1 Ice Tie Points	0	0.0	1.0	Unitless	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		
iceTiePointsI2	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		Imagery Band 2 Ice Tie Points	0	0.0	1.0	Unitless	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT	-999.2		

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.

										32_FILL			
iceTiePointsSt	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		Surface Temperature Ice Tie Points	0	0.0	Maxfloat	Kelvin	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		
localWaterTiePointsI1	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		Imagery Band 1 Local Water Tie Points	0	0.0	1.0	Unitless	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		
localWaterTiePointsI2	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	No	No	6400	6400							

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**	
		Imagery Band 2 Local Water Tie Points	0	0.0	1.0	Unitless	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		
localWaterTiePointsSt	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		Surface Temperature Local Water Tie Points	0	0.0	Maxfloat	Kelvin	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		

VIIRS-I-Refl-Temp-IP Product Profile - Quality Flags

Fields						
Name	**Data Size**	**Dimensions**				
QF1_VIIRSIREFLTEMPIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536
		I_VIIRS_SDR_COLS	No	No	6400	6400
		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**	
		searchWinQualI1	0	0	1	Unitless	No		unsigned 8-bit char	**Name**	**Value**	**Name**	**Value**
												Good Search Window	0
												Bad Search Window	1
QF2_VIIRSIREFLTEMPIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		searchWinQualI2	0	0	1	Unitless	No		unsigned 8-bit char	**Name**	**Value**	**Name**	**Value**
												Good Search Window	0
												Bad Search Window	1
QF3_VIIRSIREFLTEMPIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	No	No	6400	6400							
		Datum											
		Description	**Datum Offset**		**Unscaled Valid Range Max**	**Measurement Units**	**Scaled**	**Scale Factor Name**	**Data Type**	**Fill Values**		**Legend Entries**	
		searchWinQualSt	0	0	1	Unitless	No		unsigned 8-bit char	**Name**	**Value**	**Name**	**Value**
												Good Search Window	0
												Bad Search Window	1
QF4_VIIRSIREFLTEMPIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		waterSearchWinQualI1	0	0	1	Unitless	No		unsigned 8-bit char	**Name**	**Value**	**Name**	**Value**
												Good Search Window	0
												Bad Search Window	1
QF5_VIIRSIREFLTEMPIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		waterSearchWin	0	0	1	Unitless	No		unsigned 8-bit	**Name**	**Value**	**Name**	**Value**

		QualI2							char				
												Good Search Window	0
												Bad Search Window	1
QF6_VIIRSIRE FLTEMPIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_ COLS	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**	
		waterSearchWin QualSt	0	0	1	Unitless	No		unsigned 8-bit char	**Name**	**Value**	**Name**	**Value**
												Good Search Window	0
												Bad Search Window	1
QF7_VIIRSIRE FLTEMPIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**								
		I_VIIRS_SDR_ ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_ COLS	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**	
		Imagery Band 1 Quality Flag	0	0	2	Unitless	No		2 bit(s)	**Name**	**Value**		**Value**
												Green	0
												Red	1
												Yellow	2
		Pixel is open water (not ice)	2	0	1	Unitless	No		1 bit(s)	**Name**	**Value**	**Name**	
												FALSE	0
												TRUE	1
		Spare	3			Unitless	No		5 bit(s)	**Name**	**Value**	**Name**	**Value**
QF8_VIIRSIRE FLTEMPIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_ COLS	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**	
		Imagery Band 2 Quality Flag	0	0	2	Unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Green	0
												Red	1
												Yellow	2
		Pixel is open water (not ice)	2	0	1	Unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Spare	3			Unitless	No		5 bit(s)	**Name**	**Value**	**Name**	**Value**
QF9_VIIRSIRE FLTEMPIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_ COLS	No	No	6400	6400							

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**	
		Surface Temperature Quality Flag	0	0	2	Unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Green	0
												Red	
												Yellow	2
		Pixel is open water (not ice)	2	0	1	Unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Spare	3	0	0	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.

4.3.3 VIIRS Ice Reflectance/Temperature IP HDF5 Details

Figure 4.3.3-1, VIIRS Ice Reflectance/Temperature UML Diagram, provides details on the contents and data types of the Ice Reflectance/Temperature IP product. This UML provides details at the product level detail only. In addition to this UML, refer to Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

VIIRS-I-Refl-Temp-IP
+iceTiePointsI1 : H5T_NATIVE_FLOAT
+iceTiePointsI2 : H5T_NATIVE_FLOAT
+iceTiePointsSt : H5T_NATIVE_FLOAT
+localWaterTiePointsI1 : H5T_NATIVE_FLOAT
+localWaterTiePointsI2 : H5T_NATIVE_FLOAT
+localWaterTiePointsSt : H5T_NATIVE_FLOAT
+QF1_VIIRSIREFLTEMPIP : H5T_NATIVE_UCHAR
+QF2_VIIRSIREFLTEMPIP : H5T_NATIVE_UCHAR
+QF3_VIIRSIREFLTEMPIP : H5T_NATIVE_UCHAR
+QF4_VIIRSIREFLTEMPIP : H5T_NATIVE_UCHAR
+QF5_VIIRSIREFLTEMPIP : H5T_NATIVE_UCHAR
+QF6_VIIRSIREFLTEMPIP : H5T_NATIVE_UCHAR
+QF7_VIIRSIREFLTEMPIP : H5T_NATIVE_UCHAR
+QF8_VIIRSIREFLTEMPIP : H5T_NATIVE_UCHAR
+QF9_VIIRSIREFLTEMPIP : H5T_NATIVE_UCHAR

Figure: 4.3.3-1 VIIRS Ice Reflectance/Temperature HDF5 UML Diagram

4.3.4 VIIRS Ice Reflectance/Temperature IP Metadata Details

The product metadata elements contained in the VIIRS Ice Reflectance/Temperature IP are listed in the JPSS Algorithm Specification Vol. II Data Dictionary for the Common Algorithms, Section 4 and 5. These metadata elements include all common metadata at the root, product, aggregation, and granule level. There are no granule level Quality Flags defined as metadata elements in the VIIRS Ice Reflectance/Temperature IP. Therefore, there are no entries in the N_Quality_Summary_Name/Value metadata attributes for this product.

4.3.5 VIIRS Ice Reflectance/Temperature IP Geolocation Details

The Geolocation for the Ice Reflectance/Temperature IP uses the VIIRS Imagery Resolution Geolocation – Terrain Corrected for its Geolocation. See 474-00448-02-06, JPSS Algorithm Specification Vol. II: Data Dictionary for VIIRS RDR/SDR, Section 6.3.5, VIIRS I-Band SDR Geolocation for details.

4.4 VIIRS Ice Weights IP

Data Mnemonic	IMPI_VIIW_R0100 (Official) IMPI_VIIW_R0110 (Substitute)
Description/ Purpose	The VIIRS Ice Weights IP contains the statistical weights for three Imagery Bands, indicating the reliability of each band for further processing. Effectivity: S-NPP and JPSS

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.

File-Naming Construct	See the JPSS CDFCB-X Vol I, 474-00001-01, Section 3.0 for details.
File Size	See Table: 4.4.1-1 VIIRS Ice Weights Data Content Summary for size
File Format Type	HDF5
Production Frequency	As required
Data Content and Data Format	See Section 4.4.2 VIIRS Ice Weights IP Product Profile See Section 4.4.4 VIIRS Ice Weights IP Metadata Details See Section 4.4.5 VIIRS Ice Weights IP 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.

4.4.1 VIIRS Ice Weights Data Content Summary

Table: 4.4.1-1 VIIRS Ice Weights Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
iceWeights_0	Ice Weights for the I1 Band	32-bit floating point	[N*1536, 6400]	[1536, 6400]	Unitless
iceWeights_1	Ice Weights for the I2 Band	32-bit floating point	[N*1536, 6400]	[1536, 6400]	Unitless
iceWeights_2	Ice Weights for the I5 Band	32-bit floating point	[N*1536, 6400]	[1536, 6400]	Unitless
File Size	**117,964,800 bytes**				

4.4.2 VIIRS Ice Weights IP Product Profile

Table: 4.4.2-1 VIIRS Ice Weights IP Product Profile

VIIRS-I-WTS-IP Product Profile

Fields													
Name	**Data Size**	**Dimensions**											
iceWeights_0	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		Ice Weights for the I1 Band	0	0	1	unitless	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		
iceWeights_1	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_	No	No	6400	6400							

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.

		COLS											
		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 Weights for the I2 Band	0	0	1	unitless	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		
iceWeights_2	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**								
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		Ice Weights for the I5 Band	0	0	1	unitless	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		

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.

4.4.3 VIIRS Ice Weights IP HDF5 Details

Figure 4.4.3-1, VIIRS Ice Weights UML Diagram, provides details on the contents and data types of the Ice Weights IP product. This UML provides details at the product level detail only. In addition to this UML, refer to Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

VIIRS-I-Wts-IP
+iceWeights_0 : H5T_NATIVE_FLOAT +iceWeights_1 : H5T_NATIVE_FLOAT +iceWeights_2 : H5T_NATIVE_FLOAT

Figure: 4.4.3-1 VIIRS Ice Weights HDF5 UML Diagram

4.4.4 VIIRS Ice Weights IP Metadata Details

The product metadata elements contained in the VIIRS Ice Weights IP are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, Section 4 and 5. These metadata elements include all common metadata at the root, product, aggregation, and granule level. There are no granule level Quality Flags defined as metadata elements in the VIIRS Ice Weights IP. Therefore, there are no entries in the N_Quality_Summary_Name/Value metadata attributes for this product.

4.4.5 VIIRS Ice Weights IP Geolocation Details

The Geolocation for the Ice Weights IP uses the VIIRS Imagery Resolution Geolocation – Terrain Corrected for its Geolocation. See 474-00448-02-06, JPSS Algorithm Specification Vol. II: Data Dictionary for VIIRS RDR/SDR, Section 6.3.5, VIIRS I-Band SDR Geolocation for details.

4.5 VIIRS Ice Surface Temperature IP

Data Mnemonic	IMPI_VIST_R0100 (Official) IMPI_VIST_R0110 (Substitute)
Description/ Purpose	Surface temperature (over ice and ocean) at imagery resolution, including Quality Flags (1byte)/pixel Effectivity: S-NPP and JPSS
File-Naming Construct	See the JPSS CDFCB-X Vol I, 474-00001-01, Section 3.0 for details.
File Size	See Table: 4.5.1-1 VIIRS Surface Temperature IP Data Content Summary for size.
File Format Type	HDF5
Production Frequency	As required
Data Content and Data Format	See Section 4.5.2 VIIRS Surface Temperature IP Product Profile See Section 4.5.4 VIIRS Surface Temperature IP Metadata Details See Section 4.5.5 VIIRS Surface Temperature IP 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.

4.5.1 VIIRS Surface Temperature IP Data Content Summary

Table: 4.5.1-1 VIIRS SURF-TEMP IP Data Content Summary

Name	Description	Data Type	Aggregate Dimension	Granule Dimension	Units
st	Surface Temperature	32-bit floating point	[N*1536, 6400]	[1536, 6400]	Kelvin
QF1_VIIRSSTIP	Quality Flags	unsigned 8-bit Char	[N*1536, 6400]	[1536, 6400]	Unitless
File Size	**49,152,000 bytes**				

4.5.2 VIIRS Surface Temperature IP Product Profile

Table: 4.5.2-1 VIIRS Surface Temperature Product Profile

VIIRS-SURF-TEMP-IP Product Profile

Fields													
Name	**Data Size**	**Dimensions**											
st	4byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**							
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536							
		I_VIIRS_SDR_COLS	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**	
		Surface Temperature	0	213	285	Kelvin	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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
										SOUB_FLOAT32_FILL	-999.2		

VIIRS Surface Temperature Product Profile - Quality Flags

Fields						
Name	**Data Size**					
QF1_VIIRSSTIP	1byte(s)	**Name**	**Granule Boundary**	**Dynamic**	**Min Array Size**	**Max Array Size**
		I_VIIRS_SDR_ROWS	Yes	No	1536	1536
		I_VIIRS_SDR_COLS	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	
ST IP Quality	0	0	3	NA	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
										High	0
										Medium	1
										Low	2
										No Retrieval	3
AOT Condition (VIIRS 550nm band)	2	0	1	NA	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
										Within range (0<=AOT<=1.0)	0
										Outside range	1
Day/Night	3	0	1	NA	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
										Night	0
										Day	1
Fire Detection	4	0	1	NA	No		1 bit(s)	**Name**			**Value**
										No	0
										Yes	1
Shadow Detected	5	0	1	NA	No		1 bit(s)	**Name**	**Value**	**Name**	
										No	0
										Yes	1
Cloud Indicator	6	0	1	NA	No		1 bit(s)	**Name**		**Name**	**Value**
										Not Confidently Cloudy	0
										Confidently Cloudy	1
Cirrus Indicator	7	0	1	NA	No		1 bit(s)	**Name**	**Value**		**Value**
										Not Cloudy	0
										Cloudy (Solar & IR)	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.

4.5.3 VIIRS Surface Temperature HDF5 Details

Figure 4.5.3-1, VIIRS Surface Temperature UML Diagram, provides details on the contents and data types of the Surface Temperature IP product. This UML provides details at the product level detail only. In addition to this UML, refer to Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

VIIRS-Surf-Temp-IP
+st : H5T_NATIVE_FLOAT +QF1_VIIRSSTIP : H5T_NATIVE_UCHAR

Figure: 4.5.3-1 VIIRS Surface Temperature HDF5 UML Diagram

4.5.4 VIIRS Surface Temperature Metadata Details

The product metadata elements contained in the VIIRS Surface Temperature IP are listed in the JPSS Algorithm Specification Vol. II Data Dictionary for the Common Algorithms, Section 4 and 5. These metadata elements include all common metadata at the root, product, aggregation, and granule level. There are no granule level Quality Flags defined as metadata elements in the VIIRS Ice Weights IP. Therefore, there are no entries in the N_Quality_Summary_Name/Value metadata attributes for this product.

4.5.5 VIIRS Surface Temperature Geolocation Details

The Geolocation for the VIIRS Surface Temperature IP uses the VIIRS Imagery Resolution Geolocation – Terrain Corrected for its Geolocation. See 474-00448-02-06, JPSS Algorithm Specification Vol. II - Data Dictionary for VIIRS RDR/SDR, Section 6.3.5, VIIRS I-Band SDR Geolocation 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 Environmental Data Records (EDRs)

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

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

5.1 VIIRS Ice Surface Temperature EDR

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

Data Mnemonic	EDRE-ICST-C1030 (Official) 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	Table: 5.1.1-1 VIIRS Ice Surface Temperature EDR Data Content Summary for size.
File Format Type	HDF5
Data Content and Data Format	See Section 5.1.1, VIIRS Ice Surface Temperature EDR Data Content Summary See Section 5.1.2, VIIRS Ice Surface Temperature EDR Product Profile See Section 5.1.3, VIIRS Ice Surface Temperature EDR HDF5 Details See Section 5.1.4, VIIRS Ice Surface Temperature EDR HDF5 Metadata Details See Section 5.1.5, VIIRS Ice Surface Temperature 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.

5.1.1 VIIRS Ice Surface Temperature EDR Data Content Summary

Table: 5.1.1-1 VIIRS Ice Surface Temperature EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
IceSurfaceTemperature	Ice Surface Temperature	unsigned 16-bit integer	[N*768, 3200]	[768, 3200]	Kelvin
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
File Size	**12,288,008 Bytes**				

5.1.2 VIIRS Ice Surface Temperature EDR Product Profile

Table: 5.1.2-1 VIIRS Ice Surface Temperature EDR Product Profile

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		
										ELLIPSOID_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.

VIIRS Ice Surface Temperature EDR Product Profile - Quality Flags

Fields												
Name	**Data Size**	**Dimensions**										
QF1_VIIRSIST EDR	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												2-Band Split Window Baseline	0
												Single Band (12-micrometer) Fallback	1
		Day/Night	3	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Fire detected in pixel	6	MIN_VAL	MAX_VAL	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.

		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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
QF2_VIIRSIST EDR	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**		**Fill Values**		**Legend Entries**	
		Ice Fraction	0	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Ice Fraction = 1.00	0
												0.95 <= Ice Fraction < 1.00	1
												0.00 < Ice Fraction < 0.95	2
												Ice Fraction = 0.00	3
		Cloud Confidence Indicator	2	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Confidently Clear	0
												Probably Clear	1
												Probably Cloudy	2
												Confidently Cloudy	3
		Adjacent Pixel Cloud Confidence Indicator	4	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Confidently Clear	0
												Probably Clear	1
												Probably Cloudy	2
												Confidently Cloudy	3
		Exclusion - Thin Cirrus Detected	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**		**Value**
												FALSE	0
												TRUE	1
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
QF3_VIIRSIST EDR	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 - Land/Water Background (Identifies the type of Earth surface that lies along the	0	MIN_VAL	MAX_VAL	unitless	No		3 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.

		instrument's line of sight. All land types except Sea Water are excluded from processing)											
												Land and Desert	0
												Land/No Desert	1
												Inland Water	2
												Sea Water	3
												Coastal	5
												Invalid Land/Water	7
		Snow or Ice detected in pixel	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Shadow detected in pixel	4	MIN_VAL	MAX_VAL	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))	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**		**Value**
												FALSE	0
												TRUE	1
		Ice Surface Temperature is Out of the System Spec Validated Range. (IST < 213K or IST > 275K)	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Spare	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**

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	MIN_VAL	MAX_VAL	scale = unitless; offset = Kelvin	No		32-bit floating point	**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.

5.1.3 VIIRS Ice Surface Temperature EDR HDF5 Details

Figure 5.1.3-1, 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 Figure 3.1-1, 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 +QF1_VIIRSISTEDR : H5T_NATIVE_UCHAR +QF2_VIIRSISTEDR : H5T_NATIVE_UCHAR +QF3_VIIRSISTEDR : H5T_NATIVE_UCHAR +ISTFactors : H5T_NATIVE_FLOAT

Figure: 5.1.3-1 VIIRS Ice Surface Temperature EDR HDF5 UML Diagram

5.1.4 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 Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. 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 5.1.4-1, VIIRS Ice Surface Temperature EDR Quality Summary 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: 5.1.4-1 VIIRS Ice Surface Temperature EDR Quality Summary Metadata Values

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

5.1.5 VIIRS Ice Surface Temperature EDR Geolocation Details

VIIRS Ice Surface Temperature is produced on the VIIRS Moderate Resolution Geolocation - Terrain Corrected. See 474-00448-02-06, JPSS Algorithm Specification Vol. II: Data Dictionary for VIIRS RDR/SDR, Section 6.2, VIIRS M-Band SDR Geolocation for details.

5.2 VIIRS Sea Ice Characterization EDR

VIIRS 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.

Data Mnemonic	EDRE-SICH-C1030 (Official) 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. Sensors: VIIRS Effectivity: S-NPP and JPSS
File-Naming Construct	See the JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4 for details.
File Size	See Table: 5.2.1-1 VIIRS Sea Ice Characterization EDR Data Content Summary for size.
File Format Type	HDF5
Data Content and Data Format	See Section 5.2.1, VIIRS Sea Ice Characterization EDR Data Content Summary See Section 5.2.2, VIIRS Sea Ice Characterization EDR Product Profile See Section 5.2.3, VIIRS Sea Ice Characterization EDR HDF5 Details See Section 5.2.4, VIIRS Sea Ice Characterization EDR Metadata Details See Section 5.2.5, VIIRS Sea Ice Characterization 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.

5.2.1 VIIRS Sea Ice Characterization EDR Data Content Summary

Table: 5.2.1-1 VIIRS Sea Ice Characterization EDR Data Content Summary

Name	Description	Data Type	Aggregate Dimensions (N = Number of Granules)	Granule Dimensions	Units
IceAgeWeight	Ice Age Weighting Factors derived from Ice Age LUT and scene conditions (fire, clouds, sunglint, I-Band quality, etc.)	32-bit floating point	[N*768, 3200]	[768, 3200]	unitless
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
File Size	**19,660,800 Bytes**				

5.2.2 VIIRS Sea Ice Characterization EDR Product Profile

Table: 5.2.2-1 VIIRS Sea Ice Characterization Product Profile

VIIRS Sea Ice Characterization Product Profile

Fields

Name	Data Size	Dimensions											
IceAgeWeight	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**	
		Ice Age Weighting Factors derived from Ice Age LUT and scene conditions (fire, clouds, sunglint, I-Band quality, etc.)	0	MIN_VAL	MAX_VAL	unitless	No		32-bit floating point	**Name**	**Value**	**Name**	**Value**
										NA_FLOAT32_FILL	-999.9		
										MISS_FLOAT32_FILL	-999.8		

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		
										ELLIPSOID_FLOAT32_FILL	-999.4		
										VDNE_FLOAT32_FILL	-999.3		
IceAge	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**	
		Various classifications of ice for I1, I2, Surface Temperature IP, and weighted cell total	0	MIN_VAL	MAX_VAL	unitless	No		unsigned 8-bit char	**Name**	**Value**	**Name**	**Value**
										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	All Other Ice	4
										ERR_UINT8_FILL	251	Land Fill	10
										ELLIPSOID_UINT8_FILL	250	Cloud Fill	12
										VDNE_UINT8_FILL	249		

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**	
		Ice Age Overall Quality	0	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Green (good quality)	0
												Yellow (degraded quality)	1
												Red (bad quality)	2
												No Retrieval (Fill)	3
		Input Data Quality	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												Good	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.

												Bad	1
		Cloud Confidence	3	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Confidently clear	0
												Probably clear	1
												Probably cloudy	2
												Confidently cloudy	3
		Thermal Contrast Degradation: 1.5K < Thermal contrast < 2.2K	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**		**Name**	**Value**
												FALSE	0
												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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Exclusion: Aerosol Optical Thickness slant path at 550nm > 1.0	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
QF2_VIIRSSIC EDR	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		No Ice detected in horizontal cell (Ice concentration is <= 0.1)	1	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Exclusion: No Ocean present in horizontal cell	2	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Algorithm Branching	3	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	
												Unclassified	0
												RT:Reflectance Threshold Method	1
												THB:Thermal Heat Balance	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.

												Method	
		Heavy Aerosol present in horizontal cell	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Spare	6	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
		Thin Cirrus detected in horizontal cell	7	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
QF3_VIIRSSIC EDR	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	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Cloud Phase	1	MIN_VAL	MAX_VAL	unitless	No		2 bit(s)	**Name**	**Value**	**Name**	**Value**
												Clear	0
												Water	1
												Ice	2
												Mixed	3
		Fire detected in horizontal cell (from the VIIRS Cloud Mask)	3	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Sun Glint detected in horizontal cell	4	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Coast Line present within horizontal cell	5	MIN_VAL	MAX_VAL	unitless	No		1 bit(s)	**Name**	**Value**	**Name**	**Value**
												FALSE	0
												TRUE	1
		Spare	6	MIN_VAL	MAX_VAL	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.

5.2.3 VIIRS Sea Ice Characterization EDR HDF5 Details

Figure 5.2.3-1, 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 Figure 3.1-1, Generalized UML Diagram for statically sized HDF5 IP/EDR Files, for a complete UML rendering of this product.

VIIRS-SIC-EDR
+IceAgeWeight : H5T_NATIVE_FLOAT +IceAge : H5T_NATIVE_UCHAR +QF1_VIIRSSICEDR : H5T_NATIVE_UCHAR +QF2_VIIRSSICEDR : H5T_NATIVE_UCHAR +QF3_VIIRSSICEDR : H5T_NATIVE_UCHAR

Figure: 5.2.3-1 VIIRS Sea Ice Characterization HDF5 UML Diagram

5.2.4 VIIRS Sea Ice Characterization EDR Metadata Details

The HDF5 metadata elements associated with the VIIRS Sea Ice Characterization are listed in the JPSS Algorithm Specification Vol. II: Data Dictionary for the Common Algorithms, 474-00448-02-01. 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 5.2.4-1, VIIRS Sea Ice Characterization Quality Summary 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: 5.2.4-1 VIIRS Sea Ice Characterization Quality Summary Metadata Values

N_Quality_Summary			
Name	**Value**	**Description**	**Comments**
Exclusion - No Ocean Coverage	0 - 1	0 = Ocean in horizontal cell 1 = No Ocean in horizontal cell	
Exclusion Summary	0 - 100	Percent of horizontal cells in exclusion conditions.	
Sea Ice Granule out of range	0 - 1	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)	
Summary Ice Age Quality	0 - 100	Percent of horizontal cells within granule with high quality of retrieval	

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

5.2.5 VIIRS Sea Ice Characterization EDR Geolocation Details

VIIRS Sea Ice Age EDR is produced on the VIIRS Moderate Resolution Geolocation - Terrain Corrected. See 474-00448-02-06, JPSS Algorithm Specification Vol. II - Data Dictionary for VIIRS RDR/SDR, Section 6.2, VIIRS M-Band SDR Geolocation 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.

6 Ancillary and Auxiliary Data Inputs

Not applicable.

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

7 Look-up Tables and Processing Coefficient Tables

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

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

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

Instrument: Identification of the Instrument associated with the table.

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

File Size: The size of the data file.

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

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

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

The following rules apply to all tables:

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

7.1 Look Up Tables

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

7.1.1 VIIRS Sea Ice Reflectance LUT

Data Mnemonic	NP_NU-LM0040-009
Description/ Purpose	The VIIRS Sea Ice Reflectance LUT file contains top of the atmosphere reflectance, spectral albedo and broad band albedo values for snow/ice surfaces which are treated as flat surfaces. This file is used in the VIIRS Sea Ice Age algorithm.

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.

File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names. Version Number Field provides Provenance Version Identifier.
File Size	See Table: 7.1.1-1 VIIRS Sea Ice Reflectance LUT Data Format for size
File Format Type	Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.1.1-1, VIIRS Sea Ice Reflectance LUT Data Format.

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

Table: 7.1.1-1 VIIRS Sea Ice Reflectance LUT Data Format

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
snowThick	24	32-bit floating point	0.0 - MAX_VAL Values initially set to: [0.0, 0.25, 0.5, 1.0, 2.0, 3.0]	cm	Snow Depth Bin Values 1 Dimensional Array: DEPTH Size of Dimension(s): 6
snowGrainSize	4	32-bit floating point	Value initially set to = 250.0	micrometers	Snow Grain Size
snowDensity	4	32-bit floating point	Value initially set to = 0.3	g/cm^3	Snow Density
iceThick	20	32-bit floating point	0.0 - MAX_VAL > 0.0 Values initially set to: [5,10,20,30,40] Values initially set to: [5,10,20,30,40]	cm	Ice Thickness Bin Values 1 Dimensional Array: THICK Size of Dimension(s): 5
iceGrainSize	4	32-bit floating point	0.0 - MAX_VAL > 0.0	micrometers	Ice Grain Size
iceDensity	4	32-bit floating point	0.0 - MAX_VAL > 0.0	g/cm^3	Ice Density
normIceDensity	4	32-bit floating point	0.0 - MAX_VAL > 0.0	g/cm^3	
brineGrainSize	4	32-bit floating point	0.0 - MAX_VAL > 0.0	unitless	Brine Grain Size
brineDensity	4	32-bit floating point	0.0 - MAX_VAL > 0.0	g/cm^3	Brine Grain Density
subRefl	4	32-bit floating point	0.0 - MAX_VAL > 0.0	unitless	
sunZen	44	32-bit floating point	-1.0 – 1.0	unitless (values are cosines)	Solar Zenith Angle Bin Values 1 Dimensional Array: N_SZA Size of Dimension(s): 11
viewZen	28	32-bit floating point	-1.0 – 1.0	unitless (values are cosines)	View Zenith Angle Bin Values 1 Dimensional Array: N_VZA Size of Dimension(s): 7

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
relAzm	28	32-bit floating point	0 – 180	degree	Relative Azimuth Angle Bin Values 1 Dimensional Array: N_RELAZ Size of Dimension(s): 7
snowType	4	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Snow Type
h2oVapor	12	32-bit floating point	0.0 - MAX_VAL Values initially set to: [0.0, 0.4323, 2.0]	gm/cm2	Precipitable Water Bin Values 1 Dimensional Array: N_WVOT Size of Dimension(s): 3
totClmnOzn	12	32-bit floating point	0.0 - MAX_VAL Values initially set to: [0.0, 0.1967, 0.5]	milli-atm-cm	Ozone Column Bin Values 1 Dimensional Array: N_OOT Size of Dimension(s): 3
aeroModel	8	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Aerosol Model 1 Dimensional Array: N_AEROMDL Size of Dimension(s): 2
aotBin	16	32-bit floating point	0.0 - MAX_VAL Values initially set to: [0.0, 0.2366, 0.5472,1.0]	unitless	AOT Bin Values 1 Dimensional Array: N_AOT Size of Dimension(s): 4
iceRefl	9313920	32-bit floating point	0.0 - MAX_VAL > 0.0	unitless	TOA Reflectances From 6S RTM 1 Dimensional Array prodbins Size of Dimension(s): 2328480
sphrAlbedo	120	32-bit floating point	0.0 – 1.0	unitless	Broadband From 6S radiative transfer model (RTM) 2 Dimensional Array: N_DEPTH x N_THICK Size of Dimension(s): 6

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
					x 5
narrowSphrAlbedo	240	32-bit floating point	0.0 – 1.0	unitless	Spectral Albedo from 6S RTM 3 Dimensional Array: N_BANDS x N_DEPTH x N_THICK Size of Dimension(s): 2 x 6 x 5
File Size	**9,314,508 Bytes**				

7.1.2 VIIRS Sea Ice Broadband Atmospheric Transmittance LUT

Data Mnemonic	NP_NU-LM0040-008
Description/ Purpose	The VIIRS Sea Ice Broadband Atmospheric Transmittance LUT file is generated using the 6S radiative transfer routine and the algorithm. This file is used in the VIIRS Sea Ice Age algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names. Version Number Field provides Provenance Version Identifier.
File Size	See Table: 7.1.2-1 VIIRS Sea Ice Broadband Atmospheric Transmittance LUT Data Format for size.
File Format Type	Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.1.2-1, VIIRS Sea Ice Broadband Atmospheric Transmittance LUT Data Format.

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

Table: 7.1.2-1 VIIRS Sea Ice Broadband Atmospheric Transmittance LUT Data Format

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
aotbin	24	32-bit floating point	0.0 – 1.0 Initial Values = [0.0,0.01,0.1,0.2,0.6,1.0]	unitless	AOT Boundary Values 1 Dimensional Array: NAOT Size of Dimension(s): 6
szabin	44	32-bit floating point	-90 – 90 Initial Values = [48.0,52.0,56.0,60.0,64.0, 68.0,72.0,76.0,80.0,84.0, 88.0]	degree	Solar Zenith Angle Boundary Values 1 Dimensional Array: NSZA Size of Dimension(s): 11
bbtranslut	264	32-bit floating point	0.0 - 1.0 Initial Values = [0.913416 0.913416 0.883998 0.852080 0.734581 0.634458 (1) 0.906948 0.906948 0.874509 0.839625 0.714074 0.610474 (2) 0.898996 0.898996 0.862829 0.824371 0.689830 0.583017(3) 0.889093 0.889093 0.848281 0.805525 0.661177 0.551780(4) 0.876536 0.876536 0.829884 0.781987 0.627344 0.516514(5) 0.860251 0.860251 0.806199 0.752198 0.587501	unitless	Atmospheric Broadband Transmittance values, extracted from 6S RTM. Transmittance is provided in this field, one for each 'naot' bin (6 total) and a set of 6 for each solar zenith angle (as listed in the szabin field). 2 Dimensional Array: NSZA x NAOT Size of Dimension(s): 11 x 6

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
			0.477124(6) 0.838493 0.838493 0.774994 0.713922 0.540873 0.433793(7) 0.808251 0.808251 0.732683 0.663920 0.487026 0.387159(8) 0.763895 0.763895 0.673236 0.597567 0.426465 0.338517(9) 0.705639 0.705639 0.596868 0.514757 0.359083 0.287918(10) 0.633377 0.633377 0.503474 0.415542 0.284933 0.235338(11)]		
File Size	**332 Bytes**				

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

7.1.3 VIIRS Sea Ice Snow Depth/Ice Thickness LUT

Data Mnemonic	NP_NU-LM0233-006
Description/ Purpose	The VIIRS Sea Ice Snow Depth/Ice Thickness LUT contains snow depth on sea ice and ice thickness. The table values are model computations based on NCEP surface temperature and precipitation rate climatology data.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names. Version Number Field provides Provenance Version Identifier.
File Size	See Table: 7.1.3-1 VIIRS Sea Ice Snow Depth/Ice Thickness LUT Data Format for size
File Format Type	Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.1.3-1, VIIRS Sea Ice Snow Depth/Ice Thickness LUT Data Format

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

Table: 7.1.3-1 VIIRS Sea Ice Snow Depth/Ice Thickness LUT Data Format

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
nlat_bins	92	32-bit floating point	-90 <= nlat_bins <= 90 Values initially set to a 2.5 degree spacing from 35.0 to 90.0 degrees: [35., 37.5, 4085., 87.5, 90.]	degree	Northern Hemisphere latitudes at 2.5 deg increments 1 Dimensional Array: N_NLAT Size of Dimension(s): 23
slat_bins	68	32-bit floating point	-90 <= slat_bins <= 90 Values initially set to a 2.5 degree spacing from - 90.0 to - 50.0 degrees: [- 90., - 87.5, - 85 - 55., - 52.5, - 50.]	degree	Southern Hemisphere latitudes at 2.5 deg increments 1 Dimensional Array: N_SLAT Size of Dimension(s): 17
lon_bins	580	32-bit floating point	-180 <= lon_bins <= 180 Values initially set to a 2.5 degree spacing from 0 to 360.0 degrees: [0, 2.5, 5.0355, 357.5, 360.]	degree	Longitudes at 2.5 deg increments 1 Dimensional Array: N_LON Size of Dimension(s): 145
date_bins	52	32-bit floating point	0.0 - MAX_VAL > 0.0 Values initially set to a 30.5 day spacing from 15.5 to 381.5: [15.5, 46., 76.5320.5, 351., 381.5] Values initially set to a 30.5 day spacing from 15.5 to 381.5: [15.5, 46., 76.5320.5, 351., 381.5]	Day number	Day of year for the middle of each month 1 Dimensional Array: N_DATE Size of Dimension(s): 13
ice_bins	20	32-bit floating point	0.0 - MAX_VAL > 0.0 Values initially set to: [5.0,10.0,20.0,30.0,40.0] Values initially set to: [5.0,10.0,20.0,30.0,40.0]	cm	Ice Thickness 1 Dimensional Array: N_ICE Size of Dimension(s): 5
sdc_n	867100	32-bit floating point	0.0 - MAX_VAL	cm	Snow depth from climatology model for Northern Hemisphere 4 Dimensional Array: N_DATE x N_LON x N_NLAT x N_ICE Size of Dimension(s): 13 x 145 x 23 x 5
sdc_s	640900	32-bit floating point	0.0 - MAX_VAL	cm	Snow depth form climatology model for Southern Hemisphere 4 Dimensional Array:

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
					N_DATE x N_LON x N_SLAT x N_ICE Size of Dimension(s): 13 x 145 x 17 x 5
File Size	**1,508,812 Bytes**				

7.2 Processing Coefficient Tables

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

7.2.1 Automated Processing Coefficients

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

7.2.1.1 Cryosphere Automated PCs

Cryosphere product generation currently uses no Automated PCs.

7.2.2 Manual Processing Coefficients

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

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

7.2.2.1 Cryosphere Initialization PCs

7.2.2.1.1 VIIRS Sea Ice Concentration PC

Data Mnemonic	NP_NU-LM0233-008
Description/ Purpose	The VIIRS Sea Ice Concentration PCT file contains ice concentration parameters. This file is used in the VIIRS Sea Ice Concentration algorithm
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table: 7.2.2.1.1-1 VIIRS Sea Ice Concentration PC Data Format for size
File Format Type	Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.1-1, VIIRS Sea Ice Concentration PC Data Format

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

Table: 7.2.2.1.1-1 VIIRS Sea Ice Concentration PC Data Format

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
hmin	12	32-bit floating point	[0.0, 0.0, 0.0]	[unitless, unitless, Kelvin]	Minimum range of histogram, by band. If hmin = hmax then code must derive hmin. 1 Dimensional Array: IC_BANDS Size of Dimension(s): 3
hmax	12	32-bit floating point	[0.0, 0.0, 0.0]	[unitless, unitless, Kelvin]	Maximum range of histogram, by band. If hmax = hmin then code must derive hmax. 1 Dimensional Array: IC_BANDS Size of Dimension(s): 3
thre_def	12	32-bit floating point	[0.2, 0.17, 269.0]	[unitless, unitless, Kelvin]	Default ice/water thresholds by band 1 Dimensional Array: IC_BANDS Size of Dimension(s): 3
thre_max	12	32-bit floating point	[0.25, 0.22, 270.0]	[unitless, unitless, Kelvin]	Maximum ice/water thresholds by band 1 Dimensional Array: IC_BANDS Size of Dimension(s): 3
thre_min	12	32-bit floating point	[0.15, 0.13, 268.0]	[unitless, unitless, Kelvin]	Minimum ice/water threshold by band 1 Dimensional Array:

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
					IC_BANDS Size of Dimension(s): 3
wat_def	12	32-bit floating point	[0.08, 0.07, 271.4]	[unitless, unitless, Kelvin]	Default water tie points 1 Dimensional Array: IC_BANDS Size of Dimension(s): 3
wat_max	12	32-bit floating point	[0.1, 0.08, 278.0]	[unitless, unitless, Kelvin]	Default maximum water tie point 1 Dimensional Array: IC_BANDS Size of Dimension(s): 3
wat_min	12	32-bit floating point	[0.04, 0.03, 270.0]	[unitless, unitless, Kelvin]	Default minimum water tie point 1 Dimensional Array: IC_BANDS Size of Dimension(s): 3
ice_tiept_adj_thinice_thresh	12	32-bit floating point	[0.2, 0.17, 269.0]	[unitless, unitless, Kelvin]	Ice tie point adjustment thresholds for thin ice If any element = -999.0 then code internally sets iswitch_adj = 0 to disable the tie point adjustment computation branch. The -999.0 value may be used as a switch for the ice tie point adjustment 1 Dimensional Array: bands

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
					Size of Dimension(s): 3
ice_tiept_adj_threshT	4	32-bit floating point	270.0	Kelvin	Ice tie point adjustment temperature threshold Ice tie point adjustment is not applied to pixels with surface temperatures greater than this threshold value
wat_wsize	2	unsigned 16-bit integer	15	unitless	Size of search window for local water tie points
max_wsize	2	unsigned 16-bit integer	15	unitless	Maximum local window search size in pixels.
min_wsize	2	unsigned 16-bit integer	8	unitless	Minimum local window search size in pixels
min_pix_win	2	unsigned 16-bit integer	200	unitless	Minimum number of “good” ice pixels, in a search window, required for a reliable histogram
min_pix_wat	2	unsigned 16-bit integer	50	unitless	Minimum number of ’good‘ water pixels, in a search window, required for a reliable histogram
nbig	2	unsigned 16-bit integer	100	unitless	Number of bins in the reflectance or temperature histograms (global)
nbin	2	unsigned 16-bit integer	50	unitless	Number of bins in the reflectance or temperature histograms (local)
ning	2	unsigned 16-bit integer	5	unitless	Number of bins for boxcar smoothing of global histograms
nint	2	unsigned 16-bit integer	10	unitless	Number of bins for

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
					boxcar smoothing of local histograms
pad	2	unsigned 8-bit char	MIN_VAL - MAX_VAL	unitless	Pad Bytes 1 Dimensional Array: Pad Size of Dimension(s): 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.

7.2.2.1.2 VIIRS Ice Surface Temperature PC

Data Mnemonic	NP_NU-LM0233-011
Description/ Purpose	The VIIRS Ice Surface Temperature (IST) PCT file contains regression coefficients for the baseline and fallback algorithms for both day and night. This file is used in the VIIRS IST algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table: 7.2.2.1.2-1 VIIRS Ice Surface Temperature PC Data Format for size
File Format Type	Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.2-1, VIIRS IST PC Data Format

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

Table: 7.2.2.1.2-1 VIIRS Ice Surface Temperature PC Data Format

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
IstCoeffs	64	32-bit floating point	MIN_VAL - MAX_VAL	unitless	Dimension Details: Day or Night: Index 0 = night, Index 1 = Day Algorithm: Index 0 = 'dual', Index 1 = 'split' 4 Dimensional Array: Term x Day or Night x Algorithm x Regime Size of Dimension(s): 4 x 2 x 2 x 1
File Size	**64 Bytes**				

7.2.2.1.3 VIIRS Sea Ice Quality PC

Data Mnemonic	NP_NU-LM0233-010
Description/ Purpose	The VIIRS Sea Ice Quality PCT file contains ice quality algorithm thresholds. This file is used in the VIIRS Sea Ice Quality and Ice Surface Temperature IP algorithms.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table: 7.2.2.1.3-1 VIIRS Sea Ice Quality PC Data Format for size. The file consists of 2 table identical entries. The order of the fields and sizes of dimensions are the same for both entries.
File Format Type	Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.3-1, VIIRS Sea Ice Quality PC Data Format

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

Table: 7.2.2.1.3-1 VIIRS Sea Ice Quality PC Data Format

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
bandWgts	12	32-bit floating point	>= 0.0 Initially set to: [0.3, 0.6, 0.1]	unitless	Initial Ice Quality Band Weights 1 Dimensional Array: IQ_N_BANDS Size of Dimension(s): 3
cldWgts	84	32-bit floating point	>= 0.0 Initially set to: **(1) (2) (3) (4) (5) (6) (7)** [0.5, 0.5, 0.5, 0.5, 0.6, 0.3, 0.8; 0.5, 0.5, 0.5, 0.5, 0.6, 0.3, 0.8; 0.5, 0.5, 0.5, 0.5, 0.6, 1.0, 0.8]	unitless	Cloud weights corresponding to the three imagery bands (I1, I2, I5) (rows) and the seven cloud properties (columns) - four phases = Default (1), Water (2), Ice (3), Mixed (4), and 3 types = cirrus (5), shadow (6), adjacency (7); 2 Dimensional Array: IQ_N_BANDS x IQ_N_CLD_TYPES Size of Dimension(s): 3 x 7
cotThresh	96	32-bit floating point	>= 0.0 Initially set to: (Default, Water, Ice, Mixed) (I1) (I2) (I5) [0.5, 0.5, 0.5;**(1)** 0.2, 0.2, 0.2] **(2)** (Phases follow the order shown above)	unitless	Cloud Optical Thickness Thresholds used when COT is used to determine ***cloud confidence*** in the Ice Quality Flags IP output. The ‘4’ in the ‘Data Type/Size’ cell corresponds to the four phases (Default (1), Water (2), Ice (3), Mixed (4)). ‘IQ_N_THRESH’ corresponds to the rows

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
					of each set of matrices which are a function of cloud phase; the '(1)'s' represent the YELLOW/RED cot thresholds and the '(2)'s' represent the GREEN/YELLOW COT thresholds. 3 Dimensional Array: IQ_N_BANDS x IQ_N_THRESH x IQ_N_PHASES Size of Dimension(s): 3 x 2 x 4
min_nlat	4	32-bit floating point	-PI/2 <= minNLat <= PI/2 Initially set to: 0.62831 (36 degrees)	Radians	Sea Ice Latitude Range – Minimum Northern Latitude
max_slat	4	32-bit floating point	-PI/2 <= maxSLat <= PI/2 Initially set to: [0.0,0.15,0.5,1.0]	Radians	Sea Ice Latitude Range – Maximum Southern Latitude
aotBin	16	32-bit floating point	>= 0.0 Initially set to: [0.0,0.15,0.5,1.0]	unitless	AOT bin boundary values 1 Dimensional Array: IQ_N_AOT_BINS Size of Dimension(s): 4
qAOTSunZen	64	32-bit floating point	-PI/2 <= qAOTSunZen <= PI/2 Initially set to: (I1,I2) (G/Y) (Y/R) [1.308997(75 degrees),1.48353(85 degrees)(1) 1.22173(70 degrees) ,1.48353(85 degrees)(2) 1.13446(65 degrees) ,1.39626(80 degrees);(3) 1.04719(60 degrees),1.308997(75	Radians	Solar Zenith Angle values that correspond to the Solar Zenith Angle quality regimes (G/Y = 'Green/Yellow', Y/R = 'Yellow/Red') 3 Dimensional Array: IQ_N_AOT_BANDS x IQ_N_AOT_BINS x IQ_N_AOT_SUNZEN

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
			degrees)](4) (Bands follow the order shown above)		Size of Dimension(s): 2 x 4 x 2
qualWgts	36	32-bit floating point	>= 0.0 Initially set to: (I1) (I2) (I5) [0.060,0.12, 0.195;(1) 0.12 ,0.24, 0.39 ; (2) 0.02 ,0.04 ,0.065](3)	unitless	Overall Ice Quality Band Weights for each band (I1, I2, I5) and for each set of weights for each band; the (1)=='RED', (2)=='YELLOW' and (3)=='GREEN' quality regions. 2 Dimensional Array: EQ_N_BANDS x IQ_N_WGTS Size of Dimension(s): 3 x 3
bandWgts2	12	32-bit floating point	>= 0.0 Initially set to: [0.3, 0.6, 0.1]	unitless	Initial Ice Quality Band Weights 1 Dimensional Array: IQ_N_BANDS Size of Dimension(s): 3
cldWgts2	84	32-bit floating point	>= 0.0 Initially set to: **(1) (2) (3) (4) (5) (6) (7)** [0.5, 0.5, 0.5, 0.5, 0.6, 0.3, 0.8; 0.5, 0.5, 0.5, 0.5, 0.6, 0.3, 0.8; 0.5, 0.5, 0.5, 0.5, 0.6, 1.0, 0.8]	unitless	Cloud weights corresponding to the three imagery bands (I1, I2, I5) (rows) and the seven cloud properties (columns) - four phases = Default (1), Water (2), Ice (3), Mixed (4), and 3 types = cirrus (5), shadow (6), adjacency (7); 2 Dimensional Array:

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
					IQ_N_BANDS x IQ_N_CLD_TYPES Size of Dimension(s): 3 x 7
cotThresh2	96	32-bit floating point	>= 0.0 Initially set to: (Default, Water, Ice, Mixed) (I1) (I2) (I5) [0.5, 0.5, 0.5; **(1)** 0.2, 0.2, 0.2] **(2)** (Phases follow the order shown above)	unitless	Cloud Optical Thickness Thresholds used when COT is used to determine cloud confidence in the Ice Quality Flags IP output. The '4' in the 'Data Type/ Size' cell corresponds to the four phases (Default (1), Water (2), Ice (3), Mixed (4)). 'IQ_N_ THRESH' corresponds to the rows of each set of matrices which are a function of cloud phase; the '(1) 's' represent the YELLOW/RED cot thresholds and the '(2) 's' represent the GREEN/YELLOW COT thresholds. 3 Dimensional Array: IQ_N_BANDS x IQ_N_THRESH x IQ_N_PHASES Size of Dimension(s): 3 x 2 x 4
min_nlat2	4	32-bit floating point	-PI/2 <= minNLat <= PI/2 Initially set to: 0.62831 (36 degrees)	Radians	Sea Ice Latitude Range – Minimum Northern Latitude
max_slat2	4	32-bit floating point	-PI/2 <= maxSLat <= PI/2 Initially set to:	Radians	Sea Ice Latitude Range – Maximum Southern

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
			[0.0,0.15,0.5,1.0]		Latitude
aotBin2	16	32-bit floating point	>= 0.0 Initially set to: [0.0,0.15,0.5,1.0]	unitless	AOT bin boundary values 1 Dimensional Array: IQ_N_AOT_BINS Size of Dimension(s): 4
qAOTSunZen2	64	32-bit floating point	-PI/2 <= qAOTSunZen <= PI/2 Initially set to: (I1,I2) (G/Y) (Y/R) [1.308997(75 degrees),1.48353(85 degrees)(1) 1.22173(70 degrees) ,1.48353(85 degrees)(2) 1.13446(65 degrees) ,1.39626(80 degrees);(3) 1.04719(60 degrees),1.308997(75 degrees)](4) (Bands follow the order shown above)	Radians	Solar Zenith Angle values that correspond to the Solar Zenith Angle quality regimes (G/Y = 'Green/Yellow', Y/R = 'Yellow/Red') 3 Dimensional Array: IQ_N_AOT_BANDS x IQ_N_AOT_BINS x IQ_N_AOT_SUNZEN Size of Dimension(s): 2 x 4 x 2
qualWgts2	36	32-bit floating point	>= 0.0 Initially set to: (I1) (I2) (I5) [0.060,0.12, 0.195; (1) 0.12 ,0.24, 0.39 ; (2) 0.02 ,0.04 ,0.065](3)	unitless	Overall Ice Quality Band Weights for each band (I1, I2, I5) and for each set of weights for each band; the (1)='RED', (2)='YELLOW' and (3)='GREEN' quality regions. 2 Dimensional Array: EQ_N_BANDS x IQ_N_WGTS Size of Dimension(s): 3 x 3
File Size	**632 Bytes**				

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

7.2.2.1.4 VIIRS Surface Temperature PC

Data Mnemonic	NP_NU-LM0233-009
Description/ Purpose	The VIIRS Surface Temperature PCT file contains the regression coefficients for baseline and fallback algorithms. Includes values for both day and night time. This file is used in the VIIRS Ice Surface Temperature IP algorithm.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, for the applicable Collection Short Names.
File Size	See Table: 7.2.2.1.4-1 VIIRS Surface Temperature PC Data Format for size
File Format Type	Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.1.4-1, VIIRS Surface Temperature PC Data Format

Table: 7.2.2.1.4-1 VIIRS Surface Temperature PC Data Format

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
StipCoeffs	64	32-bit floating point	MIN_VAL - MAX_VAL	unitless	LUT Coefficients / ST IP LUT data file 3 Dimensional Array: terms x dn x alg Size of Dimension(s): 4 x 2 x 2
File Size	**64 Bytes**				

7.2.2.2 VIIRS Sea Ice Age Ephemeral PCT

Data Mnemonic	DP_NU-LM2020-027
Description/ Purpose	The VIIRS Ice Surface Temperature EDR Ephemeral PC provides tunable processing coefficients for use by the algorithm during execution. The coefficients can be modified (tuned) through a configuration control process in response to algorithm, performance, inputs, sensitivity, etc. changes.
File-Naming Construct	See the File-Naming Convention for Auxiliary Data Formats, JPSS CDFCB-X Vol. I, 474-00001-01, Section 3.4. The Collection Short Name used in the filename is based on the table – see the JPSS CDFCB-X Vol. I, 474-00001-01, Table B-1 for the applicable Collection Short Names.
File Size	See Table: 7.2.2.2-1 VIIRS Sea Ice Age Ephemeral PC

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.

File Format Type	Binary
Production Frequency	As needed
Data Content and Data Format	For details see Table 7.2.2.2-1, VIIRS Sea Ice Age Ephemeral PC Data Format

Table: 7.2.2.2-1 VIIRS Sea Ice Age Ephemeral PC

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
h00	4	32-bit floating point	>0.0 Initial Value = 30.0	cm	Young/First Year ice thickness threshold
min_conc	4	32-bit floating point	0.0 <= min_conc <= 1.0 Initial Value = 0.10	unitless	Minimum ice concentration for ice age processing
min_twgt	4	32-bit floating point	0.0 <= min_twgt <= 1.0 Initial Value = 0.05	unitless	Minimum temperature weight for processing.
max_thick_dev	4	32-bit floating point	> 0.0 Initial Value = 5.0	cm	Maximum allowed difference between I1 and I2 thickness.
q0	4	32-bit floating point	> 0.0 Initial Value = 1368	W/m^2	Solar irradiance
atmo_const	8	32-bit floating point]	> 0.0 Initial Values = [0.65, 0.055]	unitless	Atmospheric constants (empirical) used to compute long wave heat flux as a function of humidity and temperature. 1 Dimensional Array: NUM_ATM_CONST Size of Dimension(s): 2
ct	4	32-bit floating point	> 0.0 Initial Value = 0.0017	unitless	Coefficient of turbulent heat exchange (sensible heat).
ce	4	32-bit floating point	> 0.0 Initial Value = 0.0017	unitless	Coefficient of turbulent heat exchange (latent heat).
specific_heat	4	32-bit floating point	> 0.0 Initial Value = 1005	J/kg/K	Specific heat
latent_heat	4	32-bit floating point	> 0.0 Initial Value = 2.456e6	J/kg	Latent heat of evaporation
latent_heat_fus	4	32-bit floating point	> 0.0 Initial Value = 3.0e5	J/kg	Latent heat of fusion
sb_const	4	32-bit floating point	5.6704E-8 Initial Value = 5.6704E-	W/m^2/K^4	Stephan-Boltzmann constant

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

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
			8		
emiss	4	32-bit floating point	0 <= emiss <= 1.0 Initial Value = 1.0	unitless	Surface emissivity.
ice_conduct	4	32-bit floating point	> 0.0 Initial Value = 2.093	W/m/K	Ice conductivity
snow_conduct	4	32-bit floating point	> 0.0 Initial Value = 0.279	W/m/K	Snow conductivity
t_freeze	4	32-bit floating point	Initial Value = 271.4	Kelvin	Freezing point of sea water
sza_thre_r	4	32-bit floating point	0< sza_thre_r < 90 Initial Value = 80.0	degree	Red/Yellow SZA threshold (degrees) for energy balance.
sza_thre_y	4	32-bit floating point	0< sza_thre_y < 90 Initial Value = 85.0	degree	Yellow/Green SZA threshold (degrees) for energy balance
trans_thre_r	4	32-bit floating point	0< trans_thre_r < 90 Initial Value = 76.0	degree	Red/Yellow SZA threshold (degrees) for transmittance
arctic_haze_aot_thresh	4	32-bit floating point	> 0.0 Initial Value = 0.1	unitless	Arctic haze aerosol optical thickness threshold
iceAirDeltaT	4	32-bit floating point	-999.0 Initial Value = -999.0	degree	Temperature difference threshold for Ice-Surface Air Temperature Note: Setting the threshold to -999.0 effectively disables a branch to classify ice age First Year using a temperature difference threshold. This will allow the algorithm to fully utilize the energy balance equation
File Size	**88 Bytes**				

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

7.2.2.3 VIIRS Ice Surface Temperature EDR Ephemeral PCT

Table: 7.2.2.3-1 VIIRS Ice Surface Temperature EDR Ephemeral PC

Field Name	Length (Byte(s))	Data Type	Range of Values	Units	Comments
min_Bt_M15	4	32-bit floating point	Initially set to: 180	Kelvin	Min Brightness Temp for M15
max_Bt_M15	4	32-bit floating point	Initially set to 350	Kelvin	Max Brightness Temp for M15
min_Bt_M16	4	32-bit floating point	Initially set to 180	Kelvin	Min Brightness Temp for M16
max_Bt_M16	4	32-bit floating point	Initially set to 350	Kelvin	Max Brightness Temp for M16
Ice_Threshold	4	32-bit floating point	Initially set to 0.9999	unitless	Ice fraction threshold for 'ICE'
max_SolZen_Lim	4	32-bit floating point	Initially set to 1.48353	radians	Max solar zenith angle defining day/night
Ice_Primary_Threshold	4	32-bit floating point	Initially set to 0.95	unitless	Ice fraction threshold for 'PRIMARILY ICE'
Ice_No_Threshold	4	32-bit floating point	Initially set to 0.0	unitless	Ice fraction threshold for 'NOT ICE'
min_Aot_Lim	4	32-bit floating point	Initially set to 0.0	unitless	Min AOT Value
max_Aot_Lim	4	32-bit floating point	Initially set to 1.0	unitless	Max AOT Value
ist_Min_Rept_Range	4	32-bit floating point	Initially set to 213	Kelvin	Minimum Reportable IST
ist_Max_Rept_Range	4	32-bit floating point	Initially set to 275	Kelvin	Maximum Reportable IST
min_Ice_Cov_N_Lat	4	32-bit floating point	Initially set to: 36° * DEG2RAD	radians	Southern extent of Ice Cov Zone in Northern Hemisphere
max_Ice_Cov_S_Lat	4	32-bit floating point	Initially set to: -50° * DEG2RAD	radians	Northern extent of Ice Cov Zone in Southern Hemisphere
File Size	**56 Bytes**				

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

Appendix A. Data Mnemonic to Interface Mapping

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

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

Appendix B. DQTT Quality Flag Mapping

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

Table: B-1 DQTT Quality Flag Mapping

Algorithm	Product	TestID	Quality Flag
Ice Surface Temp	VIIRS-IST-EDR	5500	Summary IST Quality
Ice Surface Temp	VIIRS-IST-EDR	5501	Exclusion Summary
Ice Surface Temp	VIIRS-IST-EDR	5502	Summary Range Check
Sea Ice Age	VIIRS-SIC-EDR	800	Summary Ice Age Quality
Sea Ice Age	VIIRS-SIC-EDR	801	Exclusion 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.

Appendix C. Abbreviations and Acronyms

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

Attachment A. XML Formats for Related Data Products

Table: ATT-1 XML Formats for Related Products

File Number	XML Filename
1	474-00448-02-17_JPSS-Cryo-DD-Part-17_0200B_VIIRS-IST-EDR-PP.xml
2	474-00448-02-17_JPSS-Cryo-DD-Part-17_0200B_VIIRS-SIC-EDR-PP.xml
3	474-00448-02-17_JPSS-Cryo-DD-Part-17_0200B_VIIRS-I-Conc-IP.xml
4	474-00448-02-17_JPSS-Cryo-DD-Part-17_0200B_VIIRS-I-Qual-Flags-IP.xml
5	474-00448-02-17_JPSS-Cryo-DD-Part-17_0200B_VIIRS-I-Refl-Temp-IP.xml
6	474-00448-02-17_JPSS-Cryo-DD-Part-17_0200B_VIIRS-I-Wts-IP.xml
7	474-00448-02-17_JPSS-Cryo-DD-Part-17_0200B_VIIRS-Surf-Temp-IP.xml

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