



# JEM/SMILES L2 Products Guide

## STRUCTURE OF STANDARD SMILES L2 PRODUCTS

Draft 1.2

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## 1. STANDARD LEVEL 2 PRODUCTS OVERVIEW

### (1) **FILE NAME**

The file name is defined as follows.

SMILES\_L2\_{*product\_name*}\_{*band\_name*}\_{*version\_name*}\_{*date*}.he5

### (2) **A COMBINATION OF PRODUCT\_NAME AND BAND\_NAME**

The combination of a *product\_name* and *band\_name* are as follows.

No.	product_name	band_name
1	O3                    O3-sym-17	A
	O3-asym-18        HCl	
	CH3CN             HOCl	
	HNO3	
2	O3                    O3-sym-17	B
	O3-asym-18        HCl	
3	O3                    O3-asym-17	C
	O3-asym-18        HNO3	
	CIO	

### (3) **VERSION\_NAME**

*version\_name* is represented as follows.

xxx-yy-zzzz :

xxx        : Level 1 B version

yy         : Climatological DB version

zzzz      : Level 2 Algorithm version

### (4) **DATE**

*date* is represented as follows.

yyyymmdd : (ex. 20091009)

yyyy      : Observation year

mm        : Observation month

dd         : Observation day



## 2. PRODUCT FORMAT

### 1) STRUCTURE OF HDF5-EOS DATA FILES

We show below the format structure of the HDF5\* -EOS data file.

No.	Filed	Attributes
1	<i>FileAttribute</i>	<b>File Level Attributes:</b> <ul style="list-style-type: none"> <li>• Instrument Name</li> <li>• Processing Level</li> <li>• Version</li> <li>• Observation day</li> <li>• Band name</li> <li>• Scan number</li> <li>• L1B file name</li> </ul>
2	<i>GeolocationField</i>	<b>Geolocation Field Attributes:</b> <ul style="list-style-type: none"> <li>• Observation point</li> <li>• Time</li> <li>• Altitude</li> <li>• Solar Zenith Angle</li> <li>• Azimuth View</li> <li>• Ascending/Descending flag</li> </ul>
3	<i>Data Field</i>	<b>Data Field Attributes:</b> <ul style="list-style-type: none"> <li>• Data value</li> <li>• Estimate error</li> <li>• Status</li> </ul>

\*: [HTTP://WWW.HDFGROUP.ORG/](http://www.hdfgroup.org/)



## 2) STRUCTURE OF STANDARD SMILES L2 PRODUCTS

● Standard processing data (HDF5-EOS)

Structure of standard processing data is as follows.

<File Attributes>

No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Byte
1	<b><i>LIBID</i></b>	L1B file name	(nTimes)	char	20*nTimes
2	<b><i>InstrumentName</i></b>	Instrument Name (SMILES)	-	char	6
3	<b><i>ProcessLevel</i></b>	Processing level (L2)	-	char	2
4	<b><i>StartUTC</i></b>	Start time in this file (yyyy-mm-ddT00:00:00.000)	-	char	23
5	<b><i>EndUTC</i></b>	End time in this file (yyyy-mm-ddT23:59:59.000)	-	char	23
6	<b><i>GranuleMonth</i></b>	Month(mm)	-	int	4
7	<b><i>GranuleDay</i></b>	Day(dd)	-	int	4
8	<b><i>GranuleDayofYear</i></b>	Granule Day of Year	-	int	4
9	<b><i>GranuleYear</i></b>	Year(yyyy)	-	int	4
10	<b><i>PGEVersion</i></b>	Processing version(XXX-XX-XXXX)	-	char	11
11	<b><i>StartScan</i></b>	Scan count of first day in this file	-	char	6
12	<b><i>EndScan</i></b>	Scan count of end day in this file	-	char	6
13	<b><i>BandName</i></b>	Band name	-	char	4
			Total	107+20*nTimes	

<Swath Attributes>

No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Unit	Byte
1	<b><i>Altitude</i></b>	Calculation Altitude	(nLevels)	float	km	4*nLevels
2	<b><i>VerticalCoordinate</i></b>	vertical coordinate system name	-	char		8
			Total	8+4*nLevels		



<Geolocation/Data fields Attributes>: Next information is added to each field item.

No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Byte
1	<i>MissingValue</i>	Missing value	-	float	4
2	<i>Title</i>	Filed name	-	char	30
3	<i>Units</i>	Unit	-	char	12
4	<i>UniqueFieldDefinition</i>	Filed Definition	-	char	20
				Total	66

<Geolocation Fields>

No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Unit	Byte
1	<i>Time</i>	Observation time (Total second since 1/1/1958)	(nTimes)	double	* 1	8*nTimes
2	<i>TimeUTC</i>	Observation time (UTC) yyyy-mm-dd hh:mm:ss.sss	(nTimes)	char	-	23*nTimes
3	<i>Altitude</i>	Representative altitude	(nLevel)	float	km	4*nLevel
4	<i>Latitude</i>	Observation Latitude	(nTimes)	float	degrees	4*nTimes
5	<i>Longitude</i>	Observation Longitude	(nTimes)	float	degrees	4*nTimes
6	<i>SolarZenithAngle</i>	Solar Zenith Angle	(nTimes)	float	degrees	4*nTimes
7	<i>LocalTime</i>	Local time (hh:mm:ss)	(nTimes)	char	-	8*nTimes
8	<i>LineOfSightAngle</i>	Azimuth View	(nTimes)	float	degrees	4*nTimes
9	<i>AscendingDescending</i>	Ascending/Descending flag	(nTimes)	char	-	1*nTimes
				Total	56*nTimes+4*nLevel	

\*1: seconds since 1958-1-1



<Data Fields>

No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Unit	Byte
1	<i>L2Value</i>	Value	(nLevel,nTimes)	float	vmr	4*nTimes*nLevel
2	<i>L2Precision</i>	calculation error	(nLevel,nTimes)	float	vmr	4*nTimes*nLevel
3	<i>MeasurementError</i>	Measurement error	(nLevel,nTimes)	float	vmr	4*nTimes*nLevel
4	<i>SmoothingError</i>	Smoothing Error	(nLevel,nTimes)	float	vmr	4*nTimes*nLevel
5	<i>Apriori</i>	A priori value	(nLevel,nTimes)	float	vmr	4*nTimes*nLevel
6	<i>AprioriError</i>	A priori error	(nLevel,nTimes)	float	vmr	4*nTimes*nLevel
7	<i>CorrLength</i>	Correlative length of A priori	(nTimes)	float	km	4*nTimes
8	<i>AveragingKernel</i>	Averaging Kernel	(nLevel,nLevel,nTimes)	float	-	4*nTimes*nLevel^2
9	<i>VerticalResolution</i>	Vertical Resolution	(nLevel,nTimes)	float	km	4*nTimes*nLevel
10	<i>InformationValue</i>	Information Value	(nLevel,nTimes)	float	-	4*nTimes*nLevel
11	<i>Pressure</i>	Using pressure of retrieval	(nLevel,nTimes)	float	hPa	4*nTimes*nLevel
12	<i>WaterVapor</i>	Using Water Vapor of retrieval	(nLevel,nTimes)	float	vmr	4*nTimes*nLevel
13	<i>Baseline0</i>	Coefficient of Continuum	(nLevel,nTimes)	float	km <sup>-1</sup>	4*nTimes*nLevel
14	<i>Baseline0Precision</i>	Base line error of coefficient	(nLevel,nTimes)	float	km <sup>-1</sup>	4*nTimes*nLevel
15	<i>Baseline1</i>	primary coefficient of Continuum	(nLevel,nTimes)	float	Hz <sup>-1</sup> .km <sup>-1</sup>	4*nTimes*nLevel
16	<i>Baseline1Precision</i>	Base line error of primary coefficient	(nLevel,nTimes)	float	Hz <sup>-1</sup> .km <sup>-1</sup>	4*nTimes*nLevel



No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Unit	Byte
17	<b>Baseline2</b>	2 <sup>nd</sup> coefficient of Continuum	(nLevel,nTimes)	float	Hz <sup>-2</sup> .km <sup>-1</sup>	4*nTimes*nLevel
18	<b>Baseline2Precision</b>	Base line error of 2 <sup>nd</sup> coefficient	(nLevel,nTimes)	float	Hz <sup>-2</sup> .km <sup>-1</sup>	4*nTimes*nLevel
19	<b>Baseline3</b>	3 <sup>rd</sup> coefficient of Continuum	(nLevel,nTimes)	float	Hz <sup>-3</sup> .km <sup>-1</sup>	4*nTimes*nLevel
20	<b>Baseline3Precision</b>	Base line error of 3 <sup>rd</sup> coefficient	(nLevel,nTimes)	float	Hz <sup>-3</sup> .km <sup>-1</sup>	4*nTimes*nLevel
21	<b>RadianceResidualMax</b>	Max. Radiance Residual	(nTimes)	float	K	4*nTimes
22	<b>RadianceResidualMean</b>	Mean Radiance Residual	(nTimes)	float	K	4*nTimes
23	<b>RadianceResidualRMS</b>	RMS Radiance Residual	(nTimes)	float	K	4*nTimes
24	<b>RetrievedAltitudeOffset</b>	Altitude Offset	(nTimes)	float	km	4*nTimes
25	<b>RetrievedAltitudeOffsetError</b>	Altitude Offset error	(nTimes)	float	km	4*nTimes
26	<b>NumIterPerform</b>	Convergence number and result	(nTimes)	int	-	4*nTimes
27	<b>MaxNumIteration</b>	Max. convergence number	(nTimes)	int	-	4*nTimes
28	<b>LIBFlg</b>	Quality flag of L1B data	(nTimes)	char	-	36*nTimes
29	<b>Status</b>	Status information	(nTimes)	int	-	4*nTimes
Total			4*nTimes*nLevel <sup>2</sup> +72*nTimes*nLevel+72*nTimes			

<StructMetadata>

No.	HDF-EOS5 Name	Explanation	Dimension	Byte
1	<b>StructMetadata.0</b>	Matrix information of swath data	1	32000

< coremetadata >

No.	HDF-EOS5 Name	Explanation	Dimension	Byte
1	<b>coremetadata.0</b>	HDF-EOS information	1	6974