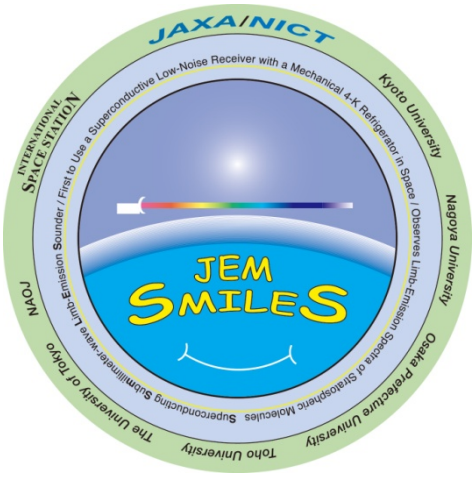

JEM/SMILES L2 Products Guide for Ver. 1.3 (006-06-0200)

STRUCTURE OF STANDARD SMILES L2 PRODUCTS

April 7, 2011

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 HCl CH3CN HOCl HNO3 BrO Temperature	A
2	O3 O3-sym-17 O3-asym-18 HCl HO_2 Temperature	B
3	O3 O3-asym-17 O3-asym-18 HNO3 ClO BrO	C

(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	***FileAttribute***	**File Level Attributes**: ・Instrument Name ・Processing Level ・Version ・Observation day ・Band name ・Scan number ・L1B file name
2	***GeolocationField***	**Geolocation Field Attributes:** ・Observation point ・Time ・Altitude ・Solar Zenith Angle ・Azimuth View ・Ascending/Descending flag
3	***Data Field***	**Data Field Attributes:** ・Data value ・Estimate error ・Status

*: 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	***L1BID***	L1B file name	(nTimes)	char	20*nTimes
2	***InstrumentName***	Instrument Name (SMILES)	-	char	6
3	***ProcessLevel***	Processing level (L2)	-	char	2
4	***StartUTC***	Start time in this file (yyyy-mm-ddT00:00:00.000)	-	char	23
5	***EndUTC***	End time in this file (yyyy-mm-ddT23:59:59.000)	-	char	23
6	***GranuleMonth***	Month (mm)	-	int	4
7	***GranuleDay***	Day (dd)	-	int	4
8	***GranuleDayofYear***	Granule Day of Year	-	int	4
9	***GranuleYear***	Year (yyyy)	-	int	4
10	***PGEVersion***	Processing version (XXX-XX-XXXX)	-	char	11
11	***StartScan***	Scan count of first day in this file	-	char	6
12	***EndScan***	Scan count of end day in this file	-	char	6
13	***BandName***	Band name	-	char	4
			Total		107+20*nTimes

<Swath Attributes>

No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Unit	Byte
1	***Altitude***	Calculation Altitude	(nLevels)	float	km	4*nLevels
2	***VerticalCoordinate***	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	***MissingValue***	Missing value	-	float	4
2	***Title***	Filed name	-	char	30
3	***Units***	Unit	-	char	12
4	***UniqueFieldDefinition***	Filed Definition	-	char	20
			Total		66

<Geolocation Fields>

No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Unit	Byte
1	***Time***	Observation time (Total second since 1/1/1958)	(nTimes)	double	*1	8*nTimes
2	***TimeUTC***	Observation time（UTC） yyyy-mm-dd hh:mm:ss.sss	(nTimes)	char	-	23*nTimes
3	***Altitude***	Representative altitude	(nLevel)	float	km	4*nLevel
4	***Latitude***	Observation Latitude	(nTimes)	float	degrees	4*nTimes
5	***Longitude***	Observation Longitude	(nTimes)	float	degrees	4*nTimes
6	***SolarZenithAngle***	Solar Zenith Angle	(nTimes)	float	degrees	4*nTimes
7	***LocalTime***	Local time (hh:mm:ss)	(nTimes)	char	-	8*nTimes
8	***LineOfSightAngle***	Azimuth View	(nTimes)	float	degrees	4*nTimes
9	***AscendingDescending***	Ascending/Descending flag	(nTimes)	int	-	4*nTimes
10	***Reserved***	Reserved field	(nTimes)	int	-	4*nTimes
			Total			63*nTimes+4*nLevel

*1: seconds since 1958-1-1

<Data Fields>

No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Unit	Byte
1	***L2Value***	Value	(nLevel,nTimes)	float	vmr	4*nTimes *nLevel
2	***L2Precision***	calculation error	(nLevel,nTimes)	float	vmr	4*nTimes *nLevel
3	***MeasurementError***	Measurement error	(nLevel,nTimes)	float	vmr	4*nTimes *nLevel
4	***SmoothingError***	Smoothing Error	(nLevel,nTimes)	float	vmr	4*nTimes *nLevel
5	***Apriori***	A priori value	(nLevel,nTimes)	float	vmr	4*nTimes *nLevel
6	***AprioriError***	A priori error	(nLevel,nTimes)	float	vmr	4*nTimes *nLevel
7	***CorrLength***	Correlative length of A priori	(nTimes)	float	km	4*nTimes *nLevel
8	***AveragingKernel***	Averaging Kernel	(nLevel,nLeveln Times)	float	-	4*nTimes *nLevel^2
9	***VerticalResolution***	Vertical Resolution	(nLevel,nTimes)	float	km	4*nTimes *nLevel
10	***InformationValue***	Information Value	(nLevel,nTimes)	float	-	4*nTimes *nLevel
11	***Pressure***	Retrieved pressure	(nLevel,nTimes)	float	hPa	4*nTimes *nLevel
12	***Temperature***	Retrieved temperature	(nLevel,nTimes)	float	K	4*nTimes *nLevel
12	***WaterVapor***	Using Water Vapor of retrieval	(nLevel,nTimes)	float	vmr	4*nTimes *nLevel
13	***Baseline0***	Coefficient of Continuum	(nLevel,nTimes)	float	km^{-1}	4*nTimes *nLevel
14	***Baseline0Precision***	Baseline error of coefficient	(nLevel,nTimes)	float	km^{-1}	4*nTimes *nLevel
15	***Baseline1***	primary coefficient of Continuum	(nLevel,nTimes)	float	$Hz^{-1}.km^{-1}$	4*nTimes *nLevel
16	***Baseline1Precision***	Baseline error of primary coefficient.	(nLevel,nTimes)	float	$Hz^{-1}.km^{-1}$	4*nTimes *nLevel
17	***Baseline2***	2nd coefficient of Continuum	(nLevel,nTimes)	float	$Hz^{-2}.km^{-1}$	4*nTimes *nLevel
18	***Baseline2Precision***	Baseline error of 2nd coefficient	(nLevel,nTimes)	float	$Hz^{-2}.km^{-1}$	4*nTimes *nLevel
19	***Baseline3***	3rd coefficient of Continuum	(nLevel,nTimes)	float	$Hz^{-3}.km^{-1}$	4*nTimes *nLevel
20	***Baseline3Precision***	Baseline error of 3rd coeficient	(nLevel,nTimes)	float	$Hz^{-3}.km^{-1}$	4*nTimes *nLevel
21	***RadianceResidualMax***	Max. Radiance Residual	(nTimes)	float	K	4*nTimes
22	***RadianceResidualMean***	Mean Radiance Residual	(nTimes)	float	K	4*nTimes
23	***RadianceResidualRMS***	RMS Radiance Residual	(nTimes)	float	K	4*nTimes
24	***RetrievedViewAngle Offset***	Antenna Elevation Angle Offset	(nTimes)	float	degrees	4*nTimes
25	***RetrievedViewAngle OffsetError***	Antenna Elevation Angle Offset errir	(nTimes)	float	degrees	4*nTimes
26	***NumIterPerform***	Convergence loop number and result	(nTimes)	int	-	4*nTimes
27	***MaxNumIteration***	Max. convergence number	(nTimes)	int	-	4*nTimes
28	***Status***	Status information	(nTimes)	int	-	4*nTimes
29	***AOSUnitNum***	Number of observed AOS Unit	(nTimes)	int	-	4*nTimes

No.	HDF-EOS5 Name	Explanation	Dimension	Data type	Unit	Byte
30	***Convergence***	Convergence status	(nTimes)	float	-	4*nTimes
31	***FOVInterference***	Interference flag *2	(nTimes)	int	-	4*nTimes
32	***CostfunctionYAll***	Costfunction of spectra	(nTimes)	float	-	4*nTimes
33	***CostfunctionY***	Costfunction of spectra for each altitude	(nLevel,nTimes)	float	-	4*nTimes *nLevel
		Total	4*nTimes*nLevel ^ 2+76*nTimes*nLevel+56*nTimes			

*2 FOVInterference field:

value	Explanation
-1	No interference information
0	No FOV interference
>0	Do not use this profile (see the `information').
1	Information: FOV interference by Sun
2	Information: FOV interference by Moon
4	Information: FOV interference by ISS Solar paddle

<StructMetadata>

No.	HDF-EOS5 Name	Explanation	Dimension	Byte
1	***StructMetadata.0***	Matrix information of swath data	1	32000

< coremetadata >

No.	HDF-EOS5 Name	Explanation	Dimension	Byte
1	***coremetadata.0***	HDF-EOS information	1	6974