

ADEOS Standard Products Specification

This material describes the latest specification of ADEOS standard products distributed to users by NASDA/EOC. Some processing algorithms are under development. So this material will be revised complying with the algorithm development.

April 1996

**Earth Observation Center
NASDA**

ADEOS Core Sensor Products (generated by NASDA/EOC)	ADEOS AO Sensor Standard Products (generated by each AO sensor provider)
(1) AVNIR Standard Products (2) OCTS Standard Products *RTC (Real Time Coverage at EOC) *LAC (Local Area Coverage) *GAC (Global Area Coverage) (3) OCTS Near Real-Time Products (for near real-time data users)	(1) POLDER Standard Products (CNES) (2) NSCAT Standard Products (NASA) (3) TOMS Standard Products (NASA) (4) IMG Standard Products (MITI) (5) ILAS Standard Products (EA) (6) RIS Standard Products (EA) <i>For information: NSCAT Near Real-Time Products will be supplied by NOAA and TOMS Near Real-Time Products will be supplied by NASA for near real-time data users.</i>

OCTS Standard Products (1/5)

Category	Processing Level	Processing Content	Product Type	Number of Files / Contents	Unit	Scene Size byte*pixel*line*band	Media					User	
							CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General
RTC (EOC Coverage)	Level 1A	Uncorrected Image Level 0 data, full resolution, edited by scene unit, annotated with radiometric and geometric calibration coefficients.	VNIR: L1AVNR	1/B1A B8	Aquisition Segment	2*2K*8K*8 =244 MB	15	15	15	15	15	15	15
			TIR: L1ATIR	1/B9A B12	ditto	2*2K*8K*4 =122 MB	15	15	15	15	15		
	Level 2	Radiometrically / Band to band registration corrected of Level 1A and interpreted geophysical parameter.	Ocean Color: L2OCR(1)	1/5nLw, 3La, É , É a	ditto	2*2K*8K*8 +1*2K*8K*2 =275 MB	15	15	15	15	15	15	15
			Ocean Color: L2OCR(2)	1/Pigment Concentration, Chlorophyll a, K490, QF	ditto	2*2K*8K*4 =122 MB	15	15	15	15	15		
			Vegetation: L2VIR	1/Vegetation Index	ditto	2*2K*8K*1 =31 MB	15	15	15	15	15		
			Sea Surface Temp.: L2STR	1/Sea Surface Temp.	ditto	2*2K*8K*1 =31 MB	15	15	15	15	15		
	Level 3 Map	Mapped data of Level 2.	Ocean Color: L3MOCR(P)	1/Pigment Concentration	ditto	1*4.2K*12.3K*1 =49 MB	15	15	15	15	15	15	15
			Ocean Color: L3MOCR(C)	1/Chlorophyll a	ditto	ditto	15	15	15	15	15		
			Ocean Color: L3MOCR(K)	1/K490	ditto	ditto	15	15	15	15	15		
			Sea Surface Temp.: L3MSTR	1/Sea Surface Temp.	ditto	ditto	15	15	15	15	15		

(1) nLw: Normalized Water Leaving Radiance, La: Aerosol Radiance, É a: Optical Thickness at 865nm, QF: Quality Flag/Mask

(2) Product Discrimination = XXXXYZ (Y₁)

XXXX : Processing level (level 1A=L1A, level 1B=L1B, level 2=L2, level 3 Map=L3M, level 3 Binned=L3B, level 3 Binned Map=L3BM)

YY : Band or geophysical parameter (exp. VNIR=VN)

Z : Category of coverage (RTC=R, LAC=L, GAC=G). In case of bin processing, it is time unit of bin.

(Y₁) : Detail geophysical parameter (exp. Radiance=(L))

(3) Archived OCTS Products at NASDA/EOC: RTC Products and GAC Products

OCTS Standard Products (2/5)

Category	Processing Level	Processing Content	Product Type	Number of Files / Contents	Unit	Scene Size byte*pixel*line*band	Media					User	
							CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General
LAC	Level 1A	Uncorrected Image Level 0 data, full resolution, edited by scene unit, annotated with radiometric and geometric calibration coefficients.	VNIR: L1AVNL	1/B1A B8	LAC Scene	2*2K*5.6K*8 =171 MB	15	15	1	15	15	15	15
			TIR: L1ATIL	1/B9A B12	ditto	2*2K*5.6K*4 =85 MB	15	15	15	15	15		
	Level 1B	Radiometrically corrected and interband registered data of Level 1A.	VNIR: L1BVNL	1/B1A B8	ditto	2*2K*5.6K*8 =171 MB	15	15	1	15	15	15	1
			TIR: L1BTIL	1/B9A B12	ditto	2*2K*5.6K*4 =85 MB	15	15	15	15	15		
	Level 2	Radiometrically / band to band registration corrected of Level 1A and interpreted geophysical parameter.	Ocean Color: L2OCL(1)	1/5nLw, 3La, É, É a	ditto	2*2K*5.6K*8 +1*2K*5.6K*2 =192 MB	15	15	1	15	15	15	15
			Ocean Color: L2OCL(2)	1/Pigment Concentration, Chlorophyll a, K490, QF	ditto	2*2K*5.6K*4 =85 MB	15	15	15	15	15		
			Vegetation: L2VIL	1/Vegetation Index	ditto	2*2K*5.6K*1 =21 MB	15	15	15	15	15		
Sea Surface Temp.: L2STL			1/Sea Surface Temp.	ditto	2*2K*5.6K*1 =21 MB	15	15	15	15	15			

nLw: Normalized Water Leaving Radiance, La: Aerosol Radiance, É a: Optical Thickness at 865nm, QF: Quality Flag/Mask

OCTS Standard Products (3/5) Cont.

Category	Processing Level	Processing Content	Product Type	Number of Files & Contents	Unit	Scene Size byte*pixel*line*band	Media					User	
							CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General
LAC	Level 3 Map	Mapped data of Level 1B, 2.	VNIR: L3MVNL	1/B1Å B8	LAC Scene	1*4K*8K*8 =244 MB	10	10	10	10	10	10	10
			TIR: L3MTIL	1/B9Å 12	ditto	1*4K*8K*4 =122 MB	10	10	10	10	10		
			Ocean Color: L3MOCL(L)	1/5nLw, 3La	ditto	1*4K*8K*8 =244 MB	10	10	10	10	10		
			Ocean Color: L3MOCL(E)	1/É	ditto	1*4K*8K*1 =31 MB	10	10	10	10	10		
			Ocean Color: L3MOCL(T)	1/É a	ditto	ditto	10	10	10	10	10		
			Ocean Color: L3MOCL(P)	1/Pigment Concentration	ditto	ditto	10	10	10	10	10		
			Ocean Color: L3MOCL(C)	1/Chlorophyll a	ditto	ditto	10	10	10	10	10		
			Ocean Color: L3MOCL(K)	1/K490	ditto	ditto	10	10	10	10	10		
			Vegetation: L3MVIL	1/Vegetation Index	ditto	ditto	10	10	10	10	10		
			Sea Surface Temp.: L3MSTL	1/Sea Surface Temp.	ditto	ditto	10	10	10	10	10		

nLw: Normalized Water Leaving Radiance, La: Aerosol Radiance, É a: Optical Thickness at 865nm, QF: Quality Flag/Mask

OCTS Standard Products (4/5)

Category	Processing Level	Processing Content	Product Type	Number of Files & Contents	Unit	Scene Size byte*pixel*line*band	Media					User	
							CCT	CD-ROM	3.5 in. MO	8mm tape	Film	PI	General
GAC	Level 1A	Uncorrected Image Level 0 data, sub sample by 4km, edited by scene unit. Annotated with radiometric and geometric calibration coefficients.	VNIR: L1AVNG	1/B1 Å B8	Tilt Segment	2*350*2.3K*8 =12 MB	▫	▫	▫	▫	▫	▫	▫
			TIR: L1ATIG	1/B9 Å B12	ditto	2*350*2.3K*4 =6 MB	▫	▫	▫	▫	▫		
	Level 2	Radiometrically / band to band registration corrected of Level 1A and interpreted geophysical parameter.	Ocean Color: L2OCG(1)	1/5nLw, 3La, É, É a	Tilt Segment	2*350*2.3K*8 +1*350*2.3K*2 =14 MB	▫	▫	▫	▫	▫	▫	▫
			Ocean Color: L2OCG(2)	1/Pigment Concentration, Chlorophyll a, K490, QF	ditto	2*350*2.3K*4 =6 MB	▫	▫	▫	▫	▫		
			Vegetation: L2VIG	1/Vegetation Index	ditto	2*350*2.3K*1 =2 MB	▫	▫	▫	▫	▫		
			Sea Surface Temp.: L2STG	1/Sea Surface Temp.	ditto	ditto	▫	▫	▫	▫	▫		
	Level 3 Binned	Spatial and time binning data from Level 2. -1day, 1week, 1month and 1year bins.	Ocean Color: Daily: L3BOCD	6/Bin Information, 5nLw+3La+É +É a, Pigment Concentration, Chlorophyll a, K490, Integral Chlorophyll	Global Bin	14*1.6M+8*1.6M*14 =202 MB	▫	▫	┆	▫	┆	▫	▫
			Ocean Color: Weekly: L3BOCW	ditto	ditto	14*4M+8*4M*14 =504 MB	▫	▫	┆	▫	┆		
			Ocean Color: Monthly: L3BOCM	ditto	ditto	ditto	▫	▫	┆	▫	┆		
			Ocean Color: Yearly: L3BOCY	ditto	ditto	ditto	▫	▫	┆	▫	┆		

nLw: Normalized Water Leaving Radiance, La: Aerosol Radiance, É a: Optical Thickness at 865nm, QF: Quality Flag/Mask

OCTS Standard Products (5/5) Cont.

Category	Processing Level	Processing Content	Product Type	Number of Files & Contents	Unit	Scene Size byte*pixel*line*band	Media					User		
							CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General	
GAC			Vegetation: Daily: L3BVID	2/Bin Information, Vegetation Index	Global Bin	14*1.6M+8*1.6M*1 =35 MB	15	15	15	15	15			
			Vegetation: Weekly: L3BVIW	ditto	ditto	14*1.7M+8*1.7M*1 =37 MB	15	15	15	15	15			
			Vegetation: Monthly: L3BVIM	ditto	ditto	ditto	15	15	15	15	15			
			Vegetation: Yearly: L3BVIY	ditto	ditto	ditto	15	15	15	15	15			
			Sea Surface Temp.: Daily: L3BSTD	2/Bin Information, Sea Surface Temp.	ditto	14*1.6M+8*1.6M*1 =35 MB	15	15	15	15	15			
			Sea Surface Temp.: Weekly: L3BSTW	ditto	ditto	14*4M+8*4M*1 =88 MB	15	15	15	15	15			
			Sea Surface Temp.: Monthly: L3BSTM	ditto	ditto	ditto	15	15	15	15	15			
			Sea Surface Temp.: Yearly: L3BSTY	ditto	ditto	ditto	15	15	15	15	15			
	Level 3 Binned Map	Binned and Mapped data.	\$: D (=daily) W (=weekly) M (=monthly) Y (=yearly)	Ocean Color: L3BMOC\$(L)	1/5nLw+3La	Global Map	1*4096*2048*8 =64 MB	15	15	15	15	15	15	15
				Ocean Color: L3BMOC\$(P)	1/Pigment Concentration	ditto	1*4096*2048*1 =8 MB	15	15	15	15	15		
				Ocean Color: L3BMOC\$(C)	1/Chlorophyll a	ditto	ditto	15	15	15	15	15		
				Ocean Color: L3BMOC\$(K)	1/K490	ditto	ditto	15	15	15	15	15		
				Vegetation: L3BMVI\$	1/Vegetation Index	ditto	ditto	15	15	15	15	15		
Sea Surface Temp.: L3BMST\$				1/Sea Surface Temp.	ditto	ditto	15	15	15	15	15			

nLw: Normalized Water Leaving Radiance, La: Aerosol Radiance, É a: Optical Thickness at 865nm, QF: Quality Flag/Mask

OCTS Near Real-Time Products

Category	Processing Level	Processing Content	Product Type	Number of File / Content	Unit	Scene Size byte*pixel*line*band	User
RTC (EOC Coverage)	Level 3' Map	Mapped data of Level 2'.	VNIR (Band 6): L3MVNR'	1/B6	Aquisition Segment	1*4.5K*11.1K*1 =48 MB	JMA
			TIR: L3MTIR'	1/B9Å B12	ditto	1*4.5K*11.1K*4 =191 MB	JMA
			Ocean Color: L3MOCR(L)'	1/La (670, 765)	ditto	1*4.5K*11.1K*2 =95 MB	JMA
			Ocean Color: L3MOCR(P)'	1/Pigment Concentration	ditto	1*4.2K*12.3K*1 =49 MB	JAFIC
			Ocean Color: L3MOCR(C)'	1/Chlorophyll a	ditto	ditto	JAFIC
			Ocean Color: L3MOCR(K)'	1/K490	ditto	ditto	JAFIC
			Sea Surface Temp.: L3MSTR'	1/Sea Surface Temp.	ditto	ditto	JAFIC

(1) nLw: Normalized Water Leaving Radiance, La: Aerosol Radiance, É a: Optical Thickness at 865nm, QF: Quality Flag/Mask

(2) Near Real-Time Products are the same as RTC Standard Products except ephemeris and spacecraft time code correction values which are predictive, not definitive.

(3) Near Real-Time Products for Japan Meteorological Agency have specific formats.

POLDER Standard Products

Processing Level	Processing Content	Generic Code	Unit	File Size	Media					User	
					CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General
Level 1	–	–	viewing segment	873 MB	TBD	TBD	TBD	TBD	T	15	TBD
Browse	–	–	ditto	0.6 M	TBD	TBD	TBD	TBD	T	15	TBD
Level 2	earth radiation	–	ditto	9 MB	TBD	TBD	TBD	TBD	T	15	TBD
	ocean colour	directional parameters	ditto	81 MB	TBD	TBD	TBD	TBD	T		
		non directional parameters	ditto	16 MB	TBD	TBD	TBD	TBD	T		
		aerosol parameters	ditto	1.5 MB	TBD	TBD	TBD	TBD	T		
	land surfaces	directional parameters	ditto	39 MB	TBD	TBD	TBD	TBD	T		
water vapour and aerosols		ditto	0.6 MB	TBD	TBD	TBD	TBD	T			
Level 3	earth radiation	synthesis	global (monthly)	63 MB	TBD	TBD	TBD	TBD	15	15	TBD
	ocean colour	ocean colour parameters	ditto	571 MB	TBD	TBD	TBD	TBD	15		
		aerosol parameters	ditto	60 MB	TBD	TBD	TBD	TBD	15		
	land surfaces	albedo and NDVI parameters	global (3 times a month using 30 days max. data)	110 MB	TBD	TBD	TBD	TBD	15		
		directional signature parameters	ditto	250 MB	TBD	TBD	TBD	TBD	15		
	atmospheric parameters	ditto	20 MB	TBD	TBD	TBD	TBD	15			

NSCAT Standard Products

Processing Level	Processing Content	Unit	File Size	Media					User	
				CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General
Level 1.5	Sigma-0 Beam Product; sigma-0 cell data organized by beam with quality and surface flags.	1 rev	12 MB	Y	Y	Y	Y	N	Y	TBD
Level 1.7	Sigma-0 Wind Vector Cell Product; earth located, sigma-0 cells in subtrack wind vector cells (50km x 50km) with quality flags.	1 rev	nominal: 8.9 MB max.: 12.7 MB	Y	Y	Y	Y	N	Y	TBD
Level 2	Wind Vector Product; Multiple ocean wind vector retrieved from sigma-0 data using the Geophysical Model Function with sigma-0 quality flags.	1 rev	nominal: 0.85 MB max.: 1.2 MB	Y	Y	Y	Y	N	Y	TBD
Level 3	Wind map product; spatially and daily averaged ocean wind vector mapped into global grid (0.5 x 0.5 degrees).	1 day	max.: 4.1 MB	Y	Y	Y	Y	Y	Y	TBD

TOMS Standard Products

Processing Level	Processing Content	Unit	File Size	Media					User	
				CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General
Level 1	Level 0 data, formatted to Raw Units File (RUF), added time correction data, orbit information data, geometric correction coefficients, satellite attitude data, etc.	1 orbit	1.2 MB	Y	TBD	TBD	TBD	N	Y	TBD
Level 2	Level 2 product, called HDTOMS, is the ozone and sulphur dioxide data produced from Level 1 data geometrically and radiometrically corrected.	1 orbit	1.0 MB	Y	TBD	TBD	TBD	N	Y	TBD
Level 3	Level 3 products, known as GRIDTOMS, contain daily high resolution ozone and reflectivity data mapped into a predefined grid.	1 day	217 KB	Y	TBD	TBD	TBD	Y	Y	TBD

IMG Standard Products

Processing Level	Processing Content	Unit	File Size	Media					User	
				CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General
Level 1C	Spectra (calibrated and standard apodized) with browse data and cloud information	1 unit: (6 observation points + 2 calibration points)	2 Mbyte	TBD	TBD	TBD	TBD	1	15	TBD
Level 2	Physical values after retrieval a) Temperature profile (including SST) b) H ₂ O profile c) CO ₂ profile d) CH ₄ profile e) N ₂ O profile f) CO profile g) total ozone h) total nitric acid (TBD)	1 day	6.4 Mbyte	TBD	TBD	TBD	TBD	1	15	TBD

ILAS Standard Products

Processing Level	Processing Content	Unit	File Size	Media					User	
				CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General
Level 1	Calibrated data, annotated with satellite position.	1 occultation event	9.8 MB	TBD	TBD	TBD	TBD	┆	┆	TBD
Level 2	O3 profile, HNO3 profile, NO2 profile, N2O profile, H2O profile, CH4 profile, Aerosol profile, Temperature profile, Pressure profile, etc.	1 parameter	5.2 KB	TBD	TBD	TBD	TBD	┆	┆	TBD

RIS Standard Products

Processing Level	Processing Content	Unit	Scene Size	Media					User	
				CCT	CD-ROM	3.5 in. MO	8 mm tape	Film	PI	General
Level 1	Transmittance data normalized by reference signals data with elevation angles.	1 observation	731 KB	TBD	TBD	TBD	TBD	┆	┆	TBD
Level 2	Profiles of O3 and CH4, and column amounts of CFC12, HNO3, CO2, CO and N2O.	1 parameter	2.1 KB	TBD	TBD	TBD	TBD	┆	┆	TBD

Media Format

Media	AVNIR	OCTS	AO Sensors	Volume (MB)
CD-ROM	File System (ISO9660)	File System (ISO9660)	File System (ISO9660)	540 ^{*a}
3.5" MO	Unix File System	Unix File System	Unix File System	128 ^{*b}
8 mm tape	non-label (variable length)	tar	tar	5,000 ^{*c} (2,500) ^{*d}
CCT	non-label (variable length)	non-label (fixed length)	N/A	150 ^{*e}

- *a) The total scene size recorded in a CD-ROM is less than 500 MByte.
- *b) The total scene size recorded in a 3.5" MO is less than 120 MByte.
- *c) The total scene size recorded in an 8 mm tape is less than 3.0 GByte.
- *d) The volume is for EXB-8200.
- *e) The total scene size recorded in a CCT is less than 130 MByte.

Reference:

- 1) AVNIR, OCTS Product Specification, ADEOS-Pro-251C, NEC, Sep. 18, 1995 (Japanese).
- 2) Near Real-Time Processed Product Size for JMA, ADEOS-Pro-333A, NEC, Oct. 5, 1995 (Japanese).
- 3) The POLDER Standard Product Formats, Edit.: PR, Rev.: 2, PA-ST-3-3131-CN, CNES, Jan. 10, 1994.
- 4) OCL No: POLDER-55, CNES, Jan. 30, 1995.
- 5) Level 1.7 Data Software Interface Specification (SIS-2) - HDF Version, JPL D-12059, Nov. 1994.
- 6) Level 2 Data Software Interface Specification (SIS-2) - HDF Version, JPL D-12060, Nov. 1994.
- 7) Level 3 Data Software Interface Specification (SIS-2) - HDF Version, JPL D-120611, Nov. 1994.
- 8) ADEOS/TOMS Science Product Specification, Version 2.0, ADEOS/TOMS Science Operations Center, Sep. 29, 1995.
- 9) ADEOS/TOMS Science Products, ADEOS/TOMS Science Operations Center, June 5, 1995.
- 10) IMG Standard Product Specification, ERSDAC, July 27, 1995.
- 11) Response to Technical Coordination Letter No.6EOC-244 "ILAS and RIS Standard Product", NIES, Feb. 2, 1995 (Japanese).
- 12) ADEOS Operation Interface Specification, Version 4.0, NASDA/EOC, April 14, 1995.
- 13) Distribution Media Specification in the ADEOS Media Conversion Subsystem, ADEOS-Pro-502, NEC, Sep. 20, 1995 (Japanese).