ILMATIETEEN LAITOS

OMI UVB Level 2G HDF-EOS5

Finnish Meteorological Institute, 2012

Format Specification Document

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DOCUMENT STATUS

Document version	Date	Notes
1.0	2010-01-20	Initial release for v003 product
1.1	2010-06-10	Added the UV index and viewing zenith angle data fields.
1.2	2010-10-06	Corrections to data types and descriptions
1.3	2012-10-04	Updated for data version 1.3.0

Contents

1 Introduction

1.1 Purpose of this document

This document specifies the format of the OMI UVB Level 2G product. The archive format is based on HDF-EOS5 format, which is an extension to standard HDF5 file format.

1.2 Definitions, acronyms and abbreviations

EOS	Earth Observing System
FMI	Finnish Meteorological Institute
HDF	Hierarchical Data Format
HDF-EOS	HDF - Earth Observation System, extension to HDF
OMI	Ozone Monitoring Instrument
OMTO3	Level 2 total ozone product based on the TOMS algorithm
OMUVB	Level 2 surface UV irradiance product
OMUVBd	Level 3 surface UV irradiance product
OMUVBG	Level 2G surface UV irradiance product
TOMS	Total Ozone Mapping Spectrometer

2 OMI Level 2G Surface UV Irradiance Product Format

2.1 Overview of the product

The OMI level 2G Surface UV Irradiance Product contains gridded surface UV irradiance and dose quantities. Additionally it includes information about input data and processing quality, some intermediate results for diagnostics and metadata for data search. The format of the product is HDF-EOS5.

2.2 Product identifier

The identifier of the OMI Level 2G surface UV irradiance product is OMUVBG.

2.3 Data file size

The size of the product file is usually about 140 Mbytes.

2.4 File name convention

OMUVBd filenames are constructed from sections delimited by underscore. This basis is followed by a suffix delimited by a period. Thus, the product file names are of the form:

<Instrument ID> _ <Data Type> _ <Product date> _ <Version>.<Suffix>

Table 1: Description of the file name sections

Section	Format	Description
Instrument ID	"OMI-Aura"	ID for the instrument and spacecraft
Data Type	"L2G-OMUVBG"	Product type
Product date	<yyyy>m<mmdd>	Product date
Version	v<nnn>-<yyyy>m<mmdd>t<hhmmss>	Collection number and processing time
Suffix	"he5"	Product file suffix

2.5 File structure

The data files follow the HDF-EOS grid format. Data field groups are stored within /HDFEOS/GRIDS/OMI UVB Product/ group. The metadata are stored as HDF-EOS file level attributes in the /HDFEOS/ADDITIONAL/FILE_ATTRIBUTES group. The product contains only one grid structure.

2.6 Grid structure

The OMUVBG product grid structure consists of Data Field groups within the OMI UVB Product group. Table 2 shows the dimensions of the data field structures. Data level attributes are shown in table 3 and fill values for missing data are shown in table 4. Grid structure metadata are stored in /HDFEOS INFORMATION/StructMetadata.

Table 2: Dimensions of the grid structure

Name	Size	Description
XDim	1440	X-dimension, longitudes [-180:180] from left to right
YDim	720	Y-dimension, latitudes [-90:90] from bottom to top
nCandidate	15	Number of candidate scenes

Table 3: Data level attributes

Name	Type	Description
Missingvalue	same as the data type	The value for missing data from table 4
Title	H5T_STRING	Title of the field
Units	H5T_STRING	Units
ScaleFactor	H5T_IEEE_F64LE	Scale Factor = 1.0
Offset	H5T_IEEE_F64LE	Offset = 0.0

Table 4: Fill values

Data type	Fill value
H5T_STRING	
H5T_STD_I16LE	-2147483647
H5T_STD_I32LE	-2147483647
H5T_IEEE_F32LE	-1.26765e+030
H5T_IEEE_F64LE	-1.26765e+030

2.7 File attributes

Name	Type	Unit	Source	Notes
OrbitNumber	H5T_STD_I32LE		OMUVB	Orbit numbers
FirstLineInOrbit	H5T_STD_I32LE		OMUVB	First line used from each orbit
LastLineInOrbit	H5T_STD_I32LE		OMUVB	Last line used from each orbit
NumberOfLinesMissingGeolocation	H5T_STD_I32LE		OMUVB	Number of lines missing geolocation
InstrumentName	H5T_STRING		PGE	"OMI"
ProcessLevel	H5T_STRING		PGE	"2G"
GranuleMonth	H5T_STD_I32LE		OMUVB	Month of start granule (1-12)
GranuleDay	H5T_STD_I32LE		OMUVB	Day of start granule (1-31)
GranuleYear	H5T_STD_I32LE		OMUVB	Year of start granule (YYYY)
GranuleDayOfYear	H5T_STD_I32LE		OMUVB	Day of year of start granule (1-366)
TAI93At0zOfGranule	H5T_IEEE_F64LE	sec	OMUVB	TAI93 time at 00:00 UTC at date of start granule
PGEVersion	H5T_STRING		PGE	OMUVBG PGE processing version
StartUTC	H5T_STRING		OMUVB	Start UTC time of first Orbit
EndUTC	H5T_STRING		OMUVB	End UTC time of last Orbit
Period	H5T_STRING		PGE	"Daily"

2.8 Data fields

Name	Type	Unit	Description
CSErythemalDailyDose	H5T_IEEE_F32LE	J/m^2	Clear sky erythemally weighted daily dose
CSErythemalDoseRate	H5T_IEEE_F32LE	mW/m^2	Clear sky erythemally weighted irradiance at local solar noon time
CSIrradiance305	H5T_IEEE_F32LE	$mW/m^2/nm$	Clear sky spectral irradiance at 305 nm at local solar noon time
CSIrradiance310	H5T_IEEE_F32LE	$mW/m^2/nm$	Clear sky spectral irradiance at 310 nm at local solar noon time
CSIrradiance324	H5T_IEEE_F32LE	$mW/m^2/nm$	Clear sky spectral irradiance at 324 nm at local solar noon time
CSIrradiance380	H5T_IEEE_F32LE	$mW/m^2/nm$	Clear sky spectral irradiance at 380 nm at local solar noon time
CSUVindex	H5T_IEEE_F32LE	unitless	Clear sky UV index at local solar noon time
CloudOpticalThickness	H5T_IEEE_F32LE	unitless	Cloud optical thickness
ErythemalDailyDose	H5T_IEEE_F32LE	J/m^2	Erythemally weighted daily dose
ErythemalDoseRate	H5T_IEEE_F32LE	mW/m^2	Erythemally weighted irradiance at local solar noon time
GroundPixelQualityFlags	H5T_STD_I32LE		From OMTO3 product
Irradiance305	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 305 nm at local solar noon time
Irradiance310	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 310 nm at local solar noon time
Irradiance324	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 324 nm at local solar noon time
Irradiance380	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 380 nm at local solar noon time
LambertianEquivalentReflectivity	H5T_IEEE_F32LE	unitless	Lambertian equivalent reflectivity
Latitude	H5T_IEEE_F32LE	degree	From OMTO3 product
LineNumber	H5T_STD_I32LE		Line number of candidate scene
Longitude	H5T_IEEE_F32LE	degree	From OMTO3 product

Data fields

NumberOfCandidateScenes	H5T_STD_I32LE		Number of candidate scenes
OMTO3AlgorithmFlags	H5T_STD_I32LE		From OMTO3 product
OMTO3ColumnAmountO3	H5T_IEEE_F32LE	DU	From OMTO3 product
OMTO3QualityFlags	H5T_STD_I32LE		From OMTO3 product
OMUVBQuality	H5T_STD_I32LE		OMUVB quality flags
OPErythemalDoseRate	H5T_IEEE_F32LE	mW/m^2	Erythemally weighted irradiance at satellite Over Pass time
OPIrradiance305	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 305 nm at satellite Over Pass time
OPIrradiance310	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 310 nm at satellite Over Pass time
OPIrradiance324	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 324 nm at satellite Over Pass time
OPIrradiance380	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 380 nm at satellite Over Pass time
OPUVindex	H5T_IEEE_F32LE	unitless	UV index at satellite Over Pass time
OrbitNumber	H5T_STD_I32LE		Orbit number of Candidate Scene
Pathlength	H5T_IEEE_F32LE		Path length
SceneNumber	H5T_STD_I32LE		Scene number of Candidate Scene
SecondsInDay	H5T_IEEE_F32LE	sec	Seconds in day
SolarZenithAngle	H5T_IEEE_F32LE	Degree	Solar zenith angle
SurfaceAlbedo	H5T_IEEE_F32LE		Surface albedo at 360 nm
TerrainHeight	H5T_STD_I32LE	m	Terrain height for center co-ordinate of ground pixel
Time	H5T_IEEE_F64LE	sec	Time
UVindex	H5T_IEEE_F32LE	unitless	Local noon UV index
ViewingZenithAngle	H5T_IEEE_F32LE	Degree	Viewing zenith angle
XTrackQualityFlags	H5T_STD_I32LE	unitless	From OMTO3 product