ILMATIETEEN LAITOS

OMI UVB Level 3 HDF-EOS5

Finnish Meteorological Institute, 2010

Format Specification Document

Date: 20.1.2010
Version: 1.0
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1 Introduction

1.1 Purpose of this document

This document specifies the format of the OMI UVB Level 3 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 3 Surface UV Irradiance Product Format

2.1 Overview of the product

The OMI level 3 Surface UV Irradiance Product contains gridded surface UV irradiance and dose quantities. Additionally it includes metadata for data search. The format of the product is HDF-EOS5.

2.2 Product identifier

The identifier of the OMI Level 3 surface UV irradiance product is OMUVBd.

2.3 Data file size

The size of the product file is usually about 2.5 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	"L3-OMUVBd"	Product type
Product date	<yyyy>m<mmdd>	Product date
Version	v<nnn>-<yyyy>m<mmdd>t<hhmmss>	Product version 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 Surface UV Radiation/ 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 OMUVBd product grid structure consists of Data Field groups within the OMI Surface UV Radiation 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	360	X-dimension, longitudes [-180:180] from left to right
YDim	180	Y-dimension, latitudes [-90:90] from bottom to top

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_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
InstrumentName	H5T_STRING		PGE	"OMI"
ProcessLevel	H5T_STRING		PGE	"3"
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	UV 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
CSIrradiance305	H5T_IEEE_F32LE	$mW/m^2/nm$	Clear sky spectral irradiance at 305 nm at local Solar noon
CSIrradiance310	H5T_IEEE_F32LE	$mW/m^2/nm$	Clear sky spectral irradiance at 310 nm at local Solar noon
CSIrradiance324	H5T_IEEE_F32LE	$mW/m^2/nm$	Clear sky spectral irradiance at 324 nm at local Solar noon
CSIrradiance380	H5T_IEEE_F32LE	$mW/m^2/nm$	Clear sky spectral irradiance at 380 nm at local Solar noon
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
Irradiance305	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 305 nm at local Solar noon
Irradiance310	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 310 nm at local Solar noon
Irradiance324	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 324 nm at local Solar noon
Irradiance380	H5T_IEEE_F32LE	$mW/m^2/nm$	Spectral irradiance at 380 nm at local Solar noon
SolarZenithAngle	H5T_IEEE_F32LE	Degree	Solar zenith angle