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## OMI Level 2 wavelength bands

### History

This document replaces version 1 of 14 February 2000. A few minor changes were made:

- The terminology “priority”, “standard products” and “special products” was changed to reflect the terminology used in the OMI Science Requirements Document Version 2 (SRD).
- The BrO retrieval window is 344 – 360 nm instead of 345 – 359 nm.
- The wavelength bands for the surface UV-B flux and UV spectra and for the cloud scattering pressure (via the O<sub>2</sub>-O<sub>2</sub> collision complex around 477 nm) data products were added.

### OMI level 2 wavelength bands

An overview is given of the wavelength bands that are used for OMI Level 2 data products. For each band a class identification from 1-3 is given, according to the following criteria:

1. Priority ‘A’ products (which shall be available directly after launch) that use a relatively small wavelength region: i.e DOAS & Cloud products, and TOMS wavelengths.
2. Same as 1, but for priority ‘B’ products (which provide a valuable contribution to the OMI mission objectives, but which are not necessarily available directly after launch) and CIO (OCI will be difficult to retrieve with OMI).
3. Products (of both the priority ‘A’ as ‘B’ type) that use broad wavelength regions: profile retrieval, aerosol optical thickness, surface reflectance, UV-B and spectra.

The class identification is based on the severity of the loss of a single wavelength and if a product is a priority ‘A’ or ‘B’ product. Loss of (a) wavelength(s) in a class 1 band has the most severe impact on the fulfillment of the OMI Mission Objects, as defined in the SRD.

The product bands, the number of wavelength pixels, and the wavelength band class identification are given in Table 2, 3 and 4, for the UV-1, UV-2 and VIS channel of OMI, respectively. The wavelength range of the OMI channels is given in Table 1. The TOMS wavelengths are based on EP-TOMS. For products with priority 3, like ozone profile and aerosol optical thickness, there are many alternative wavelength pixels, however not all wavelengths can be used. In this case no number of pixels is included in the tables.

Note that in Table 2, 3 and 4 the spectral windows related to the spectral calibration of the OMI are not included.

**Table 1.** Spectral range of the OMI UV and VIS channels.

Channel	Total range	Full performance range
UV-1	270 - 314 nm	270 - 310 nm
UV-2	306 - 380 nm	310 - 365 nm
VIS	350 - 500 nm	365 - 500 nm

**Table 2.** Product bands in UV-1.

Product name	Channel	Band [nm]	# of pixels	Class	Comments
O <sub>3</sub> Profile	UV-1	270 - 314		3	Continues in UV-2 and VIS
CIO DOAS	UV-1	290 - 314	75	2	Difficult to retrieve with OMI
TOMS#5 312.5	UV-1	311.5-313.5	6	1	Also in UV-2
TOMS#6 308.6	UV-1	307.5-309.5	6	1	Also in UV-2
Surface UV-B & spectra	UV-1	280 - 314		3	Continues in UV-2 and VIS

**Table 3.** Product bands in UV-2.

Product name	Channel	Band [nm]	# of pixels	Class	Comments
Cloud Top Pressure	UV-2	390 - 400	66	1	
Cloud Cover	UV-2	378 - 383	33	1	
O <sub>3</sub> column DOAS	UV-2	325 - 335	66	1	
O <sub>3</sub> Profile	UV-2	306 - 314		3	Continues in UV-1 and VIS
Aerosol	UV-2	340 - 400		3	Continues in VIS
BrO column DOAS	UV-2	344 - 360	114	2	Priority 'B' Product
SO <sub>2</sub> column DOAS	UV-2	314 - 327	86	2	Priority 'B' Product
OCIO column DOAS	UV-2	357 - 381	160	2	Also in VIS Priority 'B' Product
HCHO column DOAS	UV-2	336 - 357	140	2	Priority 'B' Product
Surface Reflectance	UV-2	320 - 380		3	Continues in VIS
Surface UV-B & spectra	UV-2	306 - 380		3	Continues in UV-1 and VIS
TOMS#1 360.0	UV-2	359 - 361	13	1	Also in VIS
TOMS#2 331.2	UV-2	330.2-332.2	13	1	
TOMS#3 322.3	UV-2	321.3-323.3	13	1	
TOMS#4 317.5	UV-2	316.5- 318.5	13	1	
TOMS#5 312.5	UV-2	311.5- 313.5	13	1	Also in UV-1
TOMS#6 308.6	UV-2	307.5-309.5	6	1	Also in UV-1

**Table 4.** Product bands in VIS.

Product name	Channel	Band [nm]	# of pixels	Class	Comments
NO <sub>2</sub> column	VIS	425 - 450	119	1	
Cloud Top Pressure	VIS	470 - 485	72	1	O <sub>2</sub> -O <sub>2</sub> collision complex
O <sub>3</sub> column DOAS VIS	VIS	450 - 500	238	2	
O <sub>3</sub> Profile	VIS	350 - 500		3	Continues in UV-1 and UV-2
Aerosol	VIS	350 - 400		3	Continues in UV-2
OCIO column DOAS	VIS	357 - 381	114	2	Also in UV-2 Priority 'B' Product
Surface Reflectance	VIS	350 - 500		3	Continues in UV-2
Surface UV-B & spectra	VIS	350 - 400		3	Continues in UV-1 and UV-2
TOMS#1 360 nm	VIS	359 - 361	9	1	Also in UV-2