File Revision Date:
February 4, 2019

Data set description:

PI:	C. Brogniez
Instrument:	UV SPECTRORADIOMETER (BENTHAM DTMc300)
Site:	Observatoire de Haute Provence, France (43.94N, 5.70E, 686 m), January 2009
Local horizon:	totally free, mountainous country
Local environment:	rural

Measurement Quantity :

Global spectral irradiance on a horizontal surface (cosine weighted) in the 280-450 nm range (or 290-400 nm) , wavelength step = 0.5 nm. Scans taken each half hour (or every 15 min) from sunrise to sunset.

The data summaries on the NDACC database include the following :

1. 290-450 nm integral
2. UVA, 315-400 nm
3. UVB, 290-315 nm
4. Erythemal UV
5. Derived total Ozone column
6. Relative uncertainty of retrieved Ozone

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Few reference articles:

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Buchard, V., C. Brogniez, F. Auriol, B. Bonnel, J. Lenoble, A. Tanskanen, B. Bojkov, and P. Veefkind, Comparison of OMI ozone and UV irradiance data with ground-based measurements at two French sites, Atmos. Chem. Phys., 8, 4517-4528, 2008.

Brogniez, C., F. Auriol, C. Deroo, A. Arola, J. KujanpŠŠ, B. Sauvage, N. Kalakoski, M. R. A. PitkŠnen, M. Catalfamo, J.-M. Metzger, G. Tournois, and P. Da Conceicao, Validation of satellite-based noontime UVI with NDACC ground-based instruments: influence of topography, environment and satellite overpass time, Atmos. Chem. Phys., 16, 15049-15074, doi:10.5194/acp-16-15049-2016, 2016.

Instrument description:

Double monochromator Bentham DTMc300 - 2400 gr/mm
Cosine response error: < 5% for angles < 82¡
Wavelength range:

Before 9 september 2010: Wavelength range : 290-400 nm
After 9 september 2010: Wavelength range : 280-450 nm

Resolution : 0.5nm
Wavelength alignment: After correction the shift is generally less than 0.04 nm, and up to 0.06 nm towards 420 n (according to QASUME 2010)

Slit function: 3. 10-4 at 1.25 nm from line center and 1. 10-5 at 3 nm
Sampling step: 0.5 nm
Saturation threshold: 1.7 W/m2/nm
Detection threshold: 10-6 W/m2/nm
Scan duration: 5-6 min
Overall calibration accuracy: Expanded relative uncertainty:
For two solar zenith angles and for a coverage factor k=2:
SZA = 30¡: 5.0% at 310 nm and 4.5% at 400 nm
SZA = 60¡: 6.1% at 310 nm and 5.0% at 400 nm
Stray light: 10-6 W/m2/nm
Stabilized temperature: 22¡C
Scan date and time: time is not recorded at each wavelength
Before 9 september 2010: Global irradiance scan frequency: 30 min (every hour and half hour)
Diffuse irradiance scan frequency: 30 min (fifteen minutes after and before each full hour)
After 9 september 2010: Global irradiance scan frequency: 15 min

Weekly cleaning of the diffuser. Since 2016: Monthly cleaning.

Algorithm description:
Calibration: every three months with a 1000 W standard lamp traceable to NIST. Twice a year calibration also performed with a second 1000 W lamp. Each time scans of a mercury lamp.
The two 1000 W lamps have been re-calibrated at WRC, DAVOS, in July 2012.
A NDACC inter comparison campaign held in July 2014 in Hannover, confirmed this new calibration. All the data have been reprocessed.
Wavelength calibration: alignment against Fraunhofer lines performed with an algorithm developed at LOA (Houet, 2003) and improved during a QASUME campaign held at OHP in September 2010.
Spectra are corrected for the instrument's cosine error.
Since 2016 calibrations are performed twice a year with 3 lamps

Ozone retrieval:
Mean of total ozone values from various irradiance ratios of two wavelengths (HouÃ«t, M. and C. Brogniez, 2004, Stamnes et al., 1991).
The dispersion around the mean gives an estimate of the uncertainty.
Only ozone values with a relative dispersion lower than 3% are reported since a larger relative dispersion indicates a variable
cloudiness during the scan and thus, possibly, a less reliable ozone value (Brogniez et al. 2005).

Instrument history:
The Bentham spectroradiometer working at OHP began routine measurements in 2009.
Slit function (HeCd laser line) and angular response of the diffuser were measured during QASUME 2010.

Periods for which there are no data :

15 October 2011 - 28 February 2012 :	Renovation of the building
11 February 2014 - 9 April 2014 :	Bundle damaged
14 October 2015 Đ 24 February 2016:	Repair of the bundle that had been damaged