Description of Version 2 Data Format NSF UV Monitoring Network: Full-Resolution Spectra

Full resolution spectra are compressed into zip-files.

Filename of zip files: SITE_vX.2_sB_YEAR_JDFFF-LLL.zip

where SITE is MCM for McMurdo Station, Antarctica
PAL for Palmer Station, Antarctica
SPO for South Pole, Antarctica
USH for Ushuaia, Argentina
SAN for San Diego, California
BAR for Barrow, Alaska
SUM for Summit, Greenland
X is volume identifier (1, 2, 3, …)
.2 is identifier for Version 2
s is site identifier (A=McMurdo; B=Palmer; C=South Pole; D=Ushuaia; E=San Diego; F=Barrow; J=Summit)
YEAR is year identifier (e.g., 1999, 2000, 2001, ...)
FFF is identifier of first Day of Year that is zipped
LLL is identifier of last Day of Year that is zipped

Filenames of spectra compressed in zip-file: sByyhhmm.jjj

where s is site identifier (A=McMurdo; B=Palmer; C=South Pole; D=Ushuaia; E=San Diego; F=Barrow; J=Summit)
B is indicator for Version 2 data
yy is year when spectrum was recorded (99=1999; 00=2000; 01=2001, ...)
hh is hour in UT when spectrum was recorded
mm is minute at start of spectrum
jjj is Day of Year

Data files include measured and modeled spectra, and additional parameters. Data are comma-separated and files do not have a header.

Column Assignment

Column	Description	Unit	Remark
1	Wavelength	nm	
2	Measured, cosine-corrected global spectral irradiance	μW / (cm^2 nm)	
3	1/(cosine correction) (The product of columns 2 and 3 are cosine-uncorrected measurements)		
4	Modeled clear-sky global spectral irradiance	μW / (cm^2 nm)	
5	Contribution of the direct beam to the modeled clear sky irradiance (0 means that all incoming radiation is diffuse; 100 means that all incoming radiation is direct)	%	
6	Modeled global spectral irradiance considering clouds	μW / (cm2 nm)	1
7	Contribution of the direct beam to the modeled "cloud" irradiance	%	
8	Time	Universal Time (UT)	

		hours . fraction of hours	
9	Solar zenith angle	degree	2
10	Solar azimuth angle	degree	
11	Azimuth-error-corrected TSI measurement	Volt	3
12	1/(TSI cosine correction) (The product of columns 11 and 12 are azimuth-uncorrected TSI measurements)		

Remarks

1 - Input parameters for "cloud model" spectra are based climatological values and are therefore less accurate than clear-sky model spectra (column 3). Cloud optical depth used for modeling is estimated by comparing measured spectral irradiance at 450 nm with the associated clear-sky model value. Ozone is set to a constant value of 300 DU. No model values are therefore given for wavelengths below 340 nm. "Cloud model" spectra do not take the sphericity of the Earth into account. Model spectra for solar zenith angles larger than 75° may underestimate the true spectrum significantly.

2 - Solar zenith is the true solar zenith angle, i.e., the angle between the zenith and the Sun if the Earth had no atmosphere. Due to refraction of the Earth's atmosphere, the Sun appears to an observer, who is standing at the surface of the Earth, at a smaller angle.

3 - TSI stands for "Total Scene Irradiance" and refers to a filtered photodiode that is integral to the SUV-100 spectroradiometer. The sensor is sensitive between 330 and 380 nm. Measurements of the sensor can be used to estimate the variation of radiation levels (for example due to changing cloud cover) during the period of a spectral scan.