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Measurements of global UV irradiance at Terranova Bay, Antactica, by a home made narrow band filter radiometer

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Filter radiometers measure the solar radiation in several channels (typically 4 to 7) with a bandwith from 2 to 10 nm. They require less maintenance than the spectroradiometer and they are able to work in hostile environment as for instance the polar regions. The spectral resolution depends on the width at half maximum (FWHM) of the filters and is generally lower than the spectroradiometer resolution (0.5 nm). Other than the robustness of this instruments, the main advantage of the filter radiometers is the high frequency with which all wavelengths can be measured, making this class of instrument well suited for investigating short term irradiance variation.
In this work is presented the results of UV irradiance measurements performed by a very narrow band (FWHM less than 1 nm) filter radiometer at Antarctica Italia Base, Mario Zucchelli Station, Terranova Bay, lat. 74° 41.6084' south and lon. 164° 05.9224' est. All-dielectric Fabry-Perot filters were manufactured in the laboratories of the Optical Coating Group, ENEA, by the ion beam assistance physical vapor deposition technique. Nine filters select nine different wavelengths in the UV spectral range from 296.5 nm to 377 nm with about 1 minute of measurement period, i.e. each wavelength is measured about 1250 times per day.
At the moment the radiometer are permanently located near MZS and the data are daily downloaded in ENEA, Rome, by a dedicated satellite channel. During the Antarctica winter the radiometer will be in standby mode, in this season MZS is closed, and it will be start to measure again in the Antarctica spring.