IRS2012-280
International Radiation Symposium 2012
Dahlem Cube, Berlin, Germany, 06 – 10 August 2012

Solar ultraviolet measurements in Aosta (Italy): an analysis of short- and middle-term spectral variability

H. Diémoz (1,2) and A. M. Siani (2)

(1) ARPA Valle d'Aosta, Solar and Atmospheric Monitoring Department, Aosta, Italy (h.diemoz@arpa.vda.it), (2) Sapienza University of Rome, Physics Department, Rome, Italy (annamaria.siani@uniroma1.it)

A high-quality series of ground-based solar ultraviolet (UV) measurements has been recorded since 2007 at the Environmental Protection Agency of Aosta Valley (Alpine Region, Northern Italy). A double-monochromator Bentham DTM300 spectroradiometer, equipped with a nearly-perfect cosine response diffuser, has been used to measure global irradiance spectra in the range 290-500 nm, on a 15-minutes basis. Comparisons against QASUME show average differences within few percents (2% in 2007, 0% in 2009 and 0.5% in 2011).

Although the recorded series is not long enough to detect any trend, the short- and middle-term spectral responses of solar UV radiation to atmospheric and environmental variability (ozone, cloud cover, aerosols, albedo, minor trace gases) were analyzed using multivariate techniques. The discrepancies with a radiative transfer model (libRadtran) were examined and discussed. Furthermore, a comparison between ground-based measurements and satellite (OMI) estimates was performed to investigate the influence of local effects on UV satellite products.