QOS2016-43, 2016
Quadrennial Ozone Symposium of the International Ozone Commission

Long-term trends (1979-2015) in surface UV radiation based on the homogenized series of the broadband UV measurements at the Polish Polar Station Hornsund, (77° 00' N, 15° 33' E)

P. S. Sobolewski and J. W. Krzyścin
Institute of Geophysics PAS, Physics of Atmosphere, Poland (piotrs@igf.edu.pl)

The erythemal UV measurements at Hornsund were carried since 1996 up to 2001 by the Solar Light biometer and since 2005 up to now by the Kipp and Zonen biometer. To account for possible instruments' aging the UV data have been homogenized by a comparison of the observed erythemal dose rates taken during clear-sky days in spring with the hypothetical ones based on the radiative model simulations. The following input data were used for the calculation of correction factor: daily values of total ozone (from NOAA satellite observations), aerosol optical depth (from ground based observations by the CIMEL instrument), and prescribed seasonal values of snow albedo (monotonically decreasing values between 0.6 in early spring up to 0.3 in the mid June). The trend analysis of the monthly means of UV Index and the monthly mean daily doses for the period 1996-2015 shows statistically significant positive trends (about 1-2% per year) in the UV index in July, August and September whereas the negative trends in the daily doses (about –1% per year) are found in May, June and July. The maximum UV index and daily dose reached ∼3.5 and ∼3000 J/m2 in late spring for the period 1996-2015, respectively. UV index over 3 was found a few times every year in that period.