

# **Effect of clouds on spectral UV irradiance at the high-mountain observatory Sonnblick (3106 m) in Austria**

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This study serves to investigate the effect of clouds on spectral UV irradiance at the high-mountain observatory Sonnblick (47.03 N, 12.57 E, 3106 m) in Austria. Spectral UV radiation in presence of clouds measured with Bentham DM 150 spectrometer and cloud observations are presented. Ratios of measured UV intensities and modelled clear sky values (cloud modification factor) for the actual zenith angle and ozone amount are used to analyse the dependence of some defined UVB and UVA wavelength intervals on cloud amount. 9390 spectral UV measurements are evaluated. The study provides dependences of the cloud modification factor on total cloud amount, cloud type, wavelength, solar zenith angle and ground albedo.

In addition to snowcover, clouds below the observatory play an important role for UV radiation at the Sonnblick station. They are responsible for increased albedo, because clouds reflect a certain amount of the incoming radiation and therefore enhance the albedo. Model calculations show that average albedo is increased by  $0.28 \pm 0.15$  due to 4/8 cloud cover or more below the top of the mountain. The spectral dependency of UV radiation enhancements due to clouds will be shown.