



## **UV radiation in the past: Reconstruction and long-term changes in Austria**

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The impact of climate change on UV radiation in Austria is of special relevance as increased UV exposure in the higher regions may lead to higher incident rates of malignant melanoma. Series of daily erythemal UV-dose are reconstructed for the last 30 years of the 20th century at nine locations in Austria. The changes of UV radiation during this period with respect to observed changes in total ozone, cloud regimes, solid precipitation and aerosols are discussed. The chosen stations are representative for urban, rural and high alpine areas. Covering all parts of Austria, the calculated data of this extent and quality are a unique source, in particular for the application in the health risks sector.

The reconstruction method is based on the comparison of existing long-term global radiation measurements and measurements of erythemal UV dose. The latter are taken from the Austrian UV-biometer network consisting of 13 measurement stations in Austria, with measurements available since 1998. Other input data used for the reconstruction model are clear-sky global and UV-irradiance, calculated with radiative transfer models from the libRadtran library and the input parameters albedo and ozone. The former is being estimated with a simple regression model with snow depth as a predictor for each station.

Through comparison with different data sources and available metadata, efforts are made to assure high data quality for all input parameters. First results for reconstructed daily sums show high correlations (0.95-0.97) with observed values compared on a yearly basis throughout the overlapping period. Mean bias deviation has only slightly negative values at all nine stations. Assessed from the reconstructed time series, variability of erythemal UV-dose for the chosen time period is quantified. Special emphasis is put on the investigation of the changes in UV due to observed trends in cloud and snow cover in alpine regions during the last decades.