



Investigation of the three-dimensional actinic flux field in mountainous terrain

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Spectrally resolved high quality actinic flux measurements between 290 nm and 500 nm have been performed in complex Alpine terrain under clear sky conditions. A three-dimensional Monte Carlo radiative transfer model was adapted for actinic flux calculations in mountainous terrain. This model is used to study the impact of topography and surface albedo on surface spectral actinic flux and no₂- and o₃-photolysis rates. This approach leads to surface maps of actinic flux and photolysis rates. The typical high spatial variability due to altitude, snow cover and shading affects is very well reproduced in the model. By running the model in three modes (realistic, without topography, with albedo zero) one gets a good estimation of the impact of topography and surface albedo.