



Long-term AOD timeseries by Precision Filter Radiometer and assessment of radiative forcing due to the aerosol direct effect at four sites in Switzerland over the last two decades.

Giovanni Martucci and Laurent Vuilleumier

MeteoSwiss, Remote Sensing, Payerne, Switzerland (giovanni.martucci@meteoswiss.ch)

In association with the WMO GAW Precision Filter Radiometer network, MeteoSwiss operates four automatic stations measuring the direct solar irradiance in 16 narrow spectral bands within the range 305-1024 nm since 1998.

The four sites are (i) Payerne (timeseries 2002-2016), characterized by rural environment (Swiss plateau), (ii) Davos (timeseries 1998-2016), characterized by alpine environment, (iii) Jungfrauoch (timeseries 1999-2016), characterized by alpine environment and partial free tropospheric conditions (mainly in winter, Hermann et al, 2015), and (iv) Locarno-Monti (timeseries 2001-2016), characterized by semi-alpine and urban environment (southern side of the Swiss-Italian Alps). WE present the long-term, almost uninterrupted, timeseries of Aerosol Optical Depth (AOD) in the spectral range 368-1024 nm that has been calculated for each of the four sites along the last two decades.

Additionally, we present a study of the trends over almost twenty years of the AOD at different wavelengths. Based on the simulations of the LibRadtran software package for radiative transfer calculations (Meyer and Kylling, 2005) and on the PFR-based timeseries of AOD it has been possible to assess the radiative forcing due to the direct effect of aerosols over Switzerland since 1998.