



A climate quality aerosol data set, algorithms and validation

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Tropospheric aerosol particles form a major uncertainty in predicting climate change due to three main mechanisms. First there is the direct radiative forcing effect of the aerosols which occurs when radiation is scattered or absorbed by the aerosols. Next we have indirect radiative forcing which has its origin in the influence of the aerosols on cloud microphysics. And last, the presence of aerosols can modify the concentration of climate-influencing constituents such as greenhouse gases through heterogeneous chemistry. Global observations from space are required due to short lifetime and a high spatial variability in aerosol optical and radiative properties.

In the autumn of 2012 the Climate Monitoring SAF (CM SAF) will release an aerosol product for which the RMIB is responsible. This will be a retroactively produced data set with two main components covering the whole MSG period. The first component is the aerosol optical depth (AOD) which is based on the visible and near-infrared SEVIRI channels (multichannel imager aboard the Meteosat Second Generation satellite). It is given at the spatial and temporal resolution of the channels it is based on. Monthly mean with and without diurnal cycle are also provided. The second component is the direct radiative forcing by the aerosols. It is constructed by combining the AOD product with the data from the Geostationary Earth Radiation Budget (GERB) instrument. For both data sets we present the underlying method and validation results.