



Retrieval of aerosol optical depth over land using MSG/SEVIRI data

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In the present study we proposed an algorithm to estimate hourly Aerosol Optical Depth (AOD) using multi-temporal data from SEVIRI aboard Meteosat Second Generation (MSG). The algorithm coupled a Radiative Transfer Model with Ross-Li-sparse bidirectional reflectance factor (BRF) to calculate the AOD and bidirectional reflectance simultaneously using the visible and near-infrared (NIR) channel of SEVIRI data. We assume the surface albedo doesn't vary over a short time (e.g. 1 day), and a κ -ratio approach was used which assumes the ratio of surface reflectance in the visible and NIR channel for two observations is the same. In the inversion, the MODIS product (MCD43) was used as the prior information of the surface reflectance and the single scattering albedo (SSA) and asymmetry factor (g) were derived from six pre-defined aerosol types. The retrieved AOD and Angström exponent α were compared with Aerosol Robotic Network (AERONET) measurements, which shows good consistency.