



Comparison of satellite derived AOD values with PFR measurements in Sodankylä and Jokioinen

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When the reflectance of the ground is evaluated from satellite measurements, it is extremely important to know the contribution of atmosphere, since the satellite measures the backscattered radiance from the surface-atmosphere system. Attenuation of radiation in the atmosphere deteriorates the quality of satellite images of land surfaces, thus the effect of atmosphere has to be removed from the data. The effect of aerosols is especially challenging to estimate due to their large spatial and temporal variability. Aerosol optical depth (AOD) is a quantity which describes the amount of total aerosol attenuation (scattering and absorption).

In this study AOD values calculated from the Moderate Resolution Imaging Spectroradiometer (MODIS) measurements are compared with AOD values measured with a ground-based Precision Filter Radiometers (PFR) located in Sodankylä and Jokioinen. Comparisons are done over a long time-period and in a wide range of weather conditions. The Cloud-Aerosol Lidar with Orthogonal Polarization (CALIOP) on board CALIPSO satellite, launched April 28th 2006, has the advantage of not being sensitive to surface reflectance. Therefore AOD values, integrated from CALIOP-measured vertical profiles, are also included in the comparison.