



Characterization of the aerosol type using simultaneous measurements of the lidar ratio and the single scattering albedo during EARLINET (2001-2004)

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Lidar measurements of the vertical distribution of the aerosol extinction coefficient and the extinction-to-backscatter ratio have been performed at Thessaloniki, Greece using a Raman lidar system in the frame of EARLINET for the period 2001-2004. A collocated double monochromator Brewer spectroradiometer provided measurements of spectral UV irradiance, total ozone and aerosol optical depth (AOD), semi-synchronous to lidar measurements. The retrieval of single scattering albedo (SSA), employed the Brewer global irradiance measurements and radiative transfer (RT) modeling. We used LibRadtran 0.99 package and UVSPEC DISORT version. For the estimation of SSA, we adopted a look-up table approach, in which the values global irradiance at 350 nm were tabulated as a function of the variable input parameters (SZA, SSA and AOD). From the available measurements several cases could be identified allowing to investigate how different types of absorbing aerosols affect solar UV irradiance at the Earth's surface. It is shown that the combined use of the estimated single scattering albedo and the measured extinction-to-backscatter ratio leads to a better characterization of the aerosol type detected with both measuring systems.