



Aerosol classification using EARLINET measurements for an intensive observational period

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ACTRIS (Aerosols, Clouds and Trace gases Research Infrastructure Network) organized an intensive observation period during summer 2012. This campaign aimed at the provision of advanced observations of physical and chemical aerosol properties, at the delivery of information about the 3D distribution of European atmospheric aerosols, and at the monitoring of Saharan dust intrusions events. EARLINET (European Aerosol Research Lidar Network) participated in the ACTRIS campaign through the addition of measurements according to the EARLINET schedule as well as daily lidar-profiling measurements around sunset by 11 selected lidar stations for the period from 8 June - 17 July.

EARLINET observations during this almost two-month period are used to characterize the optical properties and vertical distribution of long-range transported aerosol over the broader area of Mediterranean basin. The lidar measurements of aerosol intensive parameters (lidar ratio, depolarization, Angstrom exponents) are shown to vary with location and aerosol type. A methodology based on EARLINET observations of frequently observed aerosol types is used to classify aerosols into seven separate types.

The summertime Mediterranean basin is prone to African dust aerosols. Two major dust events were studied. The first episode occurred from the 18 to 21 of the June and the second one lasted from 28 June to 6 July. The lidar ratio within the dust layer was found to be wavelength independent with mean values of 58 ± 14 sr at 355 nm and 57 ± 11 sr at 532 nm. For the particle linear depolarization ratio, mean values of 0.27 ± 0.04 at 532 nm have been found.

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