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Air-mass Modification over Europe: Comparison of EARLINET Aerosol Observations in Northern and Southern Europe

Albert Ansmann (1), Ulla Wandinger (1), Matthias Tesche (1), Xuang Wang (2), Nicola Spinelli (2), Ferdinando De Tomasi (3), Maria Rita Perrone (3), Dimitris Balis (4), Vassilis Amiridis (4), Adolfo Comerón (5), Miguel Ángel López Márquez (5)

(1) Institute for Tropospheric Research, Leipzig, Germany.
(2) Dipartimento di Scienze Fisiche dell' Università Federico II di Napoli and INFM Unità di Napoli Complesso Universitario di Monte S. Angelo, Napoli, Italy.
(3) Dipartimento di Fisica, Università di Lecce, and INFM Unità di Lecce, Lecce, Italy.
(4) Laboratory of Atmospheric Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece.
(5) Universitat Politècnica de Catalunya (UPC), Dept. TSC, Barcelona, Spain.

Vertically resolved EARLINET observations of particle optical properties (optical depths, backscatter and extinction coefficients) of northern European aerosols (north of the Alps) were investigated as a function of air mass transport (Wandinger et al., JGR, 109, 2004JD005142, 2004). Special emphasis was put on clean maritime air masses that cross the European continent from the west and become increasingly polluted on their way into the continent. The study was based on observations at the EARLINET stations (Aberystwyth, Palaiseau, Hamburg, Munich, Leipzig, Belsk, and Minsk) and on backward trajectory analysis. Here, we extend the study to the impact of aerosol emissions on the particle optical properties in southern and southeastern Europe. We investigated the EARLINET observations taken at Barcelona, Spain, at Napoli and Lecce in southern Italy, and Thessaloniki in northern Greece and the respective airflows described by backward trajectories. The findings are compared with the ones for the northern European stations.