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Simultaneous lidar and sun photometer observations of aerosol characteristics during events of high aerosol concentration

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Mineral dust and biomass burning are significant components of global atmospheric aerosols. These particles could be transported over hundreds of kilometers from their sources. In this work, we analyzed the significant changes in atmospheric aerosol characteristics during the extreme aerosol outbreak event in the atmosphere of Kyiv in north-central Ukraine and Cyprus in the Eastern Mediterranean.
For both cases, ground-based observations of the sun photometer AERONET (Kyiv and Nicosia stations) and lidar measurements were used to study aerosol optical depth (AOD), Ångström exponent (AE), single scattering albedo, refractive index, size, and vertical distribution of aerosol particles. For localization of possible sources of mineral dust and biomass burning particles, back trajectories of air movements were calculated using the Hybrid Single-Particle Lagrangian Integrated Trajectory Model (HYSPLIT).

Keywords: aerosol, mineral dust, biomass burning, AERONET, lidar

References