



The European network of automatic lidars and ceilometers E-PROFILE: Validation through EARLINET/ACTRIS measurements and potential for satellite cal/val

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The developments of automatic lidars and ceilometers with profiling capabilities as well as advances in the calibration techniques related to such devices offer the opportunity of realising dense and continuously operating ground-based networks for the detection and quantification of aerosol layers and clouds. Such a network comprising 250 stations in Europe has recently been established in EUMETNET's E-PROFILE initiative. In contrast, in the network of European research lidars (EARLINET), more sophisticated and powerful instruments provide high-quality observations at typically three dates per week. Besides the high complementarity of both networks, EARLINET is also an ideal partner for the validation and investigation of the capacities of E-PROFILE.

This contribution shows a 1-year intercomparison of the routinely produced calibrated attenuated backscatter of three co-located research lidars and ceilometers depending on altitude range and observation conditions. Further, we investigate the observability of large-scale aerosol events (desert dust and biomass burning) by both networks. Finally, we illustrate the benefits of a dense continuously operating lidar and ceilometer network for satellite validations by presenting intercomparisons of aerosol layer heights from Sentinel-3 with E-PROFILE.