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Synergy between mobile-ground lidar and airborne measurements during EM25 experiment

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A field campaign (EM25) was conducted in London between 15 and 23 June 2009 in order to study the influence of emissions from within the London orbital motorway (M25) in terms of both aerosol and gaseous concentrations within the planetary boundary layer (PBL). The main instrumental set-up was distributed between two mobile platforms: the airborne platform FAAM (British Facility for Airborne Atmospheric Measurements, BAe 146) and a truck that was driven around the M25. FAAM was equipped to perform in situ measurements of aerosol scattering, size and composition properties and also ozone, nitrous oxides and carbon monoxide concentrations within the planetary boundary layer. The truck was equipped with an eye safe backscatter lidar emitted at 355 nm with two cross polarisations. The synergy between airborne and ground based measurements makes it possible to identify the origin of aerosol origin during this original experiment. Aged aerosol appears associated with a small depolarized ratio (some %) whereas younger aerosol showed a value significantly larger ($\sim$8%). Such difference is confirmed when analysing the airmass origin and the airborne measurements. Results on the synergy between airborne and ground measurements will be presented.