



Oxygenated organic aerosols: field and smog chamber measurements

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Two types of oxygenated organic aerosols (OOA I and OOA II) have recently been observed at urban locations in Europe and North America using the Aerodyne Mass Spectrometer (AMS). OOA I is characterised by a relatively high m/z 44 to total organic ratio and it has a mass spectral signature similar to that of fulvic acid (a model compound for humic-like substances, HULIS). It was also found to have a similar temporal behaviour to the sulphate component of the aerosols. On the other hand, OOA II is believed to be less aged than OOA I and it is characterised by a relatively high m/z 43 to total organic ratio and has a similar temporal behaviour to the nitrate component of the aerosol and it is also sensitive to ambient temperature (i.e. more volatile than OOA I). In this paper, we investigate the chemical composition of secondary organic aerosol (SOA) generated in a smog chamber from the photooxidation of the biogenic precursor (α -pinene) and compare it to the ambient spectra of OOA I and OOA II. In particular, we present results showing the effect of the initial precursor concentration on the mass spectral signature of the SOA produced and on its chemical and physical properties. Our findings suggest that the partitioning, in the smog chamber, is precursor concentration dependent.