

## Assessment of fossil and non-fossil primary and secondary organic aerosol

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A new approach of combining two in the last years developed measurement and data analysis techniques will be presented. The use of positive matrix factorization (PMF) of Aerodyne Aerosol mass spectrometer often allows the distinction of the contribution of biomass burning, hydrocarbon-like organic aerosol, and oxygenated organic aerosol (OOA) to organic mass (Lanz et al., 2007; Ulbrich et al., 2008). The hydrocarbon-like aerosol is interpreted to come from the combustion of fossil fuel (often mostly from traffic) and OOA is thought to consist of secondary organic aerosol which is supported by high correlations of OOA with ammonium sulfate and/or ammonium nitrate.

The measurements of <sup>14</sup>C/<sup>12</sup>C ratios in organic carbon (OC) allows the calculation of fossil and non-fossil contributions to (OC) (Szidat et al., 2004, 2008). The PMF results of the AMS data can be combined with the radiocarbon measurements to distinguish the fossil and non-fossil contributions to the carbon of both the primary and secondary organic carbon. Necessary assumptions include OM/OC ratios of biomass burning, hydrocarbon-like organic aerosol and secondary organic aerosol.

Results of such combined analyses will be presented at different sites in urban and rural areas as well as close to highways and Alpine valleys. Not all results are finalized yet but results so far suggest that in most cases, secondary organic aerosol is mostly non-fossil both in winter and summer in Switzerland. We will discuss uncertainties due to necessary assumptions.

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