

AMS aerosols characterization at Seiffen (Germany)

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Biomass burning aerosol characterization was performed at the village of Seiffen (Germany) during winter 2007-2008. The sampling place is located in a mountain area (640 m a.s.l.) at around 50km southwest of Dresden. The place is famous for its Christmas wood decoration production and wood combustion represents the most important source of domestic heating. During this campaign, an Aerodyne High Resolution Time of Flight Aerosol Mass Spectrometer (HR-ToF-AMS, DeCarlos *et al.*, 2006) was deployed from the 10th of January to the 2nd of February 2008 with a time resolution of 5 min.

Time series of the main aerosol components showed periods with high and low aerosol concentration (Figure 1). Mass fraction of the major aerosols components showed that aerosols are mainly made of organics > sulphate > nitrate > ammonium and chloride.

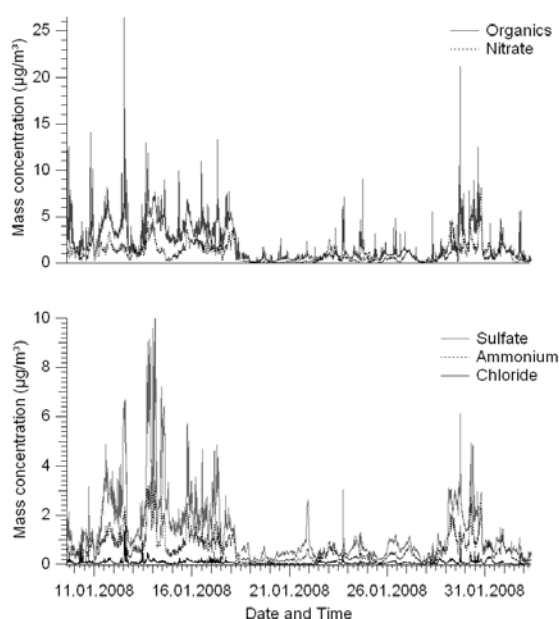


Figure 1: Time series of the main aerosol components.

In parallel to AMS, daily samples from a PM₁ high volume aerosol sampler (Digitel, Switzerland) were performed. From these samples, main anions were analysed by ion chromatography, PAH were analysed by Curie Point Pyrolysis Gas Chromatography Mass Spectrometry (CPP-GC-MS). Levoglucosan which is known to be an important

tracer of biomass burning particles was analysed by High Performance Anion Exchange Chromatography coupled to Pulse Amperometric Detector (HPAEC-PAD). Moreover, Biomass Burning Organic Aerosol (BBOA) and more specifically levoglucosan can also be detected by AMS as two specific fragments m/z 60 (C₂H₄O₂⁺) and m/z 73 (C₃H₅O₂⁺), (Schneider *et al.*, 2006). A similar ratio C₂H₄O₂⁺ to C₃H₅O₂⁺ from field and lab measurements of pure levoglucosan particles was obtained for most of time. This ratio validates that this two fragments are mainly coming from levoglucosan in our measurements. Comparisons between the different filters results (*i.e.* levoglucosan, PAH and potassium) and daily average AMS measurements showed a good agreements.

In addition, diurnal patterns of organics, BBOA, PAH and potassium showed similar time dependences: concentrations increase early in the morning and present maximum at the evening which is corresponding to the period of high heating activity in the village.

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