**Seasonal Differences in Chemical Composition of Atmospheric Aerosol Studied with High Resolution in Prague**

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# Seasonal differences in chemical composition of atmospheric aerosol studied with high resolution in Prague

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The compact-Time of Flight-Aerosol Mass Spectrometer (AMS) was used to describe seasonal differences in atmospheric aerosol at a Prague suburban site. The data were compared with measurements done with other instruments such as Sunset organic and elemental carbon analyzer, TSI Scanning Mobility Particle Sizer (SMPS), and results from ion chromatography, and with meteorological model.

In winter, we observed higher total concentration of NR-PM1 (non-refractory PM1) than in summer. Furthermore, the maxima of size distributions were higher in winter and during polluted episodes than in summer and during clean episodes. We discussed the influence of different seasonal sources, e.g. heating in winter. The daily cycles of the main AMS compounds were strongly inffluenced by the dilution effect of the mixing layer. The daily cycle of sulphate anion was influenced by the transport from the upper boundary layer, i.e. reservoir effect, and by the oxidation of $SO_2$ to $SO_4^{2-}$ (Fig.1).

A comparison of the organic fragments f43 and f44 [1] revealed less photochemically aged aerosol in winter compared to summer. Also, the winter aerosol was more influenced by biomass burning.

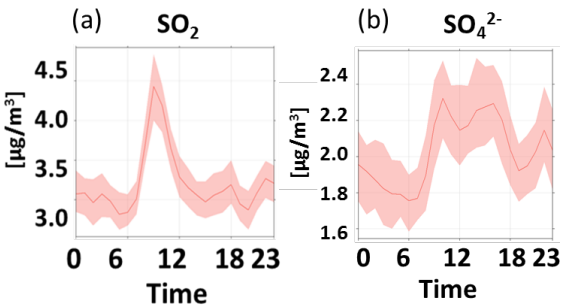


Fig.1: Daily cycle of (a) $SO_2$ and (b) sulfate anion in summer at a suburban measurement site Prague Suchdol.

[1] Ng *et al.* (2010) *Atmos. Chem. Phys.*, **10**, 4625–4641.
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