**Comparison of Summer and Winter Highly Time-Resolved Submicron Aerosol Composition Measured at a Suburban Site in Prague**

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2015

# Comparison of Summer and Winter Highly Time-Resolved Submicron Aerosol Composition Measured at a Suburban Site in Prague

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Atmospheric aerosols play an important role in many processes such as climate change, air quality degradation, and decrease of visibility. To understand their impact in detail it is important to have a description of their properties such as mass composition and size distribution.[1] The compact-Time of Flight-Aerosol Mass Spectrometer (c-ToF-AMS) is a modern scientific instrument that provides us with such descriptions with high time-resolution.[2]

We analyzed c-ToF-AMS data from a summer (20. 6.–31. 7. 2012) and winter (8. 1.–19. 2. 2013) measurement campaign at a suburban site Prague-Suchdol. The observed chemical composition with dominating organics in both seasons was in accordance with previous measurements at this site.[3] The modal diameter of size distribution occurred at higher values during episodes of increased total concentration and decreased temperature. Furthermore, we compared the AMS data with organic carbon elemental carbon field analyzer (OC/EC) measurement. This comparison together with analysis of particular organic fragments revealed that winter aerosol was less oxidized and more influenced by biomass burning. Such characteristics point to an influence of local domestic heating in winter.

The daily cycles of the main species were influenced mainly by two factors. First, the dilution effect caused by the boundary layer height and second, photochemical reactions leading to the formation of secondary aerosol. To assess the influence of the backward air mass trajectories, the trajectories were divided into clusters according to their shape and origin. In winter, maritime air masses were connected to generally lower concentrations of aerosol with an increased share of nitrate and decreased share of organics. On the contrary, arrival of winter continental air masses coincided with atmospheric aerosol with an increased share of organics and sulphate.

*Acknowledgement*

The authors of this work gratefully appreciate financial support by the Czech Science Foundation under project No. CSF P209/11/1342.

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