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Formation and Transformation of Atmospheric Aerosol in Atmospheric Boundary Layer

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Atmospheric aerosols are natural components of the atmosphere but they are also produced by the anthropogenic activity. Their presence in the atmosphere has influence on radiation balance, clouds and precipitation formation, and visibility. Therefore the study of the aerosol formation, their behavior and composition is very important. Especially for climate change research, detailed knowledge about the influence of aerosols on the state of the atmosphere is necessary. Although aerosols are able to absorb and/or scatter radiation, they have generally cooling effect on the atmosphere.^{1,2,3}

The aim of this work is to study the formation of new atmospheric aerosol particles and their transformations in the planetary boundary layer. The experimental data will be measured at the Collocated station Košetice – Křešín u Pacova. The station consists of a 250 m tall atmospheric tower, and professional meteorological and air-quality station. By measuring aerosol properties both on the tower and at the ground using advanced aerosol instrumentation, the atmospheric aerosol concentration fluxes will be assessed, and the changes in physical and chemical properties of the aerosol in the boundary layer will be characterized.

The station is a core of the research infrastructure ACTRIS-CZ run by the Czech Hydrometeorological Institute (CHMI) in close cooperation with Global Change Research Institute (GCRI), Research Centre for Toxic Compounds in the Environment (RECETOX) and Institute of Chemical Process Fundamentals (ICPF). CHMI provides a professional meteorological and air quality station operated since 1988, GCRI offers its 250 m tall Atmospheric tower yielding vertical profiles of meteorological parameters and greenhouse gases, RECETOX adds its expertise on persistent organic pollutants, and ICPF takes care of the aerosol component.



References

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3. Pöschl, U.; *Atmospheric aerosols: composition, transformation, climate and health effects*; *Angewandte Chemie International Edition*; 44, 7520–7540, 2005.

