

Tropospheric Aerosols

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While EU air quality policy has generally been quite successful and has resulted in significant reductions in concentrations of various harmful air pollutants, exceedances of limit values for fine particles are still encountered in many areas across the whole EU territory. Aerosol particles are either directly emitted from natural and anthropogenic sources or secondarily formed in the atmosphere. Sea salt spray, dust storms, and volcanic eruptions belong to the natural sources of tropospheric aerosols. Typical anthropogenic sources are soot emissions from diesel engines as well as emissions from industrial and agricultural activities. Secondary aerosols form from gas-to-particle conversions of NH_3 , HNO_3 , H_2SO_4 and products of the atmospheric oxidation of low volatile organic compounds. Evidence from epidemiological and toxicological studies suggests that tropospheric particulate matter has adverse health effects and induces respiratory or cardiovascular diseases at current exposure levels of many urban areas across Europe. To date, it is well-known that not only the particle mass concentration and their chemical composition determine the health effects of tropospheric aerosols, but that the particle number concentration, particle size and the particle surface concentration are equally relevant. Therefore, an advanced metric to assess the health effect of ambient particles - beyond the simple mass concentration - is needed in order to make reduction targets more effective. Apart from their importance for air quality and health, tropospheric aerosols have also an effect on the Earth's radiation balance and thus on climate. Aerosol particles influence the radiation budget directly by scattering and absorbing incoming solar and terrestrial radiation. In addition, aerosol particles act as cloud condensation nuclei and thereby indirectly influence the Earth's radiation budget by altering cloud scattering processes. Overall, aerosols still represent one of the largest uncertainties in climate modelling. This expert forum provides a framework for interdisciplinary scientific exchange and intends to promote international cooperation. It therefore addresses not only researchers but also programme managers and administrative stakeholders. The meeting focuses on the following topics: - Particle Formation and multiphase chemistry - Insight from recent field studies - State of the art in regional Dispersion modelling - Health effects of urban particles and regulatory issues

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