



Fog processing of polycyclic aromatic hydrocarbons (PAH)

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Polyaromatic hydrocarbons (PAHs) are a class of organic species of concern for environmental and human health. The present work will present initial finding of a comprehensive study on the fate of PAHs in multiphase fog/cloud systems and across consecutive fog/smog cycles.

Field observations were conducted in Fresno, CA in Winter 2010. Simultaneous measurements of gas phase, aerosol and fog PAH allowed to gain insights on the partitioning of PAH in a multiphase fog system. Partitioning results as well as temporal evolution of PAH concentrations across different phases will be discussed. Select known degradation products (oxy-PAH) from the processing of PAHs were also analyzed in the fog systems, although frequently their concentrations were close to or below detection limits, even in the polluted urban study setting.

The field observations are complemented by laboratory investigations on the reactivity of PAH in fog systems, both heterogeneously and in the aqueous phase. Heterogeneously a novel reactor design is being tested to simulate fog systems and allow for repeat fog/smog cycles. A separate series of measurements investigated the processing of PAH in the aqueous phase in a solar simulator set-up.