



## **The importance of aerosol water for air pollution effects on weather and climate**

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Aerosol water can affect weather and climate through alterations of the Earth's radiation budget. In turn, aerosol water is affected by air pollution and depends on thermodynamics. Anthropogenic emissions can be directly linked to visibility reduction, cloud formation and climate forcing, if aerosol water mass is explicitly accounted for. Under ambient conditions the equilibrium relative humidity (ERH) determines the saturation molality, solute and solvent activities and the aerosol water mass, since the water content is fixed by ERH for a given aerosol concentration and type. As a consequence, aerosol water drives the gas/liquid/solid aerosol partitioning, ambient aerosol size-distributions and directly links aerosol hygroscopic growth into fog, haze and cloud formation.

Metzger, S. and J. Lelieveld, Reformulating atmospheric aerosol thermodynamics and hygroscopic growth into fog, haze and clouds, *Atmos. Chem. Phys.*, 7, 3163-3193, <http://www.atmos-chem-phys.net/7/3163/2007/acp-7-3163-2007.html>, 2007.