

Towards quantitative mixing state measurements: The Sacramento case study

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Until recently, aerosol mixing state has been a qualitative term. The development of a new mixing state parameterization based on entropy metrics has recently been introduced that provides a quantitative definition of aerosol mixing state. This new parameterization has been applied to particles sampled in Sacramento, CA during the carbonaceous aerosols and radiative effects study (CARES). Mass estimates of inorganic species were derived from computer controlled scanning electron microscopy coupled with energy dispersive X-ray spectroscopy (CCSEM/EDX) and the carbonaceous mixing state was derived using scanning transmission X-ray microscopy coupled with near edge absorption fine structure spectroscopy (STXM/NEXAFS). The mixing state indices provided by these techniques yield insights in to the chemical and physical processes that drive mixing state. Additionally, these measurements provide constraints for models of individual particle composition.