

ESTIMATION OF THE SCATTERING PHASE FUNCTION OF AEROSOL PARTICLES BASED ON MOBILITY SIZE DISTRIBUTION AND SINGLE SCATTERING ALBEDO OR ABSORPTION COEFFICIENT

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ABSTRACT. Accurate measurements of absorption and scattering coefficients of atmospheric aerosols and combustion generated particulates are essential to assess their climate impact. Measurements of total scattering coefficient using an integrating nephelometer unavoidably suffer the so-called scattering truncation. Correction for scattering truncation is necessary to improve the measurement accuracy of scattering coefficient and requires the knowledge of scattering phase function. A model is proposed in this work to estimate the imaginary part of refractive index and scattering phase function of atmospheric aerosol and freshly emitted soot. The former is based on the measured mobility size distribution and single scattering albedo and the latter is based on the measured mobility size distribution, single scattering albedo, and absorption coefficient. The main assumption made in the model is that the real part of refractive index of both atmospheric aerosol and soot is known. Application of the model to both atmospheric aerosol and soot is demonstrated.

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