

Abstract Submitted
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Determination of Particle Shape Distributions of Mineral Dust Aerosols Using Spectroscopic and Light Scattering Measurements BRIAN MELAND, University of Iowa, PAULA HUDSON, California State University, Fullerton, VICKI GRASSIAN, MARK YOUNG, PAUL KLEIBER, University of Iowa — Atmospheric aerosol play a significant role in the Earth's atmosphere through scattering and absorption of incoming solar radiation as well as outgoing IR terrestrial radiation. Optical remote sensing techniques are often used to estimate aerosol loading, composition, and size distributions. However, these techniques are dependent on an accurate knowledge of the optical properties of the aerosol, which are dependent on the aerosol composition and particle shape. In this work we measure the light scattering phase functions, linear polarizations, and the IR absorption of atmospherically relevant mineral dust aerosol. We explore the possibility of using IR spectral line profiles to infer mineral aerosol particle shape distributions which can then be used in T-Matrix calculations of the phase function and polarization of the scattered light. This has allowed for better agreement with the experimentally measured scattering than was obtained using a more limited range of particle shapes. This research aims to reduce uncertainties in remote sensing measurements by allowing for an independent check of particle shapes.

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