

Abstract Submitted
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Optical Properties of Fresh Biomass Burning Aerosols: A comparison of experimental measurements and T-Matrix Method Calculations¹ SAMIN POUDEL, SOLOMON BILILIGN, DAMON SMITH, MARC FIDDLER, K.M FLURCHICK, North Carolina AT State University — Due to their abundance the absorption properties of airborne soot aerosols from biomass burning (BB) may influence directly the atmospheric visibility as well as local and global climate. A major issue with soot particles is that they cannot be considered as spherical and thus, ‘conventional’ scattering theories such as the Mie theory results cannot be compared with the experimental measurements. An adequate numerical treatment is possible with the T-matrix method. We measured the extinction and scattering cross sections of fresh BB aerosols experimentally in our lab. TEM images of filter samples revealed the shape and morphology of the soot particles. Assuming that the particles can be approximated by spheroids, T-matrix method can be used. This is a suitable numerical tool, since it is an exact method based on a solution of Maxwell’s equations. We used the FORTRAN code provided by Mishchenko and Travis and calculated the absorption, and scattering cross sections of soot. We present preliminary results comparing the measured and calculated values at selected wavelengths of light.

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