



## A new method for deriving aerosol solar radiative forcing and its first application within MILAGRO/INTEX-B

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We introduce a method for deriving aerosol spectral radiative forcing along with single scattering albedo, asymmetry parameter, and surface albedo from airborne vertical profile measurements of shortwave spectral irradiance and spectral aerosol optical thickness. The new method complements the traditional, direct measurement of aerosol radiative forcing efficiency from horizontal flight legs below gradients of aerosol optical thickness, and is particularly useful over heterogeneous land surfaces and for homogeneous aerosol layers where the horizontal gradient method is impractical. Using data collected by the Solar Spectral Flux Radiometer (SSFR) and the Ames Airborne Tracking Sunphotometer (AATS-14) during the MILAGRO (Megacity Initiative: Local and Global Research Observations) experiment, we validate an over-ocean spectral aerosol forcing efficiency from the new method by comparing with the traditional method. Retrieved over-land aerosol optical properties are compared with in-situ measurements and AERONET retrievals. The spectral forcing efficiencies over ocean and land are remarkably similar and agree with results from other field experiments.

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