

Aerosol Absorption and Scattering in Mexico City

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Aerosol optical properties are fundamental to establish the effects of aerosols on the planetary radiative balance and therefore to estimate aerosol effects on climate. A fundamental parameter for atmosphere radiative balance models is the aerosol single scattering albedo (SSA). Aerosol SSA values are calculated as the ratio of scattering to total extinction (scattering plus absorption). Optically absorbing aerosol ($SSA < 1$) may contribute to atmospheric warming while cooling the earth surface, while scattering aerosol ($SSA \sim 1$) may counteract greenhouse gases warming effects by reflecting sunlight in the atmosphere and interacting with clouds. Additionally, aerosol optical properties are strongly related to aerosol chemical composition and size, which conversely have implications for human health and environmental degradation. During the field campaign in Mexico City (MILAGRO March 2006) we measured ensemble aerosol absorption and angle-integrated scattering data. The measurements were performed using the Los Alamos aerosol Photoacoustic instrument with an integrated nephelometer (LAPA) operating at 781 nm. The LAPA was mounted on-board the Aerodyne inc. mobile laboratory which hosted a wide variety of other gases and aerosol instruments, and operated almost continuously between the 3rd and 28th of March 2006. During the campaign the van was moved in different locations to capture pollution dependencies on location, aging, elevation, sources etc. We report here a preliminary analysis of aerosol absorption and scattering values measured in Mexico City.