

Airborne High Spectral Lidar Measurements of Aerosols from the MILAGRO/INTEX-B Mission

John Hair, Rich Ferrare, Chris Hostetler, Anthony Cook, David Harper
NASA Langley Research Center

Abstract: NASA Langley Research Center (LaRC) recently developed an airborne High Spectral Resolution Lidar (HSRL) to measure aerosol and cloud distributions and optical properties. The HSRL technique takes advantage of the spectral distribution of the lidar return signal to discriminate aerosol and molecular signals and thereby measure aerosol extinction and backscatter independently. The LaRC airborne HSRL measures aerosol backscatter and depolarization at 532 and 1064 nm and aerosol extinction at 532 nm. This instrument was deployed on the NASA Langley King Air for the Megacity Initiative: Local and Global Research Observations (MILAGRO) /Megacity Aerosol Experiment in Mexico City (MAX-MEX)/Intercontinental Chemical Transport Experiment-B (INTEX-B) to: 1) characterize the spatial and vertical distributions of aerosols, 2) quantify aerosol extinction and optical thickness contributed by various aerosol types, 3) investigate aerosol variability near clouds, 4) evaluate model simulations of aerosol transport, and 5) assess aerosol optical properties derived from a combination of surface, airborne, and satellite measurements. The presentation will discuss the airborne HSRL instrument and the measurements acquired during the MILAGRO/INTEX-B field experiment.