

## **Collaborative Research: Aerosol Impacts on the Regional and Global Environment**

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This project will provide measurements of the optical and chemical properties of aerosol particles on the NSF C-130 aircraft during the 2006 Megacities Impacts on Regional and Global Environments (MIRAGE) Campaign to be conducted in Mexico City and the Intercontinental and Megacity Pollution Experiment (IMPEX). The instrument suite includes a Condensation Nuclei Counter (CNC), a Single Particle Soot Photometer (SP-2) to determine black carbon mass, aerosol size, and organic coatings, a Photoacoustic Absorption and Scattering Spectrometer (PASS) to measure aerosol scattering and absorption, an aerosol impaction collector for post-flight analysis using Fourier-Transform Infrared Spectroscopy (FT-IR) and electron microscopy, which will provide chemical information. In addition, during the MIRAGE project, aerosol measurements will be conducted at a ground-based site downwind of Mexico City.

The comprehensive data obtained on aerosol properties will be used to observe the transport and transformation of the aerosols in the outflow region of a megacity, and air masses that have undergone long-range transport across the Pacific. The data will be used to validate chemical transport models. This will provide new insights on the effect of pollutant emissions on the regional and global tropospheric composition and its effect on climate.

This project will enhance collaborations between U.S. and Mexican scientists from a number of institutions, and will provide educational opportunities for several graduate students.