Airborne Measurements of Aerosol Physio-Chemistry and Optical
Properties of Aerosols

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This project is designed to conduct a comprehensive set of measurements of the optical
and physical properties of aerosol particles using an instrument suite operated 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 Condensation
Nuclei Counters (CNCs), a Tandem Volatility Differential Mobility Analyzer (DMA),
Optical Particle Counters (OPCs), aerodynamic particle sizing, a three-wavelength
nephelometer, a three-wavelength particle soot absorption photometer (PSAP), and a Fast
Mobility Particle Sizer (FMPS).

This combined instrumentation suite will allow measurements of ambient in-situ aerosol
size-distributions, microphysical and optical properties, and physio-chemical
characteristics. The results will be used to improve the understanding of changes in the
mixing state of aerosols and their physical, chemical and optical properties over the
urban-to-regional-to-global transition, and to verify and refine the interpretation of model
and satellite products.

One post-doctoral student and one graduate student will receive support under the
auspices of this project. Both will be involved in the field campaigns and in subsequent
data analysis. Final data will be made available to the community via data archives and
websites.