

MIRAGE Airborne Measurements of Fine Particle Composition with the Particle-Into-Liquid Sampler

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This project will deploy instruments to quantitatively measure particle chemical composition from the NSF C-130 research aircraft. Online measurements will be made with the Particle-Into-Liquid Sampler (PILS) of fine particle (PM 1 μm) bulk inorganic and organic chemical composition. The following specific aerosol components will be quantified: chloride, nitrate, sulfate, sodium, ammonium, potassium, magnesium, calcium, and the water-soluble fraction of the carbonaceous aerosol (WSOC). Anions will be sampled at a rate of approximately 1 minute, cations 2.5 minutes, and WSOC 3 seconds. The objective is to map and chemically characterize the Mexico City plume, and to study plume chemical evolution. Past studies have shown that particle composition measurements can provide key information for identifying and characterizing particle sources and investigating atmospheric processing that lead to particle chemical transformations.