

Modeling of Photochemical Processes during MIRAGE-Mex

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Vigorous photochemical processing is expected in the Mexico City outflow, due to intense solar radiation incident on large concentrations of photo-labile compounds. Actinic fluxes and photodissociation frequencies (j-values) will be calculated using the Tropospheric Ultraviolet Visible model (TUV, www.acd.ucar.edu/Science/Models/TUV), and compared to values measured at the surface and from aircraft. Of special interest is the role of aerosol and gaseous pollutants in modifying the radiation field. Measured aerosol properties (size distributions, absorption and scattering properties, vertical profiles) will be incorporated in the model to test agreement with radiation measurements as a function of wavelength and altitude.

The gas-phase photochemistry will be modeled with the detailed NCAR Master Mechanism to examine (i) the production of oxidants, (ii) radical budgets and partitioning, (iii) NO_x budget and partitioning, and (iv) formation of gaseous precursors to secondary organic aerosols.