



Overview of Urban and Regional Photochemistry near Mexico City

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Recent field campaigns, including MILAGRO in March 2006, have generated a wealth of observations about the chemical processing occurring in the polluted Mexico City plume. Analyses of the observations are well under way (with over one hundred papers submitted, mostly to ACP, by the numerous participating researchers), and reveal some important features that are challenging current models. Urban ozone production is generally VOC-limited, moderately NO_x-inhibited, and somewhat suppressed in the PBL by UV-reducing aerosols. Radical budgets agree with theoretical expectations for low and moderate NO_x levels but deviate strongly at higher NO_x values. The initial organic reactivity is comprised of olefins, alkanes, and aromatics, but becomes quickly dominated by photochemically produced oxygenated organics (esp. aldehydes) on both city and regional scales. Although the chemical regime in the outflow shifts rapidly to being NO_x-limited, substantial amounts of NO_x remain for several days due to their release from large amounts of peroxy acyl nitrates (PANs) in the plume. This persistence of reactive compounds in the outflow can affect the production of oxidants and aerosols for several hundreds of kilometers downwind of the megacity.