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Long-Path-DOAS measurements of aromatics, polyaromatics and HOx precursors in Mexico City

André Merten(1), Phillip Sheehy(2,3), Ulrich Platt (1), Rainer Volkamer (2,3), Luisa T. Molina (2,3)

(1) Institut für Umweltphysik, Universität Heidelberg, (amerten@iup.uni-heidelberg.de) (2) MIT, Cambridge, MA 02139 (3) Molina Reasearch Center, La Jolla CA

Two Long-Path-DOAS instruments were installed in Mexico City in March 2006 as part of MCMA-2006 field campaign to measure VOC and radical precursors of HOx (Glyoxal, HCHO, HONO) and other species in a megacity urban environment. A particular focus of the combined DOAS set-up was to assess horizontal gradients of species that were measured by both instruments on different spatial scales and directions. The DOAS#1 telescope primarily measured aromatic volatile organic compounds (VOCs) as precursors for secondary organic aerosol (SOA) formation, among other species like O3 and SO2. Measured VOCs included benzene derivatives e.g. toluene, styrene, phenol,cresols, xylenes and tolouolaldehyds as well as two ring aromatic compounds, naphthalene and methylnaphthalene. Episodes of remarkably high concentrations of toluene (e.g.190 ppb) and styrene (14,5 ppb) were observed for selected direction, probably due to plumes of solvents moving through the city. DOAS#2 was dedicated mainly to measure HOx radical precursors like Glyoxal, HONO, HCHO and Ox. Glyoxal, a product of VOC oxidation, showed maximum concentrations between 0.5 and 1.4 ppb. HONO measurements results in night time maximal values about 9ppb and 0,2ppb for day time and clear sky conditions.