



Open-path emission factors: a novel approach to assess semi-volatile SOA precursor gas emissions in Mexico City

(1) **R. Volkamer**, (2) M. Grutter, (3) M. Zavala, (4) S.C. Herndon, (5) J. Samuelsson, (5) J. Mellqvist, (5) B. Galle, (6) B. Knighton, (3) L.T. Molina, (7) M.J. Molina

(1) University of Colorado at Boulder and CIRES, Boulder, CO, (2) UNAM, Mexico (3) MCE2, La Jolla, CA, (4) Aerodyne Research, Billerica, MA, (5) Chalmers University, Sweden (6) University of Montana, MO (7) UCSD, La Jolla, CA

Mobile sources are responsible for about 50% of VOC (volatile organic compounds), and about 70% of NO_x emissions in the Mexico City Metropolitan Area (MCMA). A novel approach has been developed to derive emission factors for mobile emission sources that are representative of the overall vehicle fleet, using collocated open-path Differential Optical Absorption Spectroscopy (DOAS) and Fourier Transform Infrared (FTIR) spectroscopic measurements. The Aerodyne mobile laboratory simultaneously sampled air in the street canyon below the DOAS/FTIR lightpath; distributions of emission factors sampled from individual exhaust plumes are used to validate the open-path emission factor approach. Surprising results were obtained for semi-volatile VOC precursor gas emissions. These results are presented, and implications for emission inventories and SOA formation from Megacities are discussed.