

## Characterizing Ozone Production in Mexico City Using a Chemical Transport Model

Wenfang Lei<sup>1,2</sup>, Miguel Zavala<sup>1,2</sup>, Benjamin de Foy<sup>2,3</sup>, Rainer Volkamer<sup>1,4</sup>, and Luisa T. Molina<sup>1,2</sup>

1 Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, MA

2 Molina Center for Energy and the Environment, CA

3 Saint Louis University, MO

4 Department of Chemistry and Biochemistry, University of California, San Diego, CA

Understanding the relation between ozone ( $O_3$ ) and its precursors, nitrogen oxides ( $NO_x$ ) and volatile organic compounds (VOCs), is a prerequisite for formulating an effective  $O_3$  control strategy. In this study, a 3-D chemical transport model (CAMx) was used to investigate the characteristics of  $O_3$  production and the response of  $O_3$  production to changes in precursor emissions in the urban region of the Mexico City Metropolitan Area (MCMA) under different meteorological conditions (“ $O_3$ -South”, “ $O_3$ -North” and “Cold Surge”). Simulated concentrations of  $O_3$ , CO,  $NO_x$  and various speciated VOCs were compared with the measurements from MCMA-2003 Campaign. Uncertainties in the emission inventory were evaluated in the context of model-observation comparison. This study aims to present a comprehensive and coherent view of the  $O_3$  production characteristics in the MCMA.

Although this study focuses on the MCMA-2003 cases, we expect that the description of  $O_3$  production can be found applications to the MILAGRO-2006 Campaign.