

Home

Online Library ACP

- Recent Final Revised Papers
- Volumes and Issues**
- Special Issues
- Library Search
- Title and Author Search

Online Library ACPD

Alerts & RSS Feeds

General Information

Submission

Review

Production

Subscription

Comment on a Paper

Impact
Factor
4.865

ISI
indexed



[Volumes and Issues](#) [Contents of Issue 17](#) [Special Issue](#)

Atmos. Chem. Phys., 8, 5113–5125, 2008

www.atmos-chem-phys.net/8/5113/2008/

© Author(s) 2008. This work is distributed under the Creative Commons Attribution 3.0 License.

Tropospheric ozone sources and wave activity over Mexico City and Houston during MILAGRO/Intercontinental Transport Experiment (INTEX-B) Ozonesonde Network Study, 2006 (IONS-06)

A. M. Thompson¹, J. E. Yorks¹, S. K. Miller¹, J. C. Witte^{2,*}, K. M. Dougherty¹, G. A. Morris³, D. Baumgardner⁴, L. Ladino⁴, and B. Rappenglück⁵

¹The Pennsylvania State University, Department of Meteorology, 503 Walker Building, University Park, PA, USA

²SSAI of Lanham, MD, USA

³Valparaiso University, Dept. of Physics and Astronomy, Valparaiso, IN, USA

⁴UNAM (Autonomous University of Mexico), CCA – Center for Chemistry of the Atmosphere, Mexico City, Mexico

⁵University of Houston, Geosciences Department, Old Sciences Bldg, Houston, TX, USA

* also at: NASA/Goddard Space Flight Center, Greenbelt, MD, USA

Abstract. During the INTEX-B (Intercontinental Chemical Transport Experiment)/ MILAGRO (Megacities Initiative: Local and Global Research Observations) experiments in March 2006 and the associated IONS-06 (INTEX Ozonesonde Network Study; <http://croc.gsfc.nasa.gov/intexb/ions06.html>), regular ozonesonde launches were made over 15 North American sites. The soundings were strategically positioned to study inter-regional flows and meteorological interactions with a mixture of tropospheric O₃ sources: local pollution; O₃ associated with convection and lightning; stratosphere-troposphere exchange. The variability of tropospheric O₃ over the Mexico City Basin (MCB; 19° N, 99° W) and Houston (30° N, 95° W) is reported here. MCB and Houston profiles displayed a double tropopause in most soundings and a subtropical tropopause layer with frequent wave disturbances, identified through O₃ laminae as gravity-wave induced. Ozonesondes launched over both cities in August and September 2006 (IONS-06, Phase 3) displayed a thicker tropospheric column O₃ (~7 DU or 15–20%) than in March 2006; nearly all of the increase was in the free troposphere. In spring and summer, O₃ laminar structure manifested mixed influences from the stratosphere, convective redistribution of O₃ and precursors, and O₃ from lightning NO. Stratospheric O₃ origins were present in 39% (MCB) and 60% (Houston) of the summer sondes. Comparison of summer 2006 O₃ structure with summer 2004 sondes (IONS-04) over Houston showed 7% less tropospheric O₃ in 2006. This may reflect a sampling contrast, August to mid-September 2006 instead of July-mid August 2004.

[Final Revised Paper](#) (PDF, 6180 KB) [Discussion Paper](#) (ACPD)

Citation: Thompson, A. M., Yorks, J. E., Miller, S. K., Witte, J. C., Dougherty, K. M., Morris, G. A., Baumgardner, D., Ladino, L., and

Search ACP

Library Search

Author Search

News

- Sister Journals AMT & GMD
- Financial Support for Authors
- Journal Impact Factor
- Public Relations & Background Information

Recent Papers

01 | ACP, 18 Nov 2008: SO₂ emissions from Popocatepetl volcano: emission rates and plume imaging using optical remote sensing techniques

02 | ACPD, 18 Nov 2008: Turbulent dispersion in cloud-topped boundary layers

03 | ACPD, 18 Nov 2008: Impact of primary formaldehyde on air pollution in the Mexico City Metropolitan Area

Rappenglück, B.: Tropospheric ozone sources and wave activity over Mexico City and Houston during MILAGRO/Intercontinental Transport Experiment (INTEX-B) Ozonesonde Network Study, 2006 (IONS-06), Atmos. Chem. Phys., 8, 5113-5125, 2008. [Bibtex](#) [EndNote](#) [Reference Manager](#)