

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



[Volumes and Issues](#) [Contents of Issue 5](#) [Special Issue](#)

Atmos. Chem. Phys., 8, 1209-1224, 2008

www.atmos-chem-phys.net/8/1209/2008/

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

Basin-scale wind transport during the MILAGRO field campaign and comparison to climatology using cluster analysis

B. de Foy^{1,2}, J. D. Fast³, S. J. Paech⁴, D. Phillips⁴, J. T. Walters⁴, R. L. Coulter⁵, T. J. Martin⁵, M. S. Pekour³, W. J. Shaw³, P. P. Kastendeuch⁶, N. A. Marley⁷, A. Retama⁸, and L. T. Molina^{1,9}

¹Molina Center for Energy and the Environment, CA, USA

²Department of Earth and Atmospheric Sciences, Saint Louis University, USA

³Pacific Northwest National Laboratory, Richland, WA, USA

⁴National Space Science and Technology Center, University of Alabama in Huntsville, AL, USA

⁵Argonne National Laboratory, IL, USA

⁶Centre de Géochimie de la Surface, Université Louis Pasteur, Strasbourg, France

⁷Department of Chemistry, University of Arkansas at Little Rock, AK, USA

⁸Secretaría del Medio Ambiente, Gobierno del Distrito Federal, México

⁹Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, USA

Abstract. The MILAGRO field campaign was a multi-agency international collaborative project to evaluate the regional impacts of the Mexico City air pollution plume as a means of understanding urban impacts on the global climate. Mexico City lies on an elevated plateau with mountains on three sides and has complex mountain and surface-driven wind flows. This paper asks what the wind transport was in the basin during the field campaign and how representative it was of the climatology. Surface meteorology and air quality data, radiosondes and radar wind profiler data were collected at sites in the basin and its vicinity. Cluster analysis was used to identify the dominant wind patterns both during the campaign and within the past 10 years of operational data from the warm dry season. Our analysis shows that March 2006 was representative of typical flow patterns experienced in the basin. Six episode types were identified for the basin-scale circulation providing a way of interpreting atmospheric chemistry and particulate data collected during the campaign. Decoupling between surface winds and those aloft had a strong influence in leading to convection and poor air quality episodes. Hourly characterisation of wind circulation during the MILAGRO, MCMA-2003 and IMADA field campaigns enables the comparisons of similar air pollution episodes and the evaluation of the impact of wind transport on measurements of the atmospheric chemistry taking place in the basin.

[Final Revised Paper](#) (PDF, 4661 KB) [Supplement](#) (14 KB) [Discussion Paper](#) (ACPD)

Citation: de Foy, B., Fast, J. D., Paech, S. J., Phillips, D., Walters, J. T., Coulter, R. L., Martin, T. J., Pekour, M. S., Shaw, W. J., Kastendeuch, P. P., Marley, N. A., Retama, A., and Molina, L. T.: Basin-scale wind transport during the MILAGRO field campaign and comparison to climatology using cluster analysis, Atmos. Chem. Phys., 8, 1209-1224,

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 | ACPD, 03 Nov 2008:
Anthropogenic influence on SOA and the resulting radiative forcing

02 | ACPD, 03 Nov 2008:
Evidence of mineral dust altering cloud microphysics and precipitation

03 | ACPD, 03 Nov 2008:
Technical Note: A new method for the Lagrangian tracking of pollution plumes from source to receptor using gridded model output

04 | ACPD, 03 Nov 2008:

