

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 22](#) [Special Issue](#)

Atmos. Chem. Phys., 8, 6655-6663, 2008

www.atmos-chem-phys.net/8/6655/2008/

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

SO₂ emissions from Popocatépetl volcano: emission rates and plume imaging using optical remote sensing techniques

M. Grutter¹, R. Basaldud¹, C. Rivera², R. Harig³, W. Junkerman⁴, E. Caetano¹, and H. Delgado-Granados⁵

¹Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México, Mexico

²Department of Radio and Space Science, Chalmers University of Technology, Sweden

³Technische Universität Hamburg-Harburg, Germany

⁴Institut für Meteorologie und Klimaforschung, Forschungszentrum Karlsruhe, Germany

⁵Instituto de Geofísica, Universidad Nacional Autónoma de México, Mexico

Abstract. Sulfur dioxide emissions from the Popocatépetl volcano in central Mexico were measured during the MILAGRO field campaign in March 2006. A stationary scanning DOAS (Differential Optical Absorption Spectrometer) was used to monitor the SO₂ emissions from the volcano and the results were compared with traverses done with a COSPEC from the ground and a DOAS instrument on board an ultra-light aircraft. Daytime evolutions as well as day-to-day variation of the SO₂ emissions are reported. A value of 2.45±1.39 Gg/day of SO₂ is reported from all the daily averages obtained during the month of March 2006, with large variation in maximum and minimum daily averages of 5.97 and 0.56 Gg/day, respectively. The large short-term fluctuations in the SO₂ emissions obtained could be confirmed through 2-D visualizations of the SO₂ plume measured with a scanning imaging infrared spectrometer. This instrument, based on the passive detection of thermal radiation from the volcanic gas and analysis with FTIR spectrometry, is used for the first time for plume visualization of a specific volcanic gas. A 48-h forward trajectory analysis indicates that the volcanic plume was predominantly directed towards the Puebla/Tlaxcala region (63%), followed by the Mexico City and Cuernavaca/Cuautla regions with 19 and 18% occurrences, respectively. 25% of the modeled trajectories going towards the Puebla region reached altitudes lower than 4000 m a.s.l. but all trajectories remained over this altitude for the other two regions.

[Final Revised Paper](#) (PDF, 17984 KB) [Discussion Paper](#) (ACPD)

Citation: Grutter, M., Basaldud, R., Rivera, C., Harig, R., Junkerman, W., Caetano, E., and Delgado-Granados, H.: SO₂ emissions from Popocatépetl volcano: emission rates and plume imaging using optical remote sensing techniques, Atmos. Chem. Phys., 8, 6655-6663, 2008. [Bibtex](#) [EndNote](#) [Reference Manager](#)

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, 26 Nov 2008: Technical Note: Adapting a fixed-lag Kalman smoother to a geostatistical atmospheric inversion framework

02 | ACPD, 26 Nov 2008: Springtime warming and reduced snow cover from carbonaceous particles

03 | ACP, 25 Nov 2008: Seasonal changes in gravity wave activity measured by lidars at mid-latitudes

04 | ACP, 24 Nov 2008:

