

[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 1](#) [Special Issue](#)

Atmos. Chem. Phys., 7, 121-137, 2007

[www.atmos-chem-phys.net/7/121/2007/](http://www.atmos-chem-phys.net/7/121/2007/)

© Author(s) 2007. This work is licensed under a Creative Commons License.

## Photochemical modelling in the Po basin with focus on formaldehyde and ozone

L. Liu<sup>1,2</sup>, F. Flatøy<sup>3</sup>, C. Ordóñez<sup>4</sup>, G. O. Braathen<sup>1</sup>, C. Hak<sup>5</sup>, W. Junkermann<sup>6</sup>, S. Andreani-Aksoyoglu<sup>4</sup>, J. Mellqvist<sup>7</sup>, B. Galle<sup>7</sup>, A. S. H. Prévôt<sup>4</sup>, and I. S. A. Isaksen<sup>2</sup><sup>1</sup>Norwegian Institute for Air Research, Kjeller, Norway<sup>2</sup>University of Oslo, Meteorology and Oceanography Section, Department of Geosciences, Oslo, Norway<sup>3</sup>Bjerknes Centre for Climate Research, University of Bergen, Bergen, Norway<sup>4</sup>Laboratory of Atmospheric Chemistry, Paul Scherrer Institut, Villigen, Switzerland<sup>5</sup>Institute of Environmental Physics, Heidelberg, University of Heidelberg, Germany<sup>6</sup>Research Centre Karlsruhe, Institute for Meteorology and Climate Research, Garmisch Partenkirchen, Germany<sup>7</sup>Department of Radio and Space, Chalmers University of Technology, Göteborg, Sweden

**Abstract.** As part of the EU project FORMAT (Formaldehyde as a Tracer of Oxidation in the Troposphere), a field campaign was carried out in the vicinity of Milan during the summer of 2002. Results from a 3-D regional chemical transport model (NILU RCTM) were used to interpret the observations focusing primarily on HCHO and ozone. The performance of the model was assessed by comparing model results with ground based and aircraft measurements. The model results show good agreement with surface measurements, and the model is able to reproduce the photochemical episodes during fair weather days. The comparison indicates that the model can represent well the HCHO concentrations as well as their temporal and spatial variability. The relationship between HCHO and ( $O_3 \times H_2O$ ) was used to validate the model ability to predict the HCHO concentrations. Further analysis revealed the importance of the representativeness of different instruments: in-situ concentrations might be locally enhanced by emissions, while long path measurements over a forest can be influenced by rapid formation of HCHO from isoprene. The model is able to capture the plume from the city of Milan and the modelled levels agree generally well with the aircraft measurements, although the wind fields used in the model can lead to a displacement of the ozone plume. During the campaign period,  $O_3$  levels were seldom higher than 80 ppb, the peak surface ozone maxima reached 90 ppb. Those relatively low values can be explained by low emissions during the August vacation and unstable weather conditions in this period. The modelled  $\Delta O_3 / \Delta NO_2$  slope at Alzate of 5.1 agrees well with the measured slope of 4.9.

[Final Revised Paper](#) (PDF, 1308 KB) [Discussion Paper](#) (ACPD)

Citation: Liu, L., Flatøy, F., Ordóñez, C., Braathen, G. O., Hak, C., Junkermann, W., Andreani-Aksoyoglu, S., Mellqvist, J., Galle, B., Prévôt, A. S. H., and Isaksen, I. S. A.: Photochemical modelling in the Po basin with focus on formaldehyde and ozone, Atmos. Chem. Phys., 7, 121-

[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, 27 Nov 2008: Estimates of mercury flux into the United States from non-local and global sources: results from a 3-D CTM simulation

02 | ACP, 27 Nov 2008: Modeling the effect of plume-rise on the transport of carbon monoxide over Africa with NCAR CAM

03 | ACP, 27 Nov 2008: Technical Note: Quantification of interferences of wet chemical HONO LOPAP measurements under simulated polar

