

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 5

Atmos. Chem. Phys., 9, 1723-1734, 2009  
www.atmos-chem-phys.net/9/1723/2009/

© Author(s) 2009. This work is distributed  
under the Creative Commons Attribution 3.0 License.

## Tropospheric ozone climatology at two Southern Hemisphere tropical/subtropical sites, (Reunion Island and Irene, South Africa) from ozonesondes, LIDAR, and in situ aircraft measurements

G. Clain<sup>1</sup>, J. L. Baray<sup>1,2</sup>, R. Delmas<sup>1</sup>, R. Diab<sup>3</sup>, J. Leclair de Bellevue<sup>4</sup>, P. Keckhut<sup>4,5</sup>, F. Posny<sup>1</sup>, J. M. Metzger<sup>1</sup>, and J. P. Cammas<sup>6</sup>

<sup>1</sup>Laboratoire de L'Atmosphère et des Cyclones (LACy), UMR-CNRS 8105, 15, av. René Cassin, BP 7151, 97715 St-Denis Cedex 9, La Réunion, France

<sup>2</sup>Institut Pierre-Simon Laplace (IPSL), Univ. Versailles Saint Quentin, 5 Boulevard d'Alembert, 78280 Guyancourt, France

<sup>3</sup>School of environmental science, University of KwaZulu-Natal, Durban, South Africa

<sup>4</sup>Service d'Aéronomie (SA), UMR-CNRS 7620 Univ. Pierre et Marie Curie, 4 place Jussieu, 75252 Paris Cedex 05, France

<sup>5</sup>Service d'Aéronomie (SA), UMR-CNRS 7620 Verrières le Buisson, 91371, France

<sup>6</sup>Laboratoire d'Aérodologie (LA), UMR-CNRS 5560 14, av. Edouard Belin, 31400 Toulouse, France

**Abstract.** This paper presents a climatology and trends of tropospheric ozone in the Southwestern Indian Ocean (Reunion Island) and South Africa (Irene and Johannesburg). This study is based on a multi-instrumental dataset: PTU-O<sub>3</sub> ozonesondes, DIAL LIDAR and MOZAIC airborne instrumentation.

The seasonal profiles of tropospheric ozone at Reunion Island have been calculated from two different data sets: ozonesondes and LIDAR. The two climatological profiles are similar, except in austral summer when the LIDAR profiles show greater values in the free troposphere, and in the upper troposphere when the LIDAR profiles show lower values during all seasons. These results show that the climatological value of LIDAR profiles must be discussed with care since LIDAR measurements can be performed only under clear sky conditions, and the upper limit of the profile depends on the signal strength.

In addition, linear trends have been calculated from ozonesonde data at Reunion and Irene. Considering the whole tropospheric column, the trend is slightly positive for Reunion, and more clearly positive for Irene. Trend calculations have also been made separating the troposphere into three layers, and separating the dataset into seasons. Results show that the positive trend for Irene is governed by the lower layer that is affected by industrial pollution and biomass burning. On the contrary, for Reunion Island, the strongest trends are observed in the upper troposphere, and in winter when stratosphere-troposphere exchange is more frequently expected.

▣ [Final Revised Paper](#) (PDF, 9211 KB) ▣ [Discussion Paper](#) (ACPD)

Copernicus Publications  
The Innovative Open Access Publisher

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, 12 Mar 2009:  
A new insight on tropospheric methane in the Tropics – first year from IASI hyperspectral infrared observations

02 | ACP, 12 Mar 2009:  
HOCl chemistry in the Antarctic Stratospheric Vortex 2002, as observed with the Michelson Interferometer for Passive Atmospheric Sounding (MIPAS)

03 | ACP, 12 Mar 2009:  
Comparison of tropospheric gas-phase chemistry schemes for use within global models

Citation: Clain, G., Baray, J. L., Delmas, R., Diab, R., Leclair de Bellevue, J., Keckhut, P., Posny, F., Metzger, J. M., and Cammas, J. P.: Tropospheric ozone climatology at two Southern Hemisphere tropical/subtropical sites, (Reunion Island and Irene, South Africa) from ozonesondes, LIDAR, and in situ aircraft measurements, *Atmos. Chem. Phys.*, 9, 1723-1734, 2009. [Bibtex](#) [EndNote](#) [Reference Manager](#)