

Interactive comment on “Tropospheric ozone climatology at two southern subtropical sites, (Reunion Island and Irene, South Africa) from ozone sondes, LIDAR, aircraft and in situ measurements” by et al.

et al.

Received and published: 1 August 2008

We would like to thank the referee for his helpful comments, suggestions and references. As several comments reveal some misunderstanding with regard to the writing, a special attention will be paid to grammar, typos, and to clarify the new version of the paper.

11076, 24-26, 11096, Fig 5 and 11077, 25-27: The referee suggests that the paper would be improved removing the ground based measurements section. This section gives evidence that ground based measurements at a high altitude station at Reunion reflects well the seasonal variations of the regional free tropospheric ozone mixing ratio.

S5493

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



However we understand that the manuscript intelligibility can increase if we follow the referee suggestion and we decided to do so, in the frameworking structure suggested by the editor.

11065, 25-26: The sentence is changed to "Results show that the positive trend for Irene is governed by the lower layer that is affected by industrial pollution and biomass burning."

11069, 7-9: The paper of Randriambelo et al. (2003) established relationships between vertical distribution of tropospheric ozone at Reunion Island during the period 1992-1999, satellite observations of fires, smoke plumes, and convective events in southeastern Africa and Madagascar, and analyses of meteorological situations. The main conclusions of this study were:

- During 1995 tropospheric ozone content rose above average and that this year should be set apart as atypical.

- The seasonal variation of ozone profiles during typical years and without the stratospheric contribution suggests that ozone contamination from biomass burning is a maximum during October in the whole free troposphere. During August, before the deep convection period, but already within the fire period, only the middle troposphere is contaminated by ozone inputs. By contrast, through November to December, well within the deep convection period, all the higher troposphere is contaminated.

- The redistribution of ozone with altitude depends on the convection intensity near source regions in accordance with convection detection and backtrajectory analysis.

This study was based on radiosonde ozone measurements performed at a single site (Reunion) and for a shorter period than the present study (7 years).

11070, 7: We meant eastward to Irene. This sentence will be rewritten more clearly.

11093, Fig.2, 11072, 25-26: We decided to change figure 2 and show the cumulated number of profile per month. The paragraph 11072, 25-26 will be rewritten accordingly.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



11074, 13: We agree that “Strong convection, strong winds, driving rains” can prevent ozonesonde launches. However, these meteorological conditions occur very seldom at Reunion or Irene. Compared to the required specific meteorological conditions (no cloud) for LIDAR measurements, ozonesondes measurements can be performed more frequently and regularly. The sentence will be rewritten more clearly.

11075, 13-15: The January LIDAR mean ozone profile is based on a total of only 8 profiles. Regarding the little significance of this number we decided not to comment the feature you mention.

11076, 8-11: A trajectory study would indeed be of great interest. However, computing the backtrajectories over a 1563 profiles database means also huge work of discussion. The classification of tropospheric ozone profiles at Reunion, with a lagrangian approach is actually one of our research projects.

11080 A seasonal tropospheric layer analysis will be conducted following the referee suggestions.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 11063, 2008.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

