Atmos. Chem. Phys. Discuss., 8, S5490–S5492, 2008
www.atmos-chem-phys-discuss.net/8/S5490/2008/

Atmospheric Chemistry and Physics Discussions

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 thank the Editor for all raising comments of interesting concern for the improvement of the manuscript.

Page S4826-S4829 Minor corrections

We thank the Editor specially for his investment in reporting the errors and typos. All suggested corrections will be considered. We will make a special effort on grammar and improving the figures in the new version of the manuscript.

Page S4823 Structure of the article

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

We agree that the current structure of the manuscript can be improved following the Editor's proposed structure. The version of the manuscript will be written accordingly.

Pages S4823-S4824 Link between biomass burning emissions and tropospheric ozone increase

The influence of biomass burning in South Africa and Madagascar on tropospheric ozone increase at Reunion has been identified and published for case studies (Randriambelo et al., 1999, 2003, Taupin et al., 1999, 2002) as well as with a climatological approach (Baldy et al., 1996, Randriambelo et al., 2000). The influence of biomass burning on tropospheric ozone for Reunion Island has been observed until 200 hPa (12 km) (Randriambelo et al., 1999, 2000).

Page S4824 : STE increase above Reunion in the past 15 years

The Editor ask for evidence to support the hypothesis of STE increase over Reunion. To our knowledge this study has not been led for our location. The James et al. STE climatology (2003, reference below) reveals that the zonal mean gross downward cross tropopause flux maximum occurs during winter in both hemispheres. This statement is compatible with the assumption we make that the positive ozone trend in the high troposphere during winter at reunion may be due to a STE increase

Page S4825

Page 11081 "the two mechanisms can play a role" the two mechanisms increasing tropospheric ozone referred to are the biomass burning influence and intrusions of stratospheric air masses into the troposphere. "can" will be replaced by "may". The full reference to Langenfelds et al., 2003 is given in the reference section.

Page S4825: Biomass burning and CO trends

Concerning page 11082 lines 13-16 the two references we know about CO trends in our area of study are the following: Brunke et al. (1990) studied CO, CH4 and NO2 trends from several years of measurements performed at Cape point, South Africa,

ACPD

8, S5490–S5492, 2008

Interactive Comment

during the 1980s. At that time no significant CO trend was found. Dunkan et al. (2003) worked from remote sensing fire counts datasets (AVHRR, TOMS„ ATSR) and found no seasonal nor annual CO trend on a global and on a regional scale in the 1990s.

References

Brunke, E.-G., H. E. Scheel, and W. Seiler, Trends of tropospheric carbon monoxide, nitrous oxide and methane as observed at Cape Point, South Africa, Atmos. Environ. Part A, 24, 585-595, 1990.

Duncan, B. N., R. V. Martin, A. C. Staudt, R. Yevich, and J. A. Logan, Interannual and seasonal variability of biomass burning emissions constrained by satellite observations, J. Geophys. Res., 108(D2), 4100, doi:10.1029/2002JD002378, 2003.

Garstang, M., P. D. Tyson, R. Swap, M. Edwards, P. Kallberg, and J. A. Lindsay, horizontal and vertical transport of air over southern Africa, J. Geophys. Res., 101, 23,721 - 23,736, 1996.

James, P., A. Stohl, C. Forster, S. Eckhardt, P. Seibert, and A. Frank, A 15-year climatology of stratosphere - troposphere exchange with a Lagrangian particle dispersion model, 2, Mean climate and seasonal variability, J. Geophys. Res., 108(D12), 8522, doi:10.1029/2002JD002639, 2003.

Langenfelds,R.L, Steele, L.P., Cooper, L.N., Spencer, D.A., Krummel, P.B., Dunse, B.L.: Atmospheric methane, carbon monoxide, and nitrous oxide from Cape Grim flask air samples analysed by gas chromatography. In: Tindale, N.W., Derek, N., Fraser, P.J. (Eds.), Baseline Atmospheric Program Australia 1999-2000. Published for the Bureau of Meteorology and CSIRO Research, Melbourne, pp. 76-77, 2003.

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