

Interactive comment on “A Tropospheric ozone maximum over the equatorial southern Indian Ocean” by L. Zhang et al.

L. Zhang et al.

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Reply to anonymous referee #1 We would like to thank the referee for the thoughtful and insightful comments. We have addressed all of the comments. Our responses are itemized below.

Reviewer #1 (Comments): General Comments This paper provides source attribution for an observed maximum in tropospheric O₃ over the equatorial Southern Indian Ocean in May. It presents a concise description of the modeling study and uses multiple satellite datasets to support the observed effect.

My only major concern is the lack description of the precision (i.e., significance) of the observations. While the accuracy (bias) of the satellite data is described, there is no

C1918

mention of how many observations are averaged or the calculation of standard error for the precision using the reported uncertainties, at least for TES and MLS. Figures should show error bars or, if the errors are relatively uniform, state the precision in the figure captions.

Reply: Point well taken. In addition to the description of the accuracy, we added discussions of the precisions for the satellite data. We also added variability (standard deviation of the data in the region and time period) to the time series plots for satellite data.

Minor comments: p. 1983, line 10, Are TES L3 data monthly or daily?

Reply: It is monthly data. Changed.

p. 1986, line 6: “local redistribution” is referenced, but a brief description would be useful.

Reply: Indeed. Brief descriptions now added.

p. 1987, line 10: “. . . we extracted model results at the time and location of the observations: : :” This should be more specific about what was done for each type of data, i.e., MLS L2 data would have different locations for each observation, but not TES L3, and both types should be selected for the observation times.

Reply: Changed accordingly.

p. 1988, line 14: “GEOS-Chem simulations of tropospheric O₃ undoubtedly bear the differences of. . .” would be better stated: “GEOS-Chem simulations of tropospheric O₃ have significant dependence on. . .”

Reply: Yes. Changed.

p. 1989, line 3: “convolute” should be “convolve”

Reply: Revised.

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Summary and conclusions: p. 1996, lines 19-29, Shouldn't this be specifically for May 2006? These are the values from Table 2, which only applied to 2006. Table 1. Is A3 for 2005 or 2006? Text refers to 2006 for A3. Figures 7-15 – Which GEOS-Chem set up is used for these?

Reply: Yes. Changed accordingly.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 1979, 2012.

C1920