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## ***Interactive comment on “Is tropospheric ozone over southern Africa really increasing? Evidence from sonde and aircraft profiles” by A. M. Thompson et al.***

### **Anonymous Referee #1**

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This is a thorough analysis and revision of previous published results of tropospheric ozone trends over South Africa and Reunion Is. The manuscript carefully reviews previous work in the field, citing an extensive set of references, in which the authors have an established trajectory. The analysis is based on ozonesondes from Irene (SA) and St. Denis (Reunion Is.) as well as aircraft retrievals from the MOZAIC project. Time sampling problems in trend calculations due to zonedonde launching time variability is discussed as well as the use of the merged ozonesonde-MOZAIC observations. Dynamical considerations are also taken into account, as well as changes driven by climate variability, i.e., ENSO, as well as possible STE processes. A multivariate model

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considering semiannual and annual cycles, trend, ENSO, PV, was used in order to understand the free troposphere ozone evolution. Different behaviours are observed over Irene and St Denis and the authors discuss the possible reasons for these differences considering source regions and transport. Trajectories were calculated using the Flexpart trajectory code. Biomass burning as well as other anthropogenic sources are considered. Observed changes appear to be dependent on pollutant transport from South America, over Irene and transport from Asia over Reunión Is. The manuscript is a detailed yet concise study of tropospheric ozone at these two sites and provides many useful insights on the causes of the observed temporal evolution. It may be argued that the number of figures (14) may be excessive. However they all are necessary complement of the text. The figures can all be well-interpreted and the figure captions are appropriate. Thus this manuscript should be accepted for publication in ACP

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Interactive comment on Atmos. Chem. Phys. Discuss., 14, 10167, 2014.

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