

Dear Reviewer,

Thank you very much for your valuable comments on our paper acp-2013-537 “A novel tropopause-related climatology of ozone profiles”. Below we present the detailed replies to your comments.

Reviewer#3

P21350, L1: Move “(” before 2010.

P21350, L18: Move “(” before 2008.

Authors: Corrected

Reviewer#3

P21353, L15: Give the reference for this equation. The coefficient is altitude dependent as a function of temperature and coefficient “16” is only applicable for a certain layer of atmosphere with an assumption of temperature being constant in that layer.

Authors:

We have added the reference and also provided the standard form of the hydrostatic equation.

Reviewer#3

P21360, L25: How is the precision of ozone profiles determined?

Authors:

In the revised version, we have provided the definition of the precision of the retrieved profiles.

Reviewer#3

Figure 9: What are the relative difference between this climatology and LLM in different months and latitude zones? Plots showing the relative difference would be helpful, as Figure 10 showed the relative difference for the annual mean ozone.

Authors:

In the revised version of the manuscript, we added information about the range of relative differences between the downgraded TpO_3 climatology and the LLM climatology. We believe that duplicating Figure 9 in another (relative units) representation is not advantageous, because this will not provide any new information.

Reviewer#3

Figure 13: The unit for y-axis should be “hPa” on the right panel.

Authors:

Corrected.

Reviewer#3

Data Availability and Figure 15: It would be helpful if the number of profiles for the mean at each altitude is also included in the data. This section may be included as an Appendix.

Authors:

As detailed in our paper, we first created separate ozonesonde and SAGE-II climatologies. In cases where SAGE-II data are not available, we use the smooth transition to the LLM climatology. If SAGE-II data are available, the ozonesonde climatology is used in the troposphere, the SAGE-II climatology at upper altitudes, and merged data (smooth transition) between. The number of measurements would provide some information for each climatology separately, but for the transition zone, the number of measurements (viz. “effective” number of measurements) cannot be clearly defined. The approximate number of measurements in altitude-latitude bins can be easily estimated using Figure 1 in our paper and the information about the distribution of tropopause heights provided in the climatology files.