Dear Dr. Bak,

Thank you very much for your interest in our paper and for your comments. Please find our replies below.

J.Bak:
I think that it is useful to refer to "Improvement of OMI ozone profile retrievals in the UTLS by the use of a tropopause-based ozone profile climatology" published in AMT [http://www.atmos-meas-tech.net/6/2239/2013/amt-6-2239-2013.html] because this paper also developed ozone profile climatology using tropopause height information used as a priori in OMI ozone profile retrievals and validated the use of Tropopause-Based (TB) climatology by comparing ozone profile retrievals with ozonesonde and meteorological variables such as thermal tropopause and potential vorticity.

Authors:
Thank you very much for the pointer to this paper. We will, as you suggested, cite this paper in ours.

J. Bak:
Also you need to mention similarities and differences between two TB climatologies. Especially, I am curious about the motivation why you develop TB climatology in such way that the tropopause height is used to classify total ozone dependent climatology, not in such way that the tropopause height is used to redistribute ozone profiles relative to the tropopause height as of previous studies [Logan (1999), Wang et al.(2006), Thouret et al. (2006), Wei et al. (2010)].

Authors:
The motivation for our approach is discussed in several places in our paper. In particular, in the Introduction (from line 23 on page 21347 to line 10 on page 21348), on page 21355 (discussion of Figure 6), and in Section 5. In short, there are 2 reasons:
(a) In some cases, the morphology of ozone profiles differs dramatically for different tropopause heights (as in springtime over Antarctica); ozone profiles cannot be considered as simply statically vertically shifted with respect to each other according to their respective tropopause heights.
(b) Existence of double tropopauses.
The climatology of Bak et al. (2013) is also not able to characterize these features of ozone profiles. The main difference between our climatology and those of previous studies can be briefly summarized as follows: "representation by the mean" (sea-level- and tropopause-referenced climatologies) versus "characterization by the probability density function" (the TpO_3 climatology).

J. Bak:
2) You can emphasize on the higher accuracy of ML climatology above 6 hPa by mentioning the results of comparisons between OMI (with LLM and ML climatologies, respectively) and MLS ozone profiles (Fig. 3 and Fig. 7) in "Evaluation of ozone profile and tropospheric ozone retrievals from GEMS and OMI spectra" published in AMT.

Authors:
Thank you for this suggestion which we will implement in the revised version of the paper.

J. Bak:
3) How about showing the structure of OMI ozone profile retrievals in the UTLS region (orbit 6704) like Figure 5 or Figure 6 of "Improvement of OMI ozone profile retrievals in the UTLS by the use of a

tropopause-based ozone profile climatology". It is easier to emphasize on how the use of dynamical dependent climatology improves the UTLS ozone profile retrievals, horizontally as well as vertically.

Authors:
The OMI retrieval is not a focus of our study and the application to OMI ozone profile retrievals is presented in our paper for illustration only. More detailed analyses of OMI retrievals will be the subject of future studies and publications.

J. Bak:
4) I am confused about the way to use this climatology. For example for January and 10N-20N, there are two groups (16, 17 km) for tropopause height. If the local tropopause is 16.5 km, the ozone profile should be "ozone profile of 16 km x 0.5 + ozone profile of 17 km x 0.5"?

Authors:
As explained in our paper (page 21361, lines 15-16), the reported tropopause heights correspond to the lower limit of the 1 km interval. For example, the tropopause height of 16 km is for a tropopause between 16 and 17 km. Therefore, for 16.5 km you should use the profile associated with the 16 km tropopause height. This information is also provided in the readme file in greater detail.

On behalf of all co-authors,
Viktoria Sofieva