We truly appreciate the comments and corrections provided. All the mentioned points are listed below.

Referee#1:

- Recently Jerry Ziemke updated the OMI/MLS data set. The new version is corrected for an instrumental drift. If the updated version was used, would that change Figure 10, where a drift between OMI/MLS and OMPS LNM is obvious.

A: From the website https://acd-ext.gsfc.nasa.gov/Data_services/cloud_slice/ hosting the OMI-/MLS, we got the following statement: "For the OMI/MLS tropospheric column ozone products listed above, a small long-term soft calibration was implemented to provide better estimates of long-term trends. This adjustment (applied in late August 2023) was necessary to update our corrections for drift error of the OMI/MLS products."

According to Ziemke et al. (2019), the drift adjustment was -1.0 DU/decade. An additional -0.6 DU/decade drift was applied last summer (Ziemke, personal communication). The updated dataset was made available months after the submission of this manuscript and is provided only on a 5°x5° grid.

Figure 10 of the manuscript shows drifts of around 5 DU (even larger) between OMI/MLS and OMPS-LNM for the compared period. A correction of OMI/MSL data by the stated instrumental drift of -1.6 DU/decade would reduce the observed drift between the data sets but not fully eliminate it.

This information is included in the manuscript:

(L. 445-449 of the new version)

A drift is observed in the differences between OMI/MLS and OMPS-LNM, stronger for mid-latitudes and in the northern hemisphere. According to Ziemke (personal communication), the OMI/MLS dataset needs to be corrected by -1.6 DU/decade. This correction would reduce the observed drift of about 5 DU for the analysed period between the data sets but not fully eliminate it. OMPS-LNM shows no drift in the ozonesondes comparison (Orfanoz-Cheuquelaf, 2023, pp. 91–92).

Referee #2:

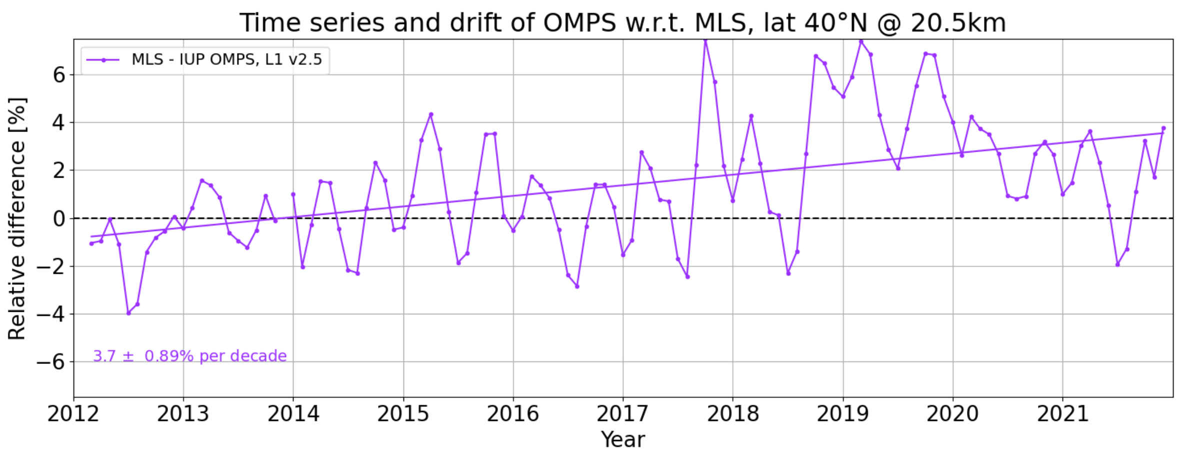
Authors addressed some of referees' comments in their revision. However, I have some concerns that prevent me from accepting this paper for publication in the existing form.

- All 3 referees asked authors why the dataset ends in 2018. Authors response was: "The OMPS-LP ozone profile time series based on L1 V2.5 data … were found to exhibit a significant positive drift after 2018 (Kramarova et al.,2018). For this reason, only the data until 2018 are used to create the OMPS-LNM-TrOC dataset."

A careful examination of Kramarova et al. 2018 reveals that the study was submitted in November 2017 and documented "observed biases and seasonal differences and evaluate the stability of the version 2.5 ozone record over 5.5 years" starting from April 2012. The quoted study obviously did not analyze data after 2017 and did not make any predictions about drifts after 2018. I found this very disturbing. It is fine to say that in this tropospheric study we choose to focus on the time period from 2012 to 2018 because we didn't process or analyze data after 2018, or found unexplained drift after 2018 etc.. But it is unacceptable to refer readers to the study that does not analyzed data after 2017.

A: Thank you for pointing this out; we realized our formulation was misleading. Kramarova et al. (2018) discussed, for the first time, the drift affecting, as you rightly say, the first 5.5 years of the OMPS-LP time series. By comparing OMPS-LP deseasonalized anomalies with MLS data, we also investigated the drift affecting our stratospheric ozone product, including data until the end of 2021. Below, we show an example of the stratospheric ozone time series in terms of monthly differences with respect to MLS in the mid-latitudes at 20.5 km. We notice that, for this case, around 2018, the drift with respect to MLS becomes stronger (see Figure below). Consequently, we decided not to update the tropospheric data set beyond the end of 2018. We plan to reprocess the whole dataset as soon as the new version of stratospheric profiles is ready, which is expected to have a mitigated drift.

The manuscript is corrected as follows:
(L. 139-146 of the new version)
Our OMPS-LP ozone profile time series V2.6 and V3.3 use L1 V2.5 data. As discussed by Kramarova et al., 2018, the ozone time series above 20 km retrieved using this L1 data exhibit significant positive drift, especially after 2016. Our later investigations show that the data after 2018 is affected even more strongly. For this reason, we decided not to continue updating the OMPS-LNM-TrOC dataset beyond the end of 2018 using profiles based on L1 V2.5 data. Currently, only measurements from the central slit are used to retrieve ozone profiles because of remaining calibration issues related to the measurements from the side slits. More information and technical details on OMPS-LP can be found in Kramarova et al. (2018), Arosio et al. (2018), and references therein. A reprocessing of the OMPS-LNM-TrOC data is planned as soon as the new version of OMPS-LP stratospheric profiles (V4.0) based on the improved L1 data (V2.6) is available.



- Responding to Referee #1 question authors replied: “The orbital structure observed over the Pacific Ocean results from a lack of coverage in the change of the orbit date, reducing the density of available data. This comes from an erroneous flagging of OMPS-LP L2 data”.
Could you please expand on this? Is it a problem with IUP-OMPS V3.3? Or is it a problem with OMPS NM total? Is it a technical problem? Can it be fixed in future revisions?

A: The problem came from a software bug. Some orbits were missing when the date changed along the orbit in the IUP-OMPS V3.3 and, consequently, in the OMPS-LNM process. This issue was fixed, and Figure 4 was updated in the latest submitted version.

- Authors explained that the cloud fraction estimates came from the NASA OMPS NM total ozone dataset (OMPS_NPP_NMTO3_L2). Authors provided a reference to the OMPS_NPP_NMTO3_L2 dataset (Jaross 2017). Then they started to described MLER model and referred to the corresponding Readme file. I feel it's inappropriate reference since the purpose of the Readme file is to provide description of the variables reported in the files but not the methodology or the algorithm. It would be more appropriate to cite the V8 ATBD document which provides the description of cloud fraction calculations: Pawan K. Bhartia and Charles W. Wellemeyer, OMI Algorithm Theoretical Basis Document, Volume II, Chapter 2, Aug. 2002, https://eospso.nasa.gov/atbd-category/49.

A: Done (L.106 of the new version). Thank you for pointing this out.

- In response to referee #2 question about assumed uncertainties in TH, authors replied "The error in TH used for the error estimation, i.e. ±100 m, is based on the information from the NASA team and corresponds to the best current knowledge". Is it an estimate for the absolute error in TH or for a drift in TH? Can you provide a reference for this? Publications by NASA's team provided larger estimates for TH error. For instance, Moy et al. 2017: "The application of RSAS to Limb Profiler (LP) measurements from the Ozone Mapping and Profiler Suite (OMPS) on board the Suomi NPP (SNPP) satellite indicates tangent height (TH) errors greater than 1 km with an absolute accuracy of ±200 m." Then Kramarova et al. 2018: "The combined accuracy of our two altitude registration methods is about ±200 m."

A: Thank you for this remark. The NASA team uses two methodologies to verify the pointing of OMPS-LP originally obtained from the star tracker information: the two papers by Moy et al. (2017) and Kramarova et al. (2018) report and discuss the accuracy and the specifics of these two methods. The RSAS is used to control the absolute pointing with an accuracy of ±200 m, whereas the ARRM is more suitable for assessing the relative pointing with an accuracy of ±100m. A combination of the results of these two methodologies is used to determine the static ground-to-flight and intra-orbital corrections. The latter is provided daily as a function of the observation number within the orbit. The uncertainty of this correction is determined by the ARRM approach uncertainty (100 m) and propagates as a random error to the retrieval results. The uncertainty of the static correction from the RSAS method (200 m) results in a potential bias of the ozone retrieval. However, the validation studies performed so far show no indication of a potential bias in the pointing. For this reason, only random uncertainty was considered in our error estimations. As mentioned above, this uncertainty is determined by the accuracy of the ARRM method, which is "sufficient to detect 100 m changes in pointing in the absence of GPH errors." (Moy et al., 2017).

References:
Moy, L., Bhartia, P. K., Jaross, G., Loughman, R., Kramarova, N., Chen, Z., Taha, G., Chen, G., and Xu, P.: Altitude registration of limb-scattered radiation, Atmos. Meas. Tech., 10, 167–178, https://doi.org/10.5194/amt-10-167-2017, 2017

Orfanoz-Cheuquelaf, A. P.: Retrieval of total and tropospheric ozone columns from OMPS-NPP, Ph.D. thesis, University of Bremen, https://doi.org/10.26092/elib/2179, 2023.