

## Reply to referee #1

Thank you for the additional comments and the noting the erroneous reference in the text. Both remarks have been accounted for in the text.

*This is my second review of the manuscript. The authors have correctly taken into account my remarks and I recommend publication in Atmospheric Measurement Techniques. I just have 2 minor comments:*

*- line 66: The reference to the ozone lidar implemented in Lauder by RIVM is not correct. It should be:*

*Swart, Daan P. J., et al., RIVM's Stratospheric Ozone Lidar for NDSC Station Lauder: System Description and First Results, 17th International Laser Radar Conference, Sendai, Japan, 405-408, 1994*

*This conference paper describes the lidar system and its first results. It is not a comparison paper, so the sentence mentioning the reference to Swart et al., 1994 should be modified accordingly.*

The reference has been corrected and is now moved to the section 2.4 where it fits better to first mention this description of the lidar and its results.

*Line 310: the lidar is also a remote sounding instrument, so I suggest to add the word "passive" in the sentence: The passive remote sounding instruments (FTIR, Umkehr, MWR)*

This is a good suggestion and the word has been added to the text.

## Reply to referee #2

Thank you for the additional comments. Text has been altered and added to account for your remarks.

*Overall, the paper is much improved and not far from suitable for publication. The most important improvements are: (1) clarifying the data version/quality and the inclusion of the Zeng et al. (2024) reference, that is now available to the reader; (2) the importance of the stratospheric results for LOTUS and stratospheric ozone assessment, ie the rationale for the paper, is better expressed and the theme carried through. Downplaying the TOAR implications, as the authors point out, is appropriate at this point.*

*The arguments for not reprocessing the sonde data for the "EnSci drop" and related concerns are reasonable at this time. However, the ~3% post-2016 total column ozone (TCO) dropoff over Lauder, although seemingly small, remains a robust signal that is affecting the results. The figure below is an update from this Reviewer's prior review, showing the dropoff now in comparison with 5 (rather than 4) TCO satellites. The dropoff in TCO is quite visible in Figure 1 of the paper and must be stated explicitly by the authors. The dropoff appears to propagate into both the drift (lower stratospheric drift, Table 4) and trends (Table 5). Indeed, if a 'simple fix' were to add 3% to the post-2016 Lauder sonde data, the Table 5 trends might decline from ~5%/decade to ~-2%/decade. An important "bottom line" then is that the sonde trend is even smaller than the LOTUS (Godin-Beekmann ref) estimate.*

We added a remark to Section 2.5 concerning the presence of the post-2016 dropoff of ozone with additionally a reference to the supplied figure of the reviewer (although in the previous version with a comparison to 5 satellites instead of 4) where the dropoff is visible. In Section 4.2.6 two sentences are added to show how the reviewer's suggested 'simple' fix of the dropoff would alter the drift values bringing it closer to the drift values of lidar. This same change is addressed for its influence on the ozonesonde trends and how they are changed even more compared to the LOTUS trend estimates. Lastly, this addition to analyze the dropoff is briefly mentioned in the conclusions.

*Incidentally, there seems to be a stray line in line 623 ? in the manuscript. Line 625, "sonde dataset" not "sondes."*

The text has edited to correct for these mistakes.

*Small edits including the points made in the prior paragraph are needed for an acceptable revision. THANK YOU.*