

Dear Farahnaz Khosrawi, thank you for the careful and thorough review of our manuscript and for the valuable comments and suggestions.

1. You have well described the reasoning for the usage of the three proxies, but it would be good if you could add a few more sentences discussing the remaining doubts from the referee, especially on the problems with introducing potential artifacts in the ozone recovery trends.

In this paper we show that the addition of the third SAOD proxy explains the low SH total ozone in the early 2020s, which are considered perturbations, leaving the retrieved ozone trend unchanged when adding four years of data (2021-2024), which we expect from the continuous and nearly linear decline in ODS since 2000. Without the additional SAOD proxy, the retrieved trends are strongly impacted by short-term variability or perturbations close to the end of the timeseries. We added the following text in the Discussion section:

"The additional HTHH-SAOD proxy was introduced to properly model the negative ozone perturbations during a short period of about three years (2020-2022) with elevated stratospheric aerosols at middle to high latitudes in the SH. Without this proxy, the retrieved trends until 2024 are significantly lower than the reported trends until 2020 (WMO, 2022; Weber et al., 2022). From the continuous and nearly linear decline in ODS since 2000, ozone recovery trends (due to ODS changes only) are expected to remain unchanged within uncertainty. With the addition of the third SAOD proxy and the dynamical proxies, this is the case."

The paragraph after this discusses the issue of overfitting.

2. - General: Remove space between degree sign and N and S, respectively

Done

3. - P2, L45: What is the LOTUS model setup? Add here one or two sentences describing shortly what it is.

To better explain the LOTUS setup, we extended the sentence with the used proxies for this setup:

"Both studies use the so-called LOTUS model setup (Petropavlovskikh et al., 2019) which includes proxies for Quasi-Biennial Oscillation (QBO), 11-year solar cycle, El Niño-Southern Oscillation (ENSO), and stratospheric aerosols."

4. - P3, L73: Sentence obsolete? Add some references here? Note: In the data availability section you refer to table A1, thus this makes it even more important to add some references to the main text.

We removed this sentence and added the reference to the Table in the Appendix (Table A1) with the links and sources of each used ozone dataset.

5. - P4, L53: Figure 1 -> Fig. 1

Done

6. - Figure 1 caption: I would suggest to rephrase the second sentence as follows: The instruments shown in light blue measure in the microwave region, those shown in green measure in the UV/visible region, those shown in orange measure in the thermal infrared region, and those shown in violet measure UV/visible limb scatter.

We agree, that this rephrasing is better in conveying what is shown in the figure. We replaced the old caption with the new one:

“Satellite missions contributing to each of the six merged ozone profile datasets. The instruments shown in light blue measure in the microwave region, those shown in green measure in the UV/visible region, those shown in orange measure in the thermal infrared region, and those shown in violet measure UV/visible limb scatter”

7. - P4, L89: Move this sentence to the previous paragraph.

Done

8. - P5, L99: Figure 2 -> Fig. 2

Done

9. - P5, L102: groundbased -> ground-based

Done

10. - P5, L107: Move this sentence to the previous paragraph.

Done

11. - P16, L310: Move this sentence either to the paragraph before or after to avoid having paragraphs with only single sentence.

We moved this sentence to the previous paragraph.

12. - P18, L366: (Sofieva et al., 2026) -> Sofieva et al., 2026

Done

13. - Figure A2-A5 caption: Last sentence -> use normal (upright) text font

Done

14. - Figure A7-A9: Same here.

Done