

Reply to the Editor and Reviewer #1 of the manuscript “Decadal tropospheric ozone radiative forcing estimations with offline radiative modelling and IAGOS aircraft observations”, Sellitto et al., second review stage.

Dear Editor, dear anonymous Reviewer #1,

Many thanks for your kind words about our manuscript and our review work in the previous stage. We have implemented the second round of comments: see our point-by-point reply in the following.

Thank you very much for your commitment to the review process of our manuscript,
[Pasquale Sellitto on behalf of all co-authors](#)

Reviewer #1

Thanks for taking carefully into account my comments and doing the additional analyses with an extended time interval (2017-2019) and the (post—COVID time interval (2000-2023). I agree with you that these analyses greatly improved the manuscript. When my comments and suggestions have not been taken into account, the authors provide meaningful arguments not to do so, so I believe the manuscript is ready for publication in ACP. I mainly have some minor or technical comments, mostly related to the (visibility of the) figures.

[Thank you for your constructive criticism and these kind words.](#)

1) Line 39: change to “was found to continue increasing well”

[Done](#)

2) Line 46: change to “ground-based, ozonesonde and satellite observations”

[Done](#)

3) Fig. 2: as already asked in my previous review report: why not extending the profiles up to 11 km (instead of 10 km)? You define the TOC and UTOC up to 11 km, so it would make sense to show the average profiles also up to 11 km!

[We are very sorry, our reply to this question was somehow lost during the first review round. The reason why we did not extend the top altitude to 11 km for this figure was because the number of observations available at this altitude is not completely homogeneous across the different regions \(for some regions, at this altitude we had a certain number of rejected observations due to influence of stratospheric airmasses\). While this has a very minor \(if any perceptible\) impact on both the UT ozone trends and the associated RF estimations, we decided to stop the profile figures only at 10 km, where these small inhomogeneities are not there anymore.](#)

4) Fig 2: I found the very hard to distinguish between the mean vertical profiles colored the grey and black on one hand, and red and dark red line on the other hand (in my printed version of the manuscript). Why not using 4 different colors here? Or increasing the contrast between grey and black and red and dark red and using dotted lines for two of them?

[We changed solid grey lines to dashed grey lines \(1994-2004\) and we increased the contrast of the red lines \(2017-2019\) using a lighter shade of red. It looks like more readable now, we think.](#)

5) Lines 145-146: “the general reduction” of UTOC in 2020-2023 seems to contrast with the

positive values between the brackets (+0.5+/-1.1 DU, +6.6+/-13.9% $\diamond$ also add DU here). So, please specify the reference period for the reduction (I guess w.r.t. 2017-2019?) here!

There was a word missing here: "...this is not the case for 2020-2023 when a general reduction of UTOC *trends* is found (+0.5 $\pm$ 1.1 DU, +6.6 $\pm$ 13.9%)...": we corrected the sentence and also added "DU", thanks.

6) Fig. 3: here again, if you would change the colors in Fig. 2, this would also increase the readability between the different column bars: the difference between red and dark red is very hard to distinguish!

Done, with the same colour scheme as for Fig. 2 (see comment 4 above).

7) Fig. 5: the difference between the two column bars of the different regions would be clearer (especially if they are close) if they would have an outside border line. The horizontal dotted lines that represent the uncertainty range of the solid lines are very hard to read (in my printed version). Couldn't you work e.g. with an uncertainty interval to the right of the figure (the horizontal solid lines are extended to the right and its uncertainty is marked there?).

We have added a black border line for the different column bars. We agree that the horizontal dotted lines (uncertainty interval for the solid lines) make the figure a bit busy, so we adapted a bit the suggestion and we only show them at the figure edge. Please also note that we adapted the colours of the horizontal lines to the new colours of Figs. 2-3 (lighter red).

8) Line 263: Replace with "Three time intervals"

Done, thanks