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Interactive comment on “Past changes in the vertical distribution of ozone – Part 3: Analysis and interpretation of trends” by N. R. P. Harris et al.

Anonymous Referee #1

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This is an important and useful paper which provides an up-to-date assessment of stratospheric ozone trends and their uncertainties. The paper provides a fairly concise summary of the results in an easy-to-find location - rather than having them in a large report. It is well written.

I think the paper can be published as is, though I do have some minor comments that the authors should consider.

1) Abstract. The abstract is a bit long, which is ok for this style of paper, but I think it misses two points: (a) It should make clear that the +ve trend in O₃ since 1998 is

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not necessarily recovery from EESC. The reader is left with the implication that the decrease in EESC explains 'all' of the change in the O3 trend. (b) The update of these results compared to WMO (2014) - that the upper stratospheric increase may not be significant - is an important result, I think, and is worth noting here.

2) P8570. Line 13. The Lambert et al paper is not available (not even submitted yet?), so that was not much help.

3) P8570. Line 25. Why is "recovery" in quotation marks. This is a possibly confusing and subtle issue for some so (as in the abstract) you should say what you mean by recovery.

4) P8570. Line 29. Do you mean 'a' trend?

5) P8578. Line 6. Not clear to mean what you mean by 'shape'. (Could be a vertical profile).

6) P8578. Line 13. Change 'losses' to 'depletion' (or decreases). (Loss is the chemical process which is always occurring and balanced by production...).

7) P8578. Line 16. Does 'insignificant' mean 'small' or 'not significant' (statistically)?

8) P8583. Line 25. I can see that you would want to reference the SPARC report for the methodology but I think there is a clear difference between combining observations of the same real quantity (O3) from different platforms, and estimates of a derived quantity using very different indirect methods and also models, which have no link to reality. I would suggest that you note this.

9) P8586. Lines 15-19. 'We hope...real scientific value'. These sentences should be rephrased. Is this just a wild hope, or is there reason to think that this work could be done? Change 'real' to something like 'considerable' - it makes it sound like the other work in this field has not been of any value.

10) P8587. Line 23. 'related to individual...'

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