

## ***Interactive comment on “Merged SAGE II, Ozone\_cci and OMPS ozone profiles dataset and evaluation of ozone trends in the stratosphere” by Viktoria F. Sofieva et al.***

### **Anonymous Referee #2**

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This manuscript introduces a new merged long-term data record of stratospheric ozone profiles from various satellite instruments based on their most recent retrieval versions. The dataset is used for ozone trend estimation from 1984-1997 and 1997-2016. Significant positive trends are found after 1997 in the extratropical upper stratosphere indicating the onset of ozone recovery. The authors present a very careful analysis of inter-sensor differences and uncertainties which are taken into account before combining the data. I appreciate that sampling inhomogeneities are also considered. The merging itself (as well as the trend estimation) are finally based on deseasonalized anomalies. Overall this study and the new data record provide a very valuable contribution to improve our understanding of long-term changes in ozone.

The manuscript is written in a clear and concise manner. I recommend publication and I have only a few very minor comments and technical corrections.

Minor comments:

p. 1, lines 30-31: "upper stratosphere" occurs twice in this sentence.

p. 1, lines 31-32: I would suggest to add that positive trends in the upper stratosphere are also expected due to decreasing temperatures in this altitude region.

p. 11, lines 14-26: The seasonal cycles for SAGE II and OMPS are computed using different reference time periods. For Figure 3 you calculate an adjusted seasonal cycle, but this is not used in the merging procedure. Might this have an impact on trend estimation ?

and p. 13, lines 13-15: I am not sure whether I understand this correctly. Are these offsets (SAGE II vs Ozone\_cci from 2002-2005 and OMPS vs Ozone\_cci from 2012-2016) due to the different reference time periods for the seasonal cycle ? And if so, do you correct for this ? Might these offsets have an impact on trend estimation ?

Technical corrections:

p. 24, line 5: missing journal

p. 24, line 35: remove curly brackets around "MIPAS"

p. 25, line 4: correct "H<sub>2</sub>O" and "O<sub>3</sub>"

p. 26, lines 13-15: refer to final revised paper

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Discussion paper

