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Discussions

Interactive comment on "Comparison of GTO-ECV and Adjusted-MERRA total ozone columns from the last two decades and assessment of interannual variability" *by* Melanie Coldewey-Egbers et al.

Anonymous Referee #3

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The authors present a comparison of two total ozone datasets, which generally is of interest for the atmospheric community.

Main drawback of this study is that both datasets are NOT independent, as both involve OMI measurements. This is mentioned in the paper (paper 6, line 10), but ignored in other parts and not thoroughly discussed. The GTO-ECV product, involving satellite measurements, is compared to an assimilated ozone product, also involving satellite measurements. In fact, both products involve O3 from OMI (from different algorithms, but based on the same OMI spectra). This should be clearly stated in the manuscript

(earlier than in section 3). It remains unclear to me how far the differences between GTO-ECV and MERRA after 2005 reflect just the difference between the DOAS vs. SBUV algorithm, or how far the assimilation model contributes. So please add a comparison of the OMI input data used in GTO-ECV vs. MERRA, or provide a reference on such a comparison. The impact of having data from the same instrument contributing to both datasets, and the meaning of such an intercomparison between dependent datasets, has to be discussed in more details in the manuscript.

Detailed comments:

- add a statement in the introduction that both datasets are not independent and provide arguments why the comparison still makes sense and what can be learned from it.

- Page 6 line 18: after the introduction of OMI in GTO-ECV AND in MERRA!

- Page 6 lines 22ff: when discussing differences here, the respective comparison of the input OMI data to GTO-ECV vs. MERRA has to be provided.

- Page 8 line 11: introduction of OMI in GTO-ECV AND in MERRA!

- Figure 3: please provide these plots also for before-OMI and post-OMI periods.

- Extend the discussion/conclusions wrt both datasets not being independent. What is the worth of an "excellent agreement" between two datasets that are not independent?

Minor comments:

- Table 1: please add a column for local overpass time.

- Page 4, line 13: if gridded on 1°, the smaller OMI pixels compared to SCIAMACHY do not matter that much.

- Page 5, line 18: please provide a detailed description of the "renormalization"

- Fig. 7: why do the difference plot on the right have such strong latitutde-dependency, e.g. a jump at 30°N in spring?

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