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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Trends in Global Tropospheric Ozone Inferred from a Composite Record of TOMS/OMI/MLS/OMPS Satellite Measurements and the MERRA-2 GMI Simulation" *by* Jerry R. Ziemke et al.

Anonymous Referee #1

Received and published: 20 December 2018

Main Comments: You need to improve the connection between the main article and supporting material. Specifically, you need to refer to sections A, B, C, and D of the supporting material separately and to restate (in one or two sentences) the main conclusion of these sections in the main bod (e.g.., the magnitude of the various constant offsets)

More information on the likely cause(s) of the increase in tropospheric ozone column over central Africa would be useful.

Comments:

L66: How different is a 28 Tg from what you find? If significantly, different, the cause could be discussed around lines 372-377.

L126: Remind readers why the CCD product is limited to the tropics

L350-352: What drifts have been observed in the MERRA-2 meteorological fields during the TOMS period that might affect the trends in the GMI simulation?

Minor Comments:

L28: is include to evaluate –> is used to aid in the interpretation of

L60: effects on tropospheric ozone from these changes in emissions –> effects of these changes in emissions on tropospheric ozone

L92: was determined –> was constructed

L203: v2.3 climatology –> v2.3 lightning climatology

L220: that include –> and includes

L286: tropospheric NO –> tropospheric NO emissions

Supporting Material L15: Remind reader why you use only rows 3-18 here.

L23: Figure S1. What do you mean by "Overkill" TCO?

L23: You may want to include the mean trend by decade for each region as these trends were used as a guide when choosing -1.0 DU decade-1 as the OMI/MLS TCO adjustment.

L29: (indicated) –> beginning with 40N-60N (upper left) and ending with 40S-60S (lower right).

L64: Likely fine but confirm that change and uncertainty are identical.

L98-103: Make sure that this information is in main paper too.

L107: An important yet small –> A small but important

L107: is to show some –> is an

L167: “Most all”. Can you be more specific?

L199: Why did you integrate from the ground to 8km as opposed to from the ground to the thermal tropopause as done elsewhere in the article?

Figure S10: The captions for A and B are identical. I believe the caption for B should refer to GMI as opposed to OMI/MLS.

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