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Atmospheric Measurement Techniques Discussions
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Interactive comment on "A Cloud-Ozone Data Product from Aura OMI and MLS Satellite Measurements" *by* Jerald R. Ziemke et al.

Anonymous Referee #2

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General Comments:

This paper describes a long-term record of monthly mean cloud ozone in the tropics derived from OMI/MLS measurements. It is derived from the residual between OMI ozone above convective clouds and MLS stratospheric ozone. As the OMI cloud pressure is often in the middle of clouds and the physical cloud tops often reach the tropopause, the derived residual ozone generally therefore represents ozone inside clouds, difficult to be measured otherwise. The OMI/MLS cloud ozone is also compared with cloud ozone derived from OMI alone using the ensemble cloud slicing. The spatiotemporal distribution of cloud ozone is discussed in contrast with background ozone. The analysis shows persistent low ozone in the tropical Pacific and higher ozone over landmass regions and connections with ENSO, intra-seasonal/Madden-Julian oscillation variability and boundary layer pollution. This study is suitable for publication in AMT. It is

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well logically organized. Overall, I recommend it to be published after addressing the following minor comments.

Specific Comments:

1. L115, do you mean OMI V3 as V8.5 is for the OMTO 3algorithm not for all OMI products

2. L251, the sentence “The panels in Figure 4 . . . ozone (asterisks)” is redundant with the first sentence and can be removed.

3. L267-269, you may add something to explain the larger uncertainty, e.g., due to the sparseness of clouds as indicated by much fewer derived ensemble cloud ozone in this region

4. Last paragraph of section 3, is the OMI/MLS cloud ozone product derived on the daily basis? If not, mention monthly mean and the grid cell for averaging. Briefly mention that it is limited to 30S-30N and explain why.

5. L286-290, please mention the enhanced ozone over the Pacific/Atlantic Ocean at latitude closer to 30S/30N.

6. L292, it is good to define “background” here, i.e., by adding “(near clear-sky scenes with radiative cloud fractions less than 30%)”

7. In last paragraph of section 5, is it contradictory between saying “STE accounts for <5% of ozone over tropical Atlantic” around L299 and “stratospheric ozone contribution is the most important factor for driving the IAV of upper tropospheric ozone . . .” around L308? Please clarify it.

8. In Figure 8 and L335-345, it is useful to add correlation between aerosol index and cloud ozone over Southern Africa

9. L356-360, any other speculation for the relatively low cloud ozone around 2010-2012?

Technical comments

1. L19, change to “tropospheric” as we say “lower tropospheric ozone”
2. L25, use full word “ultraviolet” or “ultraviolet (UV)” for UV at its first occurrence
3. L37 and other places, remove the “.” at the end of section title.
4. L111, change to “UV/visible” due to first/only occurrence of visible
5. L144, change to “lies”
6. L171, please define for “THIR” and “IR” at its first occurrence
7. L182, remove “effective cloud pressure” as OCP stands for cloud pressure
8. L253, please define ITCZ at its first occurrence.

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