

## ***Interactive comment on “Ozone Comparison between Pandora #34, Dobson #061, OMI, and OMPS at Boulder Colorado for the period December 2013–December 2016” by Jay Herman et al.***

### **Anonymous Referee #3**

Received and published: 22 July 2017

General Comments: This paper gives a brief synopsis of comparisons for 3 years of Total Column Ozone (TCO) measurements from two ground-based (Dobson and Pandora) and two satellite-based (OMI and OMPS) platforms over Boulder, Colorado. The main objective is to analyze TCO differences between the instruments and find any trends (or drifts) over the short period. Since the Dobson instrument is usually a standard for TCO measurements, it would be worthwhile for the authors to mention this study as a validation effort of the Pandora, OMI and OMPS instruments (particularly those considered newer such as Pandora or OMPS). The comparisons presented give

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valuable information, but further detail in the methodology of the statistics would provide more support for the interpretations the authors make. In addition, the discussion of the drifts found in the TCO measurements was missing any explanation for the results despite the highly correlated datasets. Drifts of 0.6%/year (or for the long term of 6%/decade) are not trivial, but appear to be minimized in the text.

Specific Comments: (1) Why was a Lowess fit (with 0.1) used versus another fit? If this analysis is related to what was presented in the Herman et al (2015) paper, this should be explicitly stated and any differences should also be pointed out. Is the fit used in Figure 2B the same as in Figure 3? If so, this should be stated. If not, an explanation is also needed. (2) The meaning of “significance” is not clear as written. What is used to test this? I think there is a level of assumption on the authors’ part that we should know this, but some additional information would resolve any confusion. (3) After 2014, there is a noticeable separation between the TCO measurements between the Pandora and Dobson in Figure 2B. Do the authors have any explanation for this drift? The last statement of the summary including “long term stability of the four instruments” seems presumptive without any explanation for the observed trends. In my opinion, these results need to be characterized further to support that statement.

Minor comments: Line 40 – OMI and OMPS acronyms need to be corrected to Ozone Monitoring Instrument and Ozone Mapping Profiler Suite respectively. Line 88 – ‘archived at WOUDC’, missing “at”. Line 102 – missing “;” to separate listed references.

After addressing the above concerns and clearing up some confusion in the results, I believe this paper would be appropriate for publication with AMT and provides useful evaluation of TCO observations over an extended time period.

1. Does the paper address relevant scientific questions within the scope of AMT? Yes  
2. Does the paper present novel concepts, ideas, tools, or data? Yes - data  
3. Are substantial conclusions reached? For the most part with some additional support

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suggested in point 3 above. 4. Are the scientific methods and assumptions valid and clearly outlined? Yes except for the specific points 1 & 2 mentioned. 5. Are the results sufficient to support the interpretations and conclusions? Yes after point 3 is resolved. 6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? After specific points 1 & 2 are addressed. 7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? Yes 8. Does the title clearly reflect the contents of the paper? Yes 9. Does the abstract provide a concise and complete summary? Yes 10. Is the overall presentation well-structured and clear? Yes 11. Is the language fluent and precise? Yes 12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Same as 4. 13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? No 14. Are the number and quality of references appropriate? Yes

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