

## ***Interactive comment on “The Ozone Monitoring Instrument: Overview of twelve years in space” by Pieternel Levelt et al.***

### **Anonymous Referee #2**

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#### General Comments:

This is an excellent overview of OMI performance and results, and represents a monumental undertaking to summarize the efforts of many researchers taken over the last 13 years. OMI is an important bridge between the US BUUV type instruments and the European GOME/SCIAMACHY instruments to the yet to be flown atmospheric composition instruments. The paper opens with the stated science objectives of the OMI instrument, followed by a review of the instrument features and performance, and then summarizes the many science results and applications by operational users. The paper is an excellent complement to this ACP special issue and provides the reader, with the more than 200 references, an excellent resource for OMI capabilities.

Although the paper has many contributors, the detailed content reads fluently and with

an even technical level. There are other ways to organize large number of topics in the paper, but the organization as presented is appropriate.

Specific comments:

Since all the (that this reviewer can tell) science findings and technical results that appear in this paper have been previously published, there are no comments that challenge or question the results.

Section 2.2 deals with air quality forecasting. On page 10, line 11 what is the connection with “..total ozone column have been assimilated..”?

Page 11. What is the significance of Figure 3? What is the quality of the comparison, and what is the conclusion?

Page 12. What is to be concluded from Figure 4? The data are for the tropics, not an important source of pollution compared to Northern mid latitudes. This section deals with pollution trends. Perhaps these results pertain more to climate.

Page 13, first paragraph may better fit in section 7.3 that deals with synergy by combining OMI and other instrument data.

Page 18, SSI Monitoring is very important topic, but most of the discussion has been published and repeated here. The level of detail is out of proportion for this review paper.

Page 23, line 14. Are the predicted ozone trends detectable with this level of long term accuracy? That is the goal of these efforts and a top level OMI objective.

Page 24, Figure 14. The content of the little green circles at end of each bar is hardly discernable. Explaining what they are might be useful. Deleting them will not reduce the value of the figure. In the caption, what is the basis of the 220 DU?

Page 24, Line 20. Should the MSR-1 results appear in the next section on UV. Where these data used for trend detection? How do they compare with the results in Figure

15?

Page 26, Figure 16. The patterns are similar, but are the differences significant for the purpose the climatology was produced?

Page 27, Line 7. What are the “global correlative datasets”?

Page 28, Section 8.2. H<sub>2</sub>O is an important constituent. Are there global maps, trends, more research? For example, Wang et al. "Results show that the OMI data track the seasonal and interannual variability of TCWV for a wide range of climate regimes".

Page 31, Section 9.5. If this section is included in the article, then some mention of results should also be included. This would be consistent with other sections.

Page 32, Section 10. Cal/Val is a major activity for every space mission. For this overview paper, there is too much detail, however. OMI Cal/Val should be a paper in itself, and I would expect that a detailed description and results will appear in this special issue. Highlights only should appear in this review paper.

Technical Corrections:

Page 15, Figure 6 caption. What is “16-18”? Define HTAP. Should the phrase in the parenthesis say “(the sum of HTAP and missing sources)”?

Page 25, Line 7, I could not find “Douglass et al., 2011”, “Bais et al., 2007,” or the WMO report in the References list. Perhaps they were lead authors in the UV chapters therein.

Page 25, Line 24. The acronym “BAMS” should be defined.

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