

Review of acp-2018-614 v4

Albeit a shortened version of the original manuscript, this version is still quite lengthy. There is a lengthy comparison of the 'reference' data set (TOMS-OMI) with surface observations, followed by a lengthy intercomparison of the GOME-2 A & B, OMPS-NM & NP, and SBUV/2 observations, followed by a lengthy evaluation of data assimilation results by using unbiased vs bias corrected observations. I don't have much contention with the methods used, I think the comparisons and evaluations were done well. I do have some concerns about usage of a 'not ready for prime time' OMPS-NM and NP products. Even though the authors are careful to acknowledge these products as 'provisional', there are still many features in these ozone products that need to be addressed and corrected. There are cross-track biases in the OMPS-NM that needs to be corrected, so even though latitude and SZA corrections are generated the cross-track differences would still need to be accounted for in the bias correction. The thing that concerns me most is that future, less diligent, readers of this article may think that these bias differences pertain to the final OMPS v8 products. Eventually, NESDIS will produce an evaluation/validation report on the final v8 products, but usage of these provisional products for intercomparison with other 'mature' products is may give the wrong impression of the quality of these products.

Secondly, the authors need to be careful with the 6-hour forecast comparisons with the GOME-2 observations. There are significant 'time of observation' differences between the two data sets, which also means that the geographical coverage is different, which means that the number of collocated observations is limited with latitude. All of this may impact the statistics presented and the bias corrections generated.

Another comment is that when comparing a total column ozone product (OMI or OMPS-NM) against a nadir profile's summed total ozone product (SBUV/2 or OMPS-NP) there may be differences that show up latitudinally as the combination of total ozone channels changes with SZA while the profiler changes the number of channels it uses. This may account for the noticeable changes in differences in Figures 2 and 3.

When introducing the OMI ozone product considerable space is used to present the DOAS technique and quality statistics but then in the end only the TOMS technique is used. Somewhat similarly is done with the GOME-2 products, only there are no available quality statistics for the NESDIS generated products.

In Figure 8, the quality of the CNTL is poor in the tropics and the high latitudes. I presume this is indicative of the questionable quality of the ozone climatology. I wonder how the results would change if a better climatology is used.

The only misspelling/grammatical error I found was in the abstract on line 8 : 'near-time time' should be 'near-real time'.