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On behalf of the World Ozone and Ultraviolet Radiation Data Center, shows the resulting improvements to the Ozone CRD by optimising the instrumental slit functions. In order to assess the inter-consistency and long-term stability of the five sensors included in this data record, comparisons with existing datasets by the same sensors are also considered, always using as background "truth" the ground-based measurements. Possible remaining issues are also acknowledged and their reasons elucidated.

**Woudc Brewer & Dobson Spectrophotometers**

The Woudc Dobson and Brewer stations include in the OMI GODFIT v3 validation (http://www.woudc.org).

**The OMI GODFIT v3 Algorithm Total Ozone Columns**

Monthly mean differences between Dobson and OMI GODFIT v3 TOCs. No temporal issues can be identified and the overall agreement is well within the requested 1% for most latitudes.

Seasonal variability of the differences between Dobson and OMI GODFIT v3 TOCs. No significant issues can be identified and the overall agreement is well within the requested 1% for most latitudes.

Please visit Paper 115 - Extension of the ESA Ozone Climate Change Initiative program, OMI Observations, Van Christophe and colleagues for details on the GODFIT v3 CI algorithm.

**Comparisons with the OMI DOAS and OMI TOMS Datasets.**

In this section, comparisons between the OMI GODFIT v3 TOCs (blue) and co-located OMI DOAS and OMI TOMS [in red] TOCs and the equivalent Woudc Brewer-based stations are shown. The OMI DOAS and OMI TOMS data have been downloaded from the Aura Data Validation Center service at http://avdc.gsfc.nasa.gov.

**Comparisons between the different OMI/Aura TOCs and the Brewer spectrophotometer TOCs in the upper row, the OMI TOMS data are shown. In the bottom row, the OMI DOAS data.**

- The monthly mean time series [left column]: the OMI GODFIT v3 TOCs show a near zero difference with the Brewer with a small negative drift after year 2012 currently under investigation. The OMI TOMS TOCs [top] show a stable difference of around -1.5% for all years, whereas the OMI DOAS TOCs [bottom] show a marked positive drift starting around -1.1% at year 2005, reaching -1% in year 2011 and stable henceforth.
- The latitudinal variability [middle column]: no discernible latitudinal dependency is seen for either of the three OMI products, only a constant difference between GODFIT v3 and the TOMS/DOAS Algorithms of around 2%. Most features in these comparisons are due to the ground-based stations located within each 10° bin.
- The solar zenith angle dependency [right column]: a very similar SZA behaviour is seen for both GODFIT v3 and OMI TOMS [upper plots], with almost no dependency up to 75° and a small increase after that, however with quite few collocations. For the 75° to 90° region, the same can be said for the GODFIT v3 & OMI TOMS comparisons. The differences in the quite low & quite high angles are due to OMI DOAS.

**Comparisons with the GOME, SCIAMACHY and GOME2 GODFIT v3 Datasets.**

Comparisons between the different GODFIT v3 TOCs and the Brewer spectrophotometer TOCs in the upper row, the GOME TOCs in the middle the SCIAMACHY TOCs and in the bottom the GOME2 TOCs.

- The monthly mean time series [left column]: the OMI GODFIT v3 TOCs show a near zero difference with the ground with no other patterns. A small seasonal signal can be seen for the rest of the GODFIT v3 TOCs, with differences rising to 1% for the winter months, under investigation.
- The latitudinal variability [middle column]: no discernible latitudinal dependency is seen for either of the four GODFIT v3 products and no differences whatsoever.
- The solar zenith angle dependency [right column]: a very similar SZA behaviour is seen for the three original GODFIT v3 products, GOME/SCIAMACHY/GOME2, with an increase above 60°. OMI GODFIT v3 appears more unaffected by the SZA up to 80°.

**Comparisons between the different OMI/Aura TOCs and the Dobson spectrophotometer TOCs in the upper row, the OMI TOMS data are shown. In the bottom row, the OMI DOAS data.**

- The monthly mean time series [left column]: the OMI GODFIT v3 TOCs show a near zero difference with the Dobson, but the OMI GODFIT v3 & OMI TOMS [lower & OMI TOMS (upper)] is seen for the Dobson collocations, with a mean difference of less than 1% for the three algorithms. The same drift pattern as for the Brewer comparisons (see above) are noted, pointing to an instrumental issue.
- The latitudinal variability [middle column]: no discernible latitudinal dependency is seen for either of the three OMI products, most features in these comparisons are known Dobson instrument issues.
- The solar zenith angle dependency [right column]: the known Dobson effective temperature dependency is manifested in these plots, with all three algorithms showing a near similar behaviour. One might note that at the low SZA bins, GODFIT v3 is facing slightly better than the other two datasets.

**Further Reading:**

The ESA Ozone CLI portal. [http://www.esa-ozone-cli.org](http://www.esa-ozone-cli.org)


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