Atmospheric Measurement Techniques Discussions

Interactive comment on "Geophysical validation and long-term consistency between GOME-2/MetOp-A total ozone column and measurements from the sensors GOME/ERS-2, SCIAMACHY/ENVISAT and OMI/Aura" *by* M. E. Koukouli et al.

Anonymous Referee #2

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The authors present the validation of the GOME-2 total ozone columns retrieved with GDP 4.4 retrieval algorithm. For the validation Dobson and Brewer measurements are used. In addition, the comparison is made with similar retrieval algorithms for GOME and SCIAMACHY and with the two OMI total ozone products. Several dependencies are presented, but interpretation of the results is rather limited.

Major comments

The validation results are sometimes contradicting for the comparison with the Dobson and the Brewer measurements. Maybe the authors can add some discussion about which result is more reliable. The use of error bars or the discussion of the errors on the comparisons might also help the reader to interpret the significance of the results.

Substantial part of the paper handles the dependence of the cloud fraction and pressure. It would be usefull to add this to the conclusion as point 5.

Minor Comments

Page 3024, line 22: The footprint size of 60 x 30 km depends on both wavelength window and on the observation state of SCIAMACHY. It is better to call this a typical footprint size for ozone observations.

Page 3025, line 9: The spectral range of OMI is 270-500 nm (not 380 nm).

Page 3025, Section 2.1.3: I miss here a discussion on the row anomaly of the OMI instrument and on the filtering of the anomaly in the OMI-TOMS data and the OMI-DOAS data. Is this the same for both algorithms ?

Page 3026, line 9: The second time the word "than" appears, seems a typo.

Page 3026: line 13: What is "near-to-real time" ? Is this not just "near-real time" ?

Page 3030: Line 2: Earlier it was discussed that the Bangkok station forms an outlier in the comparison. Is the Bangkok station still appearing in the data for Figure 2 and later Figures ? This might clearly affect the intercomparisons, especially Figure 3 and 4, but it is no longer discussed in the paper.

Page 3030: I miss a discussion about the error bars shown in Figure 2. It is not mentioned what they represent. Are they changing in time? Why are they so large for a few data points?

Page 3031, line 9: The word "left" is redundant.

Page 3031, line 12-13: Why is this same equatorial belt not missing in Figure 1 for GOME-2. What data is shown in Figure 1 around the equator ?

Page 2031, line 17-19: In the text the whole caption of Figure 4 is repeated. The same kind of repetition is done for several other Figures. I recommend to mention this information only in the captions.

Page 3031: line 24-26: The description of rows 3 and 4 of the Figure does not match the actual Figure itself.

Page 3034, line 1: Here, the Dobson stations are chosen for Figure 5. Why ? Because the Dobson stations are only in the NH, the results will be biased to this region.

Page 3034, line 1: How many data points are used to create Figure 5? I would like to suggest to show a density plot for this Figure.

Page 3042, last line of the caption: remove "left"

Page 3043, last line of the caption: remove "left"

Page 3044, Figure 4: The Figures are very small in the printer-friendly version of AMTD. Please, make the font size larger.