

Interactive comment on “Differences between ground Dobson, Brewer and satellite TOMS-8, GOME-WFDOAS total ozone observations at Hradec Kralove, Czech” by K. Vanicek

Anonymous Referee #2

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General comments

The paper draws the attention of the readers to some potential problems that can arise by the use of total ozone observations without knowledge of the drawbacks of the observing techniques. It will be very helpful for people who analyse total ozone data set for long term variations. It gives explanations for differences between data-sets taken at the same site that are outside the expected error-bars of the instruments. Also the effect of these differences on trends is presented by a simple analysis. Although the data of only one station are treated most conclusions seem to be valid for similar stations. The paper itself does not reveal new scientific findings but the conclusions

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are very important for the interpretation of results of analysis of total ozone data. It also proposes solutions to cope with the identified problems.

Specific comments

In section 2.4 on p 5845 a discussion is given on the accuracy of the monthly means, given the fact that there are missing values. An analysis is made by a Monte-Carlo method to find out the error-bars related to the missing values. This gives indeed an error estimate for the error associated with the RANDOM missing of data. It is however probable that days with missing values are not random, but are related to specific conditions (weather conditions that prevent observations). If these conditions are related to specific deviations of total ozone from the monthly mean, then a bias is introduced in the data-set of monthly means that is not included in the Monte-Carlo estimates of the error. A comment on this should be added.

In section 3.2.4 on p5849, eq 3b the SO₂ value is subtracted from the raw Dobson data. However Komhyr and Evans (GRL, 7, 157-160, 1980) derived theoretically that a factor of 1.5 should be used while De Backer and De Muer (JGR, 96, 20711-20719, 1991) found a value of 1.4 from quasi simultaneous Brewer and Dobson observations. The use of the factor 1.0 in this manuscript needs to be justified.

Technical corrections: P5843, line 2, replace "once" by "ones" p5843, line 12, I think it is better to emphasise the fact that for SO₂ a different linear combination is made than for ozone. Therefore change "The linear" in "Another linear" p5845, line 5, The sentence starting with "The methodology was ..." does not seem to be grammatically correct, an is therefore confusing. It should be reformulated to better represent the idea's. p5845, l 23, change "moths" in "months"

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