

Interactive comment on “Metrology of ground-based satellite validation: co-location mismatch and smoothing issues of total ozone comparisons” by T. Verhoelst et al.

Anonymous Referee #2

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This manuscript considers total ozone column measurement and the uncertainty arising in co-locating satellite data with ground measurements.

In particular it proposes an uncertainty budget which includes smoothing and sampling errors. To do this, the simulation software named OSSMOSE is used.

Simulation results are validated by comparing %bias and variability of observed and simulated total co-location errors. Bias is assessed by median co-location %error and variability is assessed by inter-quantile difference based on 0.16 and 0.84 quantiles.

The paper is well written and findings have the potential of adding new science to cur-

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rent literature. Nonetheless, in order to be ready for publication, I think this manuscript should give a stronger motivation. In particular conclusions should not be limited to the use of robust statistics as a tool to compare observed and simulated uncertainty.

I try to make this point more clear. Robust statistics such as median and inter-quantile difference are well known and are commonly used to avoid the effect of extreme values on central tendency and variability estimation, the extreme being measurement errors (outliers) or climate extremes (non Gaussian distributions). In this sense the paper correctly validate central tendency of simulated co-location errors. On the other side it is well known that meteorology and climate change are strongly influenced by extreme values (e.g. Katz R.W., Brown B.G., 1992, Extreme events in a changing climate: Variability is more important than averages, Climatic change, 21:3, 289-302, . . . like so many others).

For these reasons, in my opinion, the paper should consider this point. For example assessing the behavior on the tails of the error distributions and/or comparing median/spread results with more traditional mean/standard deviation results at least in some selected test cases and/or using appropriate synthetic indicators, for example, the temporal mean of the median time series.

MINOR: Legendas in figures have color and line tickness which are different from the figures. In particular red/orange/brown are mixed.

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