Review of "TOC intercomparison of Brewer, Dobson and BTS Solar at Hohenpeißenberg and Davos 2019/2020"

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This is an important contribution to the continuing efforts for expanding our capabilities in monitoring the ozone layer. The paper describes a TOC intercomparison using the well-established Brewer and Dobson ozone spectrophotometers together with newer BTS array spectrometers. The description of the intercomparison is sufficiently detailed and the conclusion contains important steps for further improvement of the new instruments and the retrieval algorithms. The results of the intercomparison are encouraging.

There are some important shortcomings in the current state of the paper. These are mostly form-related, but some are content-related as well.

First, this is likely the longest Introduction I've seen in a such a short paper. I highly recommend cutting it in half. The long list of which reference paper describes which instrument is likely unnecessary.

Also to this, an inappropriately detailed description of the Dobson spectrophotometer is out of place in this paper, especially when an exhaustive reference list is provided.

The authors keep referring to the array-based measurements as "continuous spectral range" and contrast this with the "discrete wavelngths" type of the Brewer and the Dobson. I truly dislike such terminology since the only difference, however important, is in the number of the wavelengths. There is no way to either record or analyze "continuous spectral range". I recommend to either define what you call "continuous spectral range" or not use this term.

In lines 142-143 the paper incorrectly states that only one wavelength is used for SO2. In fact 5 wavelengths are used for SO2.

Lines 145-150 have a somewhat confusing discussion about the time needed for a measurement in different instruments. The discussion seem to first suggest that both the Brewers and the Dobsons take too long compared to BTS only to finish by saying the indeed it takes up o 5 min for BTS to collect good statistics. I recommend to either express this though clearly as to why you see this important or remove this from the paper.

Lines 239-241 must be re-written to a) correctly define what 'm' is and b) to explain how it is possible to have same AMF for ozone,aerosol and Rayleigh (it isn't).

Lines 247-248 may need a more accurate statement about shy it is possible to retrieve Rayleigh because it is definitely not due to "advantage of the minimal least square fit". Hint: if Rayleigh were to correlate with ozone the retrieval would fail.

Line 380 may lead the readers to conclude that the strong seasonal trend is somehow related to the Brewers. Please clarify/re-phrase.

I recommend to re-work the flow of lines 389-395 to have a more logical order of the discussion of the straylight and its effect on the seasonality in the differences.

Lines 404-405. Assume it's a typo: "too high" meant to be "too low"?

This is important: almost all figures use a colour scheme that is poor for presentation. Please use more contrasting colours for different lines/points. Also in figures: some lines are only marked as "fit" while no explanation is found how those fit were done.

Cosmetic corrections:

line 12: "fibre-coupled", "optics", "optics"
line 21: consider re-wording "the slant path slope" or define what you mean
line 25: "is" instead of "has been"
line 107: way too many decimal points for the lat/lon.
line 245: re-word "parametrized with a linear parametrization"
line 414: "applied" instead of "applicable"
line 416: "significantly"