Review of “Aerosol optical depth in the European Brewer Network” by López Solano et al.

The manuscript by López Solano et al is the result of a big collaborative work. It describes the algorithm and the processes used in EUBREWNET to retrieve AOD from the Brewer network, provides a quantitative estimation of the uncertainties, and lists a number of possible actions which could further improve the quality of the specific product. My main comment is that, although the manuscript is well structured and concise, linguistic corrections are necessary prior to its publication to ACP.

In the following, there is a list of more specific suggestions minor comments.

Abstract

P1, L1-2: Add “,” after the words “networks” and “time”

P1, L4: According to the Eubrewnet webpage, the Eubrewnet network includes more than 50 instruments deployed not only in Europe, but from Patagonia, Argentina and Tasmania, Australia to Kangerlussuaq, Greenland. Why only 30 instruments are referred? Do you refer only to the currently calibrated instruments? Please be more specific.

P1, L9: Replace “aerosols” with “AOD”.

Introduction

Some information regarding the importance of measuring the AOD in the UV, and especially in the UV-B region (where Brewers perform measurements), should be also added in the introduction. This would give the reader a better sense of the importance of this product. E.g., the interaction of aerosols with UV radiation, especially at lower wavelengths, is usually stronger and more complicated compared to the interaction between aerosols and the radiation at visible wavelengths, and yet not fully understood (Bais et al., 2015: Ozone depletion and climate change: impacts on UV radiation). Thus, measurements of the aerosol optical properties in the UV can improve the understanding of these interactions and help obtaining more information regarding the physical and chemical properties of aerosols. Furthermore, over several mid-latitude stations aerosols have found to be the main driver of the long-term changes of both, the (very important for the human health) UV and visible radiation.

P2, L1: Use “such as” instead of “like”

P2, L4 – 6: Use “introduce large uncertainties” instead of “add a large uncertainty”.

P2, L18: Again, I think that Brewers in Eubrewnet are more.

P2, L28: “Further … information”. The specific sentence is not very clear. Please rephrase.

P3, L1: Replace “first give details” with “present the results of”

P3, L2: I think that “estimate” would be more accurate than “derive”

P3, L3: replace “in these Brewer instruments in” with “from these Brewer instruments for”

Method

P3, L9: Use “Methodology” instead of “method”

P3, L13: Delete “used … spectrophotometer”

P3, L17: Use “performs” instead of “makes”. Also, replace the phrase “and, through a well defined process, produces a TOC value” with “which, through a well defined process, are used to calculate TOC”

P3, L19: Replace the phrase “but … work” with “the most relevant parts of which to the present study are highlighted in the following”

P3, L20: Use “measures” instead of “detects”

P5, L8: Use “In addition to” instead of “Besides”

P5, L9: Use “we apply those” instead of “we also apply the ones”

P5, L10: Use “for” instead of “of”

P5, L14 – 16: This sentence is not clear, please rephrase

P6, L15: Re-write Eq. (6) so that all terms are in the same line.

P6, L27: I suppose that you add this last criterion (AOD st. dev. <0.02) to filter out the measurements performed under cloudy conditions (since these measurements are only partially filtered out by applying the TOC filters). Please add some more information.

P8, L7: I think that using the word “reliable” would be more accurate than using the word “correct”.

P9, L7: Replace “For the uncertainty” with “For the estimation of the AOD uncertainty due to the corresponding uncertainty in”.

P9, L28: Use “dataset” instead of “data”

P9, L29: Use “from” instead of “for”

P9, L30: Add “which is” after “provided,”

P9, L31: Use “which is” instead of “this being”

P10, L6: Do you mean the corrections which are currently applied or the corrections which should be applied to reduce the effect of large FWHM? Please clarify.

Results

P11, L7: Do you mean the difference between the results for different filters?

P11, L8: I think that what you mean here is that the filter correction removes the greatest part of the effect of the different attenuation by different ND filters. Please re-write this sentence and make clear what you mean.

P11, L13: Use “by” instead of “due to”

P11, L15: Use “considered to be” instead of “taken as”

P11, L16: Delete “For comparison”

P12, L10: Use “for Brewers” instead “of Brewers”

P12, L11: Use “consider to be equal to” instead of “approximate by”

P13, L10: Delete “ones”

P13, L11: Use “toward” instead of “in”

Figure 3: The format of the date used at x-axis labels is a bit confusing. Using a format like mon-yy or at least something like ”/” between DOY and year would be better.

P13, L20: “with the lowest” instead of “the lowest”

P13, L26: Delete “it should … Sect. 3.1” and add “(see Sect. 3.1)” at the end of the sentence.

P13, L28: Use “possible reasons” instead of “a possible reason”

P14, L13: Use “using” instead of “by”

Table 2: It seems to me that in this table you provide the 1-sigma instead of the 2-sigma standard deviation. Please double check.

Discussion

P16, L2: “generally” instead of “overall”

Conclusions

P17, L9: Replace “AOD results” with something like “the results of the AOD retrieval from Brewers participating in Eubrewnet”.

P17, L16: Add “with” before “the corresponding”

P17, L21: Again, this area is possibly larger.