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Atmospheric Chemistry and Physics Discussions

Interactive comment on "EuBrewNet – A European Brewer network (COST Action ES1207), an overview" *by* John S. Rimmer et al.

Anonymous Referee #2

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General Comments

The manuscript provides an overview of the achievements made (and those still promised) of the "EuBrewNet" network as funded by a specific COST action. The project has been very important for improving the quality, consistency and transparency of Brewer data in Europe and beyond.

This is of great interest to users of high quality total ozone data and lies within the scope of ACP.

My general comment is that in some places the manuscript currently reads more like a project proposal than a scientific paper. There are a number of places where I feel the details could be tightened up or the marketing talk toned down.

Once this has been done I believe it will be suitable for publication in ACP.

Specific Comments

Page 1

Lines 8-20 I think the whole abstract should be rewritten to be more specific about the contents of the paper and less polemical.

Lines 11-13 This list of relevant international bodies sounds like a project proposal or funding pitch and I think should be deleted.

Page 2

Lines 2-17 These statements should be better referenced. I suggest the UNEP/WMO Ozone Assessments as authoritative references for many of these claims. Hossiaini et al. 2015 seems a random choice to choose for this topic.

Line 8-10 You can't say the 2011 Arctic depletion showed a lack of understanding, because CTMs were able to reproduce the event forced with the actual meteorology, but it did illustrate that low ozone and high UV can still be a big issue in Europe despite the success of the Montreal Protocol. You could refer to recent work on ozone trends (eg Chipperfield et al. 2017, Weber et al. 2018).

Lines 17-23 Again I think these statements should be referenced.

Line 24 "TOC" has not previously been defined.

Line 25 For the information of readers not as familiar with the subject, you should also mention the Dobson which is slowly being supplanted by Brewers. I am not sure "most" is correct globally but no doubt it is true in Europe these days.

Line 30 "was being" - before what?

Page 3

Line 2 "any disparity" – disparity in what? (I assume you mean disparity in technique).

Line 2 – 6 This statement is too hyperbolic for a scientific paper – again it sounds like a proposal.

Line 7 I would drop or re-work this sentence. The separate funding is not the issue from a scientific point of view, the real issue is the different schedules, processing etc which you then go on to describe.

Lines 8-10 I would prefer more detail here. How does a different schedule affect the measurements? Were the results of different processing significantly different from each other? How big an effect do the instrument characteristics make?

Line 13 – Explain what you mean by "first generation".

Lines 18-22 Now the writing has changed to future tense. This again makes the manuscript sound like a proposal.

Lines 23-28 This paragraph is excellent because it lists the specific issues and gives references for each. However I don't like the "etc" because either EuBrewNet characterises these properties or does not. You could give a reference for slit functions too.

Page 4

Line 9-10 "the National Metrology Institutes" – which ones?

Line 12 "developed with" should be be just "developed" unless there was going to be something else in the sentence.

Line 18 Personally I think "roughly" is too informal for a journal paper and would prefer "approximately".

Line 23 I think it would be better to express these quantities (such as MS9 and O30) in more general notation (in fact as it normally appears in Brewer papers) and then give their equivalent in Brewer-specific terminology.

Page 5

Line 1 ETC_0 hasn't been defined yet.

Line 2 This is perhaps a philosophical discussion but I am surprised the first derivation of ozone is considered level 0 data. Level 0 would normally be the raw intensities. To calculate ozone you need to have an algorithm for mu and alpha and these have previously changed, and will continue to change, for example with new cross-sections.

Line 7 How are the filters characterised for non-linearities?

Line 11 "stray light correction" should be "a stray light correction"

Line 15 It should be explained more clearly when these iterations are performed. By the notation it appears O3_0 -> O3_1 -> O3_2 etc going up in the processing levels.

Line 19 O3 is not meant to be on both sides of the equation, is it?

Page 6

Line 1 "Finally the data is filtered to select only valid measurements" – this makes it sound as if your filters are 100% accurate in removing all bad data but no good data. Maybe re-word to something like "to try to select only valid measurements".

Lines 10-18 The arrangement of the paper seems wrong here because we have already read about the central processing in detail in the previous section but now we are being introduced to it again in general terms. (I suspect there has been cutting & pasting from different co-authors' contributions). Please ensure the different sections are unified and flow together properly.

Page 7

Line 17 It's not really correct to say the "WMO SAG Ozone has recently ruled. . .", in fact the International Ozone Commission wrote to the SAG directing them to implement the new cross sections (and to take stratospheric temperature into account too).

Page 8

Line 11 Figure 2 is nothing to do with the filter correction. The filter correction was previously alluded to but has remained somewhat mysterious to the reader.

Line 12-14 This is important. It is good to see the effect of all your work quantified like this. I would have liked to see more quantitative detail like this throughout the rest of the manuscript.

Technical comments

Page 2 Line 4 and Line 6 - It is unusual for "Ozone Layer" to be in capitals.

Throughout, "et al" should be "et al. "

The spellings of words are inconsistent, both "characterise" and "charcaterize" are used in different places, presumably by different co-authors.

References

Chipperfield, M. P., Bekki, S., Dhomse, S., Harris, N. R. P., Hassler, B., Hossaini, R., Steinbrecht, W., Thiéblemont, R. & Weber, M. (2017). Detecting recovery of the stratospheric ozone layer. Nature, 549(7671), 211–218. https://doi.org/10.1038/nature23681

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