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Atmospheric Measurement Techniques Discussions

Interactive comment on "Optical Characterization of Three Reference Dobsons in the ATMOZ Project – Verification of G. M. B. Dobson's Original Specifications" *by* Ulf Köhler et al.

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Response on the Reviews ATMOZ-Paper Köhler et al., AMT 2017-411

Referee 2:

Response to General Comments:

- The basic formula how to calculate ozone is added. I am aware that it is really a specific Dobson-Brewer oriented paper in the context of the ATMOZ project, which is already reflected in the title. I am not sure, how a larger community can be reached with additional or modified parts. Perhaps the addition of "Consequently the quality of the

Dobson TOC records in the data centres will be improved as well, which will increase the reliability of these data for their use in trend analyses and satellite validations" at the end of the second last section of the Summary might somewhat help.

- It is not the intention of the paper to compare the results of former laboratory investigations with the results here. This paper concentrates on the optical characterizations of three reference instruments and wants to show, how large the differences and the effects on the data will be. However, two sentences at the end of 3.2. are added to show the similarity to Evans et al. results.

- More precise and quantitative statements are included in section 3.2 also according referee 1's General comments.

- Figures 7a-c: See also my response to referee 1: "In contrast to the comment of referee 1 would like to keep this figure in the paper, however, it might be better to show it as an overview first and then the other figures in detail. Thus I moved it as figure 4a-c in front of the detailed figures". I don't know, how the presentation of ozone cross sections can enhance the information about the importance of slit functions? Another question would be then: which cross sections? BP or IUP or both together to show their differences and their importance. This would overrun the frame of this paper.

- Consequences of EACs on calibration: See the last sentence in 4. Summary. . ..

- "Dobson original specifications": A similar comment of referee 1 was already answered. One should not mix Dobson slit function with Komhyr Bass/Paur x-sections/absorption coefficients. Dobson used older cross sections, which were valid in the fifties. Komhyr applied adjusted Bass/Paur x-sections using Dobson's nominal slit functions to determine the best set of absorption coefficients.

Special comments:

- P1, l15-17 (abstract): It was tried to remove most of the unneeded parentheses.

- P1, l23: It is not the D-wavelength pair, as suggested, it is the long D-wavelength –

corrected.

- P1, l24: I think the consideration “not too large” is explained in the following sentence by the statement “less than $\pm$1%”

- P1, l25: I think it is indeed an improvement as the data quality will be higher and uncommon behaviour of field Dobsons during calibration can possibly be explained.

- P1, l31 (Introduction): “stations” corrected.

- P2, l6: Missed Evans (2008) reference added.

- P2, l6: - done – see comment under referee 1.

- P2, l8: - done – Langley plot method mentioned.

- P2, l24: done, missing reference added.

- P2, l33: Bernhard et al added as relevant reference.

- P3, l30: Figure numbers corrected.

- P3, l31: This section is a contribution of co-author Smid. I suppose this information is useful.

- P4, l4: plain to plane – done.

- P4, l11: A modified structure of these sentences makes it hopefully clearer, what is meant with “signals” and how they are processed.

- P4, l31: Three relevant references of Daumont, Brion and Malicet have been added

- P5, l30: term “effective absorption coefficients” removed.

- P6, l6: + replaced by $\pm$.

- P6, l20, Summary: + replaced by $\pm$.

- References: Pass and Bass moved to alphabetically right place

- Figur 2: Symbols removed.

Please also note the supplement to this comment:
https://www.atmos-meas-tech-discuss.net/amt-2017-411/amt-2017-411-AC2-supplement.pdf

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