

Interactive comment on “The influence of the baseline drift on the resulting extinction values of a CAPS PMex” by Sascha Pfeifer et al.

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We would like to thank the Referee for the constructive comment.

We are pleased to see that the Referee agrees on the usefulness and the great benefits of this alternative method.

Of course the novelty is limited. It is an alternative post-processing for an existing device using an established mathematical method, so the article was designed as a technical note from the beginning. There is no need for a totally new mathematical concept. This is also a great advantage, which allows the user to use a variety of already existing functions and libraries depending on the preferred programming language.

Regarding the comprehensive analysis of performance: The artifacts are primarily due

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to the fluctuating background in combination with the internal calculation procedure and less to other aspects of performance. We do not believe that a comprehensive performance analysis will improve the novelty of the paper. It would only blur the focus of the work.

Nevertheless, it may be useful to address aspects of quality assurance to assess performance and accuracy.

We have added two more sections and one more plot:

in "Experimental set-up": "Before and after measurements the quality of the CAPS PMex were checked by a comparison with a thoroughly and regularly calibrated reference nephelometer (Ecotech Aurora 4000). For this purpose non-absorbing ammonium sulfate particles were used. The truncation error in the nephelometer has been corrected using the method of Müller et al. (2011). Nevertheless relatively small particles were generated (mean size of approx. 50 nm) to minimize the effect of truncation. Analogous to the comparison of the measured and mie calculated theoretical values using mono-disperse particles and a reference CPC (Petzold et al., 2013), correction factors can be derived by comparing the truncation-corrected scatter values of the reference nephelometer with the respective measured extinction values. The factors represent a correction of the internal calibration, which primarily considers the influence of the purge air variability."

in "Results": "Before and after the measured time series the comparison of CAPS PMex and reference nephelometer show a small but very stable deviation, exemplary shown in Fig. 2. The devices show slightly too high values in the range of 3–4 %, 6–8 %, and 6–7 % for the blue, green and red, respectively."

Apart from that, for a statement of the expected accuracy we think that the mentioned maximum values or percentiles of artifacts are sufficient. Concerning the precision (for long average periods) we consider the simple statistical data of mean value, standard deviation and skewness as well as Std.Allan-Var analysis as sufficient.

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