

Interactive comment on “Correction for a measurement artifact of the Multi-Angle Absorption Photometer (MAAP) at high black carbon mass concentration levels” by A.-P. Hyvärinen et al.

Anonymous Referee #3

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I find the article interesting, as there is a lot of literature related with the corrections of other filter-tape based instruments, such as the aethalometer or the PSAP, but nearly nothing about MAAP artifacts and how to correct them. However, I think that there are still some clarifications and corrections that have to be made.

- Page 6558, line 6: should be $t_i - t_{i-1}$ instead of $t_{i-1} - t_i$ - Page 6559: equations 4 and 5 are different to the correction proposed in Petzold et al. (2005) (See Table 2 in Petzold et al. (2005)) - Page 6559, line 21: what does bAP,METHOD refer to?

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Both bAP,TRANS and bAP,REFL of equations 4 and 5? - Page 6560, equation 6: The units of ΔBC should be given.. if they are in $\mu\text{g}/\text{m}^3$, then A/V would be missing - Page 6561, line 4: I guess this should be bAP,TRANS - Page 6563, section 3.3: It is not quite clear what BCsmooth is in detail. In line 8 it says that it could be the last few minutes before the next filter spot change .. In equation 8 however BCini is the concentration before the spot change. - Page 6563, overall correction: maybe it could be interesting if you showed a graph with the correlation between the smoothed data and the reference ones. - Page 6563, line 23: why have you used the Hill function? Justify it. - Page 6563, line 24: Define what the ‘apparent accumulated mass’ is. - Page 6566, line 12: Is there any difference between the ‘apparent accumulated mass’ (m) and the ‘accumulated mass’? - Page 6567, line 20: why do you assume an absorption Ångström exponent of 1? You should justify your choice. - Page 6574, figure 2a. Is m the ‘apparent accumulated mass’? Then you should define this parameter in the text before you present it in the graph.

To better judge if there are any general filter artefacts of the MAAP and if they are improved by this method. I would like to see for the dataset in Gual Pahari the concentration of BC as a function of attenuation for the whole period before and after applying the procedure. The dataset is long enough to provide enough statistics. It would be interesting to see if for such a dataset all filter load dependencies are now taken care of.

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