

Interactive comment on “Positive sampling artifact of carbonaceous aerosols and its influence on the thermal-optical split of OC/EC” by Y. Cheng et al.

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We are appreciated for the further suggestions and comments from Dr. Subramanian. We agree with the first and the second comment and we will make corresponding changes or clarifications in the revised version of our paper. Considering the third comment about the “underestimation” and “overestimation”, we think that further discussion is needed. As stated by Mader et al. (2003), the Q-QBQ correction assumes: (1) for the front and backup filters, the mass/filter area amounts of each organics adsorbed from the gas phase onto the filters is equal; (2) the gas adsorption capacity of the front and backup filter are equal; (3) organics observed on the backup filter did not result from evaporation of particles collected on the front filter. In other words, the Q-QBQ correction does not include negative artifact. As a result, we suspect that whether

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is reasonable to get the conclusion that QBQ provides a proper estimation of the positive artifact based on the equivalence of (Q-QBQ)-OC and OC collected by (Q+CIG). This interpretation works only if CIG-OC is exclusively due to the enhanced evaporation of collected particulate OC caused by the depletion of gaseous organics in the organic denuder. We think this should not be the case, since the negative artifact exists whether using the denuder or not. Though we accept that part of CIG-OC maybe due to the enhanced evaporation, it is difficult to quantitatively determine the fraction of CIG-OC caused by the enhanced evaporation. Considering CIG has a much higher affinity to gaseous organics than quartz filter, we don not think it is reasonable to compare (Q-QBQ)-OC with (Q+CIG)-OC when talking about the positive artifact. As a result, we suggest that using denuded backup quartz filter for the comparison instead of denuded backup CIG. As shown in Page 13749, negligible amount of OC was collected by the denuded backup quartz filter. So we think that make the comparison between (Q-QBQ)-OC and DQ-OC is reasonable. We will make a more clear clarification about this when revising the paper. Moreover, the results from 4-6h samples would also be included.

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