

# ***Interactive comment on “Atmospheric black carbon can exhibit enhanced light absorption at high relative humidity” by Y. Wei et al.***

**J Allan (Editor)**

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I observe that all three reviewers are unanimous in identifying the truncation issue as a potentially critical flaw in this work. Because of the high single scattering albedos, a small error in  $B_{SCA}$  will translate to a large error in  $B_{ABS}$  and therefore MAC. While the correction of Qian et al. is employed and the authors state this will cause the  $B_{SCA}$  values to be overestimated for particles with a weaker truncation dependence on RH than those assumed (390nm ammonium sulphate particles), reviewers #1 and #2 query whether this be the case for larger particles, in particular those made of sea salt, which are expected in this environment and are more hygroscopic than the modelled particles. As the truncation correction required for these particles could conceivably

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have a stronger dependency on RH than the modelled particles, their presence could cause MAC to be systematically overestimated at high RH. Furthermore, in their rebuttals to reviewers #2 and #3, the authors state that they have no constraint over the size or the composition of the aerosols sampled. Given the nonlinearities within the system, this potentially presents a major problem in dealing with this issue.

While the result presented may indeed be considered highly significant if it can be shown to be robust, I regret to say that I do not foresee that this manuscript will be deemed publishable in ACP unless this specific point can be addressed on the level of detail requested by the reviewers.

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 13, 29413, 2013.

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