

Report #1

The authors have satisfactorily addressed the concerns raised in the previous round. I recommend acceptance, with only minor editorial and technical corrections to be handled during proof with careful grammar check.

In Eq. (4), ρ_{SO_4} is not defined.

R: Thank you. We have clarified that ρ_{SO_4} represents the density of sulfate aerosols.

Figure 10 caption “over East China,” please to East Asia, consistent with the main text.

Corrected

In Section 2.3, the symbol α is used both for AOD and for the hygroscopic growth factor in Eq. (5). Consider renaming one of them for clarity.

R: Thank you. We have renamed the symbol for AOD.

"season variations" → "seasonal variations"

"by the QUALITY chamber" → "using the QUALITY chamber"

"include effect of" → "include effects of"

"BC still induce" → "BC still induces"

"Figs. 5d and 6d" → "Figs. 6b and d"

"Figure 10a-c illustrates" → "illustrate"

"can be downed" → "can be downloaded."

"PG preformed" → "PG performed."

R: Thank you. All of the above issues have been corrected.

Report #2

The authors have responded thoroughly and constructively to all comments from the first round, and the revised manuscript is substantially improved.

I have few some minor comments:

1.) Line 186: "The condensation growth term (I_{cond}) in Eq. (1)", should be "The condensation growth term (I_{cond}) in Eq. (2)"

Corrected

2.) In Eq (2). The symbol (α) denotes both AOD and the hygroscopic growth exponent? It is better to use distinct symbols.

R: Thank you. We have renamed the symbol for AOD.

3.) Table S2 reports NMBs of -21% to -24% for surface BC, which is smaller than the 30-60% underestimation cited from previous studies. So in Line 317 it is better to write "Comparable to or smaller than the findings from most current...." would describe this more accurately than "consistent with."

R: Thank you. We have revised this statement accordingly in the manuscript.

4.) Line 652: "...results in more surface ERF of -2.68 W m⁻² over East Asia" This "more" more of

what? Is it more negative surface ERF?

R: Thank you. We have revised this statement to clarify that it refers to a more negative surface ERF.

5.) Line 722: refers to Table 3 but is written as Table 2

Corrected