

Review of “Explaining variance in black carbon’s aging timescale” by L. Fierce, N. Riemer, and T. Bond

The description of the paper was much improved in this revision. The paper is suitable for the publication of this journal after the following minor corrections.

Line 222: Please clarify the definition of $S_{c,i}$. $S_{c,i}$ means $S(D_{c,i})$?

Equation (7): N_{train} in the denominator should be $N_{p,\text{train}}$.

Line 450-451: across all **fresh** BC-containing particles

Line 453: Section 4.1 should be Section 4.2?

Line 472: Please correct “ $\tau_{\text{aging},j}$ ”.

Equation (12): this equation is similar to equation (8), but τ_{aging} is written without “ \wedge ”. Is this correct? Similarly, please clarify the τ in Figure 7 is τ_{aging} with “ \wedge ” or without “ \wedge ”.

Lines 593-662: This part is sufficiently long. I recommend this part or some of this part should be Section 5.1. Then, Sections 5.1 and 5.2 will be Sections 5.2 and 5.3, respectively.

Line 600-601: BC-containing particles (**$n_{\text{fresh}}(D)$**) and the number

Line 604: fresh BC **containing particles** ($n_{\text{fresh}}(D)$)

Line 615: taffect → affect

Line 724: oft his → of this

Table 2: At the explanation of G2, “turn of NH_3 ” should be “turn off NH_3 ”.