

## Review of “Modeling global radiative effect of brown carbon...”

The authors addressed my comments in the second round. For the second comment, they added Figure 6 (c) for AAOD comparison with AERONET. It needs a few clarifications.

First, what wavelength the AAOD is compared at? It makes a difference as BrC absorbs only moderately in 550nm. If the purpose is to show BrC effect, they should compare AAOD at shorter wavelength or spectral dependence. If the purpose is to show the modeled aerosol absorption compares with obs, it may be good to compare at 550nm. Nevertheless, this needs to be clarified. In the conclusion, these findings from the comparison of modeled aerosol absorption with AERONET should be included in the discussion of estimated BrC DRE vs BC DRE, i.e., could the underestimated AAOD (if it's at 550nm) imply that the relative importance of BrC DRE to BC DRE is overestimated in the current model?

Second, why not use least-square-root regression for AAOD, as it is for AOD? It is not explained why a different regression is needed for AAOD comparison. Does the inclusion of BrC improve the mean AAOD? It seems from Figure 6c still low-biased. At least the mean statistics should be calculated and presented.

lastly, the sentence “Similarly, we used the same criterion for model data” needs clarification: is the model AOD at 440nm  $\geq 0.4$  threshold applied to filter the model AAOD at the monthly mean or daily or hourly time intervals? The CAM AOD is obviously low-biased compared with AERONET: does it make sense to use the same AOD threshold at 440nm  $> 0.4$  to select the model data?