

Response to editor's comment

Editor's comment:

Dear authors,

Thank you for taking the time to revise your manuscript, perform more analysis, and update Figure 5. The reviewer recommends acceptance subject to a brief acknowledgment in the limitations section that the effects of absorption and particle size may not be fully separable. Specifically, that there are alternative explanations (e.g., coating-induced enhancement, multi-component aging, non-linear changes in multiple scattering due to microphysical effects of mixed absorbing and scattering aerosols which are non-negligible at the SSA values shown in Figure 3) which could also contribute to the observed spectral behavior.

I notice that the requested acknowledgment has not yet been added. Please add the following sentence (or equivalent using your own wording) to the limitations section:

“While particle size appears to explain the observed spectral curvature, we note that absorption effects (including potential coating-induced enhancement or non-linear effects on multiple scattering) may also contribute, and may not be fully separable given measurement uncertainties.”

No other changes are required. Once this sentence (or an equivalent statement in your own words) is inserted, I will accept the manuscript.

Thank you for your understanding.

Authors response: We want to thank the editor for putting an insightful effort throughout the review process of this manuscript. Following the above comment, we have added the following sentence in the updated manuscript in Lines 587-590 as,

“While particle size appears to explain the observed spectral curvature in AOD, other factors including potential coating-induced enhancement or non-linear effects on multiple scattering might also be considered for future studies that may or may not be fully separable given the measurement uncertainties.”

Comment by files validation team: Your figure on page 36 is wrongly named. Please rename it from Figure A4 to Figure C2.

Authors response: The mentioned figure has been correctly renamed as Figure C2 in the updated manuscript on Page 38.

We thank the reviewers and the editor for the valuable comments that has improved the quality of this manuscript manifold.