

Round 2 Review of “Analysis of the MODIS Above-Cloud Aerosol Retrieval Algorithm Using MCARS” by Wind et al.

Summary:

The manuscript revisions are very good, particularly for the specific comments. That said the major comment identified by all three reviewers may still need a minor revision to be adequately addressed.

The major comment relies on the aerosol model differences in MCARS and MOD06ACAERO, particularly the Single Scattering Albedo (SSA). It is understood that the author’s response was to highlight the work described by Wind et al. (2016).

Line 316-318:

“Detailed comparison of GOCART and MOD04_DT aerosol models for biomass burning aerosols has been performed in Wind et al (2016).”

Expansion of this sentence with a summary of the impacts of AOD matching found by Wind et al. (2016) here would be appropriate. Of interest would be the selected case study (fig. 9 in Wind et al. 2016) shows higher SSA values than what would be expected for southeast Atlantic (e.g., Pistone et al., 2019), and any conjecture on possible impact to AOD.

References:

Pistone, K., Redemann, J., Doherty, S., Zuidema, P., Burton, S., Cairns, B., Cochrane, S., Ferrare, R., Flynn, C., Freitag, S., Howell, S. G., Kacenelenbogen, M., LeBlanc, S., Liu, X., Schmidt, K. S., III, A. J. S., Segal-Rozenhaimer, M., Shinozuka, Y., Stamnes, S., van Diedenhoven, B., Van Harten, G. and Xu, F.: Intercomparison of biomass burning aerosol optical properties from in situ and remote-sensing instruments in ORACLES-2016, *Atmos. Chem. Phys.*, 19, 9181–9208, doi:10.5194/acp-19-9181-2019, 2019.