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Discussions

Interactive comment on "Two decades observing smoke above clouds in the south-eastern Atlantic Ocean: Deep Blue algorithm updates and validation with ORACLES field campaign data" *by* Andrew M. Sayer et al.

Anonymous Referee #2

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The goal of the paper by Sayer et al is to provide an update of the aerosol above cloud (AAC) algorithm that retrieves above cloud AOD and liquid COD. This algorithm can then be applied both over land and ocean for sensors such as SeaWiFS, MODIS, and MODIS. The paper also evaluates the results of the algorithm from 2016 and 2017 from the (4STAR/HSRL2) ORACLES filed campaign.

The paper is generally well written but some of the results are not conclusive. It is not convincing that only one Mongu AERONET aerosol model is used for this study. Just because the time-series is correlated with UV index and total column AOD it does not

mean that they can serve as proxies for AAC load when retrievals are not available. I suggest removing that conclusion from the abstract. The level 1 to level 2 pixel to cell size appears to be done arbitrarily without justification (may be calculating signal to noise ratio will help). The two step cloud masking approach for SeaWIFS is again filled with uncertainties. Changing these thresholds even slightly may alter results. The satellite/4STAR comparisons indicate that the individual level comparisons are noisy and of course the granule level averaged comparisons are better. While the discussion to the differences are explained more from primarily a statistical point it will be interesting to obtain some definitive answers on why these discrepancies exist. The authors themselves conclude that the AAC algorithm only performs "roughly" within expectations. The validation data appears to be sparse.

In conclusion while this paper is well written provides an update to the AAC algorithm, the validation portions of the paper appear to be preliminary.