

Interactive comment on “Spatial distribution of dust’s optical properties over the Sahara and Asia inferred from Moderate Resolution Imaging Spectroradiometer” by M. Yoshida et al.

Anonymous Referee #3

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This manuscript presents a method based on “critical surface reflectance” to estimate aerosol single scattering albedo along with aerosol optical depth. The nine-year MODIS data were analyzed to plot the spatial distribution of aerosol optical properties over the Sahara and Asia. Uncertainties are also investigated in order to validate the estimated results. Generally, a lot of work has been done in this research, and the manuscript is well written. The following are my concerns: 1. In page 8 line 1, “three-month periods of ” should be removed. 2. Did authors consider the spatial variation of ozone concentration in the radiative transfer model when the look-up tables were calculated? 3. The color in Fig. 3 is confusing. 4. The spatial distribution of the estimated aerosol optical property uncertainties over Asia would be also interesting if are shown

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as Fig. 4. 5. In the equations of 7 and 8, p represents the scattering phase function, however I believe the p in equation 7 is quite different from it in equation 8, because these two formulas are descriptions for haze and clear conditions, respectively. 6. The large differences of AOD between estimated from the MODIS data and the AERONET may be less helpful to reduce the uncertainty of dust aerosol radiative effects on climate system.

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