

Interactive comment on “Synergistic angular and spectral estimation of aerosol properties using CHRIS/PROBA-1 and simulated Sentinel-3 data” by W. H. Davies and P. R. J. North

Anonymous Referee #2

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The manuscript presents a method that combines annular and spectral information for retrieving aerosol properties (AOD, fine mode fraction, and SSA). The method part of this manuscript is poorly written, and therefore this reviewer can not assess the true merit of this paper. I suggest that the manuscript should receive a major revision (if not rejection) to improve the clarity in the method description before it can be thoroughly reviewed.

1. equation 1. what is R_{ang} . is it reflectance at the surface or top of atmosphere?
2. P 5387, line 5. what is Lambertian scattering albedo, and aggregated single scatter-

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ing phase function. how do you consider multiple scattering here? These terminologies are not common and authors should define them.

3. equation 3, what is rh_spec .

4. equation 14. what is R_spec . is it surface reflectance at the surface?

5. equation 15. what is R_mod .

6. equation 15, what is R_sim .

7. Finally, the method appears to rely on the constraints of surface angular spectral variation. In otherwords, during the inversion, the solution has to fit with both radiance at TOA and the pre-defined angular and spectral variation of surface reflectance. If this understanding correct, I suggest authors to justify the latter. what is the uncertainty in the idealized surface model?

other minors:

1. p 5385, line 18, where can we obtain CHRIS data?

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