

Interactive comment on “Aerosol retrievals from the ACEPOL Campaign” by Guangliang Fu et al.

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Received and published: 13 August 2019

The ' $\alpha * R_{pol}$ ' part in Eq.(1), p.4, seems unclear to me. Please provide explicit form for the R_{pol} matrix like it is done for the RPV -part. Reference to the Maignan et al, 2009 paper gives little help:

- 1) Sections 3.2, 3.3, and 3.5 in Maignan et al. 2009 discuss different models - which particular one was used in the paper under review?
- 2) As far as i know, Maignan et al. 2009 does not define the Mueller matrix of the surface - only BPDF, which is based on the $F_{12}=F_{21}=F_p$ element of the Fresnel matrix. To get the Mueller matrix, shall one compute matrix exponential of the Fresnel matrix, or, vice versa, create a matrix of "scalar" exponents of elements of the Fresnel matrix?
- 3) The complete 4×4 (or reduced 3×3 if V is ignored) Mueller matrix of the surface is

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required only to simulate the surface reflection of diffuse radiation (including multiple bouncing of light between the atmosphere and surface). How strong and important is that effect for polarization components?

- 4) Is ' α ' in Eq.(1) band-dependent?

Thank you!

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2019-287, 2019.