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Atmospheric Measurement Techniques Discussions

Interactive comment on "Statistically optimized inversion algorithm for enhanced retrieval of aerosol properties from spectral multi-angle polarimetric satellite observations" *by* O. Dubovik et al.

Anonymous Referee #2

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This is another fundamental and quite welcome contribution by Dubovik et al. I wholeheartedly recommend publication, subject to a few minor comments below.

1. The authors may consider referencing the recent book by A. Doicu, Numerical Regularization for Atmospheric Inverse Problems, Springer, Berlin, 2010.

2. I strongly recommend adding a figure showing the scattering geometry. The azimuth angle of the incident light concerns me the most since it is traditionally defined in a

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different way by the surface and atmospheric RT communities (which results in a 180-deg difference). It is important to make sure that the surface and atmospheric RTs are treated consistently.

3. The authors seem to imply that the polarization accuracy of the POLDER measurements is 0.5%. It would be important to know what effect would a lower accuracy (1% or 2%) have on the accuracy of aerosol retrievals over land.

4. The retrieval strategy developed by the authors appears to be powerful and robust. Can the authors use this tool to comment on whether the accuracy of the resulting POLDER retrievals is expected to be consistent with the accuracy requirements formulated by M. Mishchenko, B. Cairns, J. Hansen, et al. (2004) Monitoring of aerosol forcing of climate from space: analysis of measurement requirements, J. Quant. Spectrosc. Radiat. Transfer 88, 149–161.

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 4967, 2010.

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Interactive Comment