**Atmospheric
Measurement
Techniques
Discussions**

Interactive
Comment

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.

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We thank the Reviewer for his/her valuable and positive comments.

We have carefully analyzed the Reviewer comments and tried to address her/his questions and comments in the revised manuscript and in the present response.

Rsponces to the Reviewer specific questions :

1. As suggested we have referenced the textbook by Doicu [2010] together with some

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other textbooks discussing numerical inversion.

2. Figure 2 showing the scattering geometry has been added.

3. We agree with the Reviewer that the polarization accuracy of the POLDER measurements is likely higher than 0.5%. We have clearly stated in the text that the noise in the actual POLDER measurements is likely to be higher by a factor of 2 or 3 and, consequently retrieval errors are higher too by a factor 2 or 3. (Generally, in case of measurements error is small, there is a linear relation between the increase of the noise level in the input data and the increase of the errors in the retrieval.)

4. As suggested by the Reviewer we have added a discussion comparing our estimations of POLDER retrieval accuracy with the accuracy requirements formulated by M. Mishchenko, B. Cairns, J. Hansen, et al. (2004). In brief, the estimations of POLDER retrieval accuracy are quite consistent with the requirements, with the exception that our retrieval does not discriminate between the optical constant of fine and coarse modes of the aerosol.

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

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