

Interactive comment on “Assessment of lidar depolarization uncertainty by means of a polarimetric lidar simulator” by J. A. Bravo-Aranda et al.

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Dear Dr. Miffre. We thank you very much for your comments, which give us the chance to elaborate some peculiarities of our approach for the numerical error calculation. This manuscript, published on 08 Feb 2016, uses the theoretical model as described in detail in the companion manuscript by Freudenthaler, 2016, doi:10.5194/amt-2015-338, which was published on 11 Feb 2016 as discussion paper together with this manuscript in the same journal and the same special issue, for the calculation of polarisation dependent systematic errors of a variety of lidar systems. We think that it is appropriate to split the long theoretical part and the part with the numerical error calculation in two papers in the same issue, so that one can refer to the other and not

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all details and all references and related discussions have to be repeated again. However, the basic theory, which is necessary to follow the concepts of this manuscript, is included. This manuscript just uses the theory of amt-2015-338 for a comprehensive numerical error assessment with a complete search of the systematic, polarisation dependent error space. In this error assessment we include the error space of the calibration factor depending on the uncertainties of all model parameters. Such an error assessment, which includes simultaneously all the error sources of our model, seems not possible by means of analytical error analysis; at least nobody showed it yet. Furthermore, in the manuscript we compare the complete uncertainty of the volume linear depolarisation ratio of eight different lidar systems with various setups and calibration techniques on the basis of the proposed model in amt-2015-338. These results can be used as a reference in scientific works employing the investigated lidar systems. We have the impression that the majority of your comments rather pertain to the theoretical part amt-2015-338. In the view, that the two manuscripts belong together, we will answer your comments in the attached supplement.

Please also note the supplement to this comment:

<http://www.atmos-meas-tech-discuss.net/amt-2015-339/amt-2015-339-AC3-supplement.pdf>

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2015-339, 2016.

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