

1. *The authors conclude that the negative values of the BAEs measured for dust are due to the enhanced absorption in the UV. This is not supported by independent measurements. It is also well-known that the spheroid model assumes a spectrally independent phase function at 180 degrees. A possible spectral dependence on the 180 phase function could also be the source of negative BAEs and this limitation of the spheroid model should be mentioned in the manuscript and in the conclusion section.*

It is true, we had no available independent measurements of dust refractive index. However such measurements we done during SAMUM campaigns in West Africa. So spectral dependence of imaginary part in our measurements looks very probable.

Phase function in spheroid model depends on size parameter, in this way it is spectrally dependent.

2. *The paper gives the impression that the particle depolarization ratio does not provide significant information on the inversion. However, there is much discussion in the literature (see for example the work of Gasteiger) that the spheroid model cannot reproduce the lidar measurements of the linear particle depolarization ratio. Thus, how we expect that an inversion code based on the spheroid model would show that there is an added value on the microphysical retrievals by adding depolarization information? I think that the conclusions should be rephrased, such as to make clear that this could be a limitation of the spheroid model as well.*

This question was posed also by Reviewer 1. Yes, spheroid model has issues in reproducing depolarization measurements, though it is not easy to quantify these without laboratory measurements in chamber. We added several comments in the text, in particular that results presented should stimulate development of the dust model with improved capability to mimic dust depolarization properties.