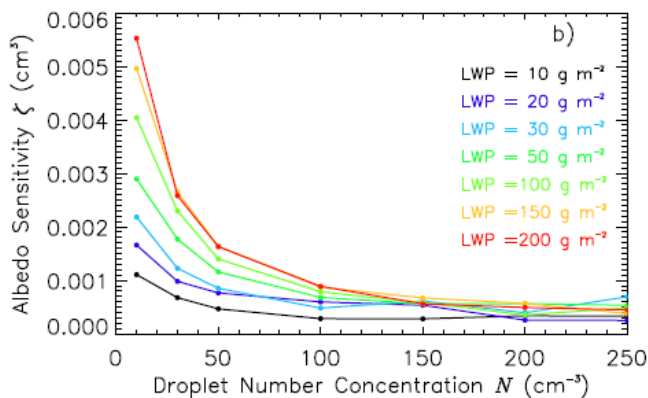


Response to Anonymous Referee #3

The comments of the reviewer have been helpful to improve the manuscript. We thank the reviewer for the suggestions. Detailed replies on the reviewers comments are given below. The reviewers comments are given bold while our replies are written in regular roman letters. Citations from the revised manuscript are given as indented and italic text.

In Fig.1 b), why do curves cross each other? The reviewer guesses that these curves would be simple and not touch each other.

A: Due to low cloud optical thickness, and liquid water path / liquid water content, the calculated albedo / sensitivity zeta are easily affected by small effective radius and according dependence on the phase function on reff within the simulations. Therefore the simulations have been repeated with higher precision, reducing the noise and making the plot in Fig. 1b) more clear. Despite that, some crossing of the lines is still present for higher DNC, which could not be removed completely.



The reviewer feels that ‘7. Conclusions’ is a bit lengthy. Hopefully, this section can be shorter, focusing on the main outcome.

A: The author tried to (re-)phrase the statements more clear and precise by simultaneously reducing the length of the section. Parts of the former conclusion were transferred to the uncertainty estimation and sensitivity.

“From the synthetic measurements and the two cloud cases it can be concluded that method A is suggested for optically thin clouds with ($LWP < 100 \text{ gm}^{-3}$) while method B should be preferred for optically thicker clouds. For homogeneous clouds when the cloud boundaries can be determined precisely from the active radar, lidar, and dropsonde measurements, the resulting γ_{calc} can be determined and used as a correction factor in the calculation of N as the optimal case. The synthetic measurements showed that the differences between modeled N_{cld} and retrieved $N_{\text{C;lib}}$ or $N_{\text{C;R}}$ with method C, are significantly reduced comparing to method A or

B, for all three cloud cases. This indicates that a correction with gamma_calc is vital and necessary for the calculation of N of shallow trade wind cumulus using remote sensing techniques. Otherwise systematic overestimation of retrieved N is present and not feasible.”

All through the manuscript, I found grammatical mistakes and typographical errors frequent (just one sample, P28L18 eg.g.). Proofreading by a professional editor will make this manuscript much better.

A: Careful proofreading has been performed to minimize typos.

Please also see the latex difference file, where the changes become visible in the manuscript.