

The authors have addressed my original comments satisfactorily; in particular my concern for the radar calibration has been allayed. However, I have some additional questions and issues that I believe need addressing before the paper is ready to be published in AMT.

- 1) In my opinion, Figure 1 has been over simplified and no longer fulfills its purpose of aiding the reader to piece the different bits of the retrieval together. I suggest using the flowchart to emphasize the key assumptions and intricacies of the retrieval (e.g., smoothing LWC at cloud base, choosing which assumptions are applied). As the retrieval is quite complex, a good flowchart will go a long way to guiding the reader through the method section.
- 2) Performance of the retrieval in 'Case I', where drizzle is detected only above cloud base. I am worried that there is not enough information to constrain both drizzle and cloud properties. How sensitive are the forward models to the first guess of drizzle scale factor? For example if the drizzle LWC is doubled or halved in CASE I of Fig 6., and all other settings of the retrieval remain unchanged, does the retrieval give satisfactory results?
- 3) What causes the 'kink' in retrieved drizzle properties at ~0.5 km in CASE II of Fig. 6?
- 4) How sensitive are the results of drizzle below cloud base to the lidar backscatter? In CASE II of Fig. 6, the lidar backscatter below cloud base is identical or at least very similar to the clear air backscatter (CASE I Fig. 6). Perhaps a greater LWC of drizzle would allow the synthetic drizzle to be detectable above the molecular backscatter.
- 5) There is too much discussion of the retrieval in cloud only mode (Sect. 3.1). I suggest removing Figure 3,4 and 5, replacing them with a 'Case 0: cloud only' set of panel plots, similar to those in Fig 6. I think this will make the paper more concise and focused on the problem at hand.

Minor comments:

- 6) Pg 9, ln 32 The extinction coefficient, effective radius, k_1 and k_2 are all dependent on each other, so the choice of which to include in the state vector is arbitrary. I suggest removing this sentence.
- 7) Pg 17 ln 13 is too informal
- 8) Pg 18 ln 12 Surely a thorough error analysis is exactly within the scope of the paper? I suggest removing this sentence.