**Atmospheric
Measurement
Techniques
Discussions**

Interactive comment on "Estimating drizzle drop size and precipitation rate using two-colour lidar measurements" *by* C. D. Westbrook et al.

Anonymous Referee #2

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This is an excellent contribution and has significant implications. The dual-wavelength lidar technique is well suited to the drizzle domain - between cloud and heavier rain. How far do the boundaries of this domain extend is something that needs better definition and will hopefully emerge from future work. Is there a limitation in depth of drizzle layer, in precipitaion rate, sensitivity, ...? Some thoughts along those lines from the authors would be welcome.

The paper deals well with possible error sources and is reasonable in its claims.

Minor comments follow with page/line references:

896/3 Has alpha been defined earlier in the paper?

899/18 Is this correctly stated? Absorption depends on total mass not just size.

899/24 "Liquid cloud .." - probably meant to distinguish from aerosol cloud, but common usage now tends toward cloud to refer to condensate, which is in this case is understood to be liquid.

900/13 The agreement in Fig. 8 is indeed supportive of the success of the retrieval. Yet, the data points seem to cluster more about a line of greater slope than unity. Is that so? If so, what does it mean?

901/26 Why is there agreement within 2 dB for case II versus +/-5 db in case I? Is it because of better fit of size distribution to the model? How far off can other cases go?

902 It may be good to remember that the M-P distribution was develop for rain resulting from melted snow. Of course, it was also applied to other situations, but it is not surprising that the fit for drizzle is poor.

Interactive comment on Atmos. Meas. Tech. Discuss., 3, 891, 2010.