Atmos. Meas. Tech. Discuss.,
doi:10.5194/amt-2016-301-RC2, 2017

Atmospheric Measurement Techniques Discussions

Interactive comment on "Retrieval of the raindrop size distribution from polarimetric radar data using double-moment normalisation" *by* Timothy H. Raupach and Alexis Berne

Anonymous Referee #2

Received and published: 25 January 2017

General Comments

The authors generally replied satisfactorily to the comments on the original manuscript and added the relevant clarifications in the revision. Some points, which are described in specific comments below, need more explanation.

Specific Comments

Fig. 3: The authors didn't justify the large values (larger than 5mm) of measured Dm in Fig. 3, which are probably erroneous. Such large values come to clear contradiction with the note from authors in another comment on the effect of truncation limits of DSD on results that drops above 7 mm in diameter are rare. By excluding such unrealistic

large Dm values in Fig. 3 the correlation of the two estimation methods with measured values changes.

p. 15, l. 27-28: As it was mentioned in the comments on the original manuscript, the threshold of 35 dBZ for ZH to replace radar measured ZDR and KDP with expected values in order to avoid noise effects is too high. At X-band it corresponds on average to a value of 1.5 mm for Dm and values in ZDR and KDP higher than the corresponding thresholds of 0.2 dB and 0.3 deg/km, which they authors additionally use and are acceptable values. For example, the average relation at X-band between ZH and ZDR (Park et al. 2005, JTECH) shows that a value of 35 dBZ for ZH corresponds on average to 1.2 dB for ZDR, which is clearly a value that is above noise for all polarimetric radars.. A 15 dBZ threshold for ZH would be more realistic. The 35 dBZ threshold reported in the paper of Bringi et al. (2002) that the author use a reference for such a high value corresponds to S-band radar data (lower ZDR than X-band) and it used to discriminate light rain (usually stratiform) from more intense rain in order to use a different retrieval method in this case. Similar use for the 35 dBZ threshold is made by Part et al. (2005) in rainfall estimator (with or without KDP). This does not mean that 35 dBZ correspond to noisy ZDR or KDP in order to replace them with expected values, but simply that the specific polarimetric rainfall estimators fail below this threshold.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2016-301, 2016.