

## ***Interactive comment on “A novel approach for absolute radar calibration” by C. Merker et al.***

**Anonymous Referee #2**

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The calibration method illustrated in the paper is interesting and can be of interest for dense networks of weather radars working at attenuated frequencies, although the main interest seems to be the calibration of the vertical profiler. It is not clear to me whether such method can be extended to radars with different frequencies. The concept of calibration is proven by means of simple simulations. Experimental validation, even in a preliminary form, would add more value to the paper. Moreover, to set up a specific calibration experiment should not be too much complicated. I have a couple of main comments on this paper: a) The use of a  $N(D)$  estimated by the Doppler vertical profiler is supposed to be not affected by some known effects, such as the presence of vertical winds as expressed also in the cited paper by Atlas et al. 1993. In general, profiler DSD estimates are not perfect, but this is not important. Important is to establish conditions (rain intensity, wind) in which the  $N(D)$  estimate is acceptable to make calibration method to work within acceptable limit. I think to deal with this issue is

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important to “proof the concept”. b) Effects of vertical variability of DSD within horizontally looking radar sample volumes is not taken into account. The variability detected by the vertical profiler can be real or induced by artifacts (see Tokay et al. JTECH 2009 “A Field Study of Reflectivity and Z–R Relations Using Vertically Pointing Radars and Disdrometer”, where fig. 5 shows a bias of MRR reflectivity measurements at lower level that increases with height and measured reflectivity (from 35 dBZ).

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