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Atmospheric Measurement Techniques Discussions

Interactive comment on "Evaluation of turbulent dissipation rate retrievals from Doppler cloud radar" *by* M. D. Shupe et al.

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We thank the reviewer for the comments and feedback on this manuscript. The comments will be address here in order. 1) There are many different methods for deriving turbulence from ground-based active sensors, many of which are broadly mentioned in the introduction of the manuscript. The approach mentioned by the reviewer was unfortunately left out in the first version of the paper but has been added now. While this structure function approach has not been applied to the cloud radar measurements contained in this paper, we see no reason why the approach would not be applicable. Some work would be needed to evaluate this possibility and implement a retrieval; both of which are beyond the scope of this paper. 2) For the calculations contained in the present study there is no range averaging included. However, range averaging might

be a useful means for increasing the number of points included in a velocity variance calculation, which would result in a decrease in the measurement error in the variance (e.g., O'Connor et al. 2010). This issue is discussed in more detail in responses to the second reviewer's comments. 3) We agree that estimating the error in velocity variance measurements is an important topic. The second reviewer made a similar, and more detailed, comment about these errors and the new version of the manuscript now explores this topic in greater detail with a new section and a number of new figures and/or additional figure panels, including showing the increase in errors at smaller dissipation rates. Please see the response to Reviewer #2 for more detail on the additions. 4) The wording change has been made as requested. 5) There was some filtering that we failed to mention. Specifically, radar measurements are only considered when hydrometeors are present and the signal-to-noise ratio is greater than -13 dB. This has been added to the text. Otherwise, the only other filtering is the requirement that valid velocity measurements (passing the SNR criterion) must be present for the entire sampling window considered in the calculations.

Interactive comment on Atmos. Meas. Tech. Discuss., 5, 747, 2012.