Atmos. Meas. Tech. Discuss.,
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Atmospheric Measurement Techniques Discussions

Interactive comment on "Analysis of Flow in Complex Terrain Using Multi-Doppler Lidar Retrievals" *by* Tyler Bell et al.

Anonymous Referee #1

Received and published: 30 April 2019

The study tries to answer the question "how well the 2D and 3D multi-Doppler measurements perform in a complex terrain?" but does not give quantitative results in detail (or not fully comment on the results). There are assumptions made without full explanation which makes the methodology unrepeatable.

I believe the paper needs major changes. I would be happy to read again after the corrections.

- Section 2: If you want your paper to be easy to understand for everyone, even for people who does not know Perdigao experiment, I think you should make more figures showing the scanning patterns for the lidars. I think section 2 needs more then Figure 1.

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- Page 2 Line 11: The term "large spatial heterogeneity" is not quantitative. Since the referred studies gives a range of number, I think you should rephrase.

- Page 6 Line 1: How do you justify using “linear interpolation”? Add references and comment on the contribution of the linear interpolation on the general uncertainty

- Page 6 Line 20: Even expert opinions need citation. You must either write more about your assumption of 2m/s and its reasoning in detail, or you need to cite a study doing so. It is a very critical step in your method chain, and you are making the method unrepeatable by just giving an assumption for your specific case. You must clear this point.

- Page 9 Line 16 + Page 10 Line 5: Journal uses SI units.

- Page 13 Figure 8: I cannot understand the difference of the vertical wind speed values above 200m. OU DL and VT3 show a big difference. Why? Can you comment?

- Conclusion: I think more discussion is required for the limitations of the lidars.

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