

Review of the revised version of the manuscript HESS-2014-306:
“Polarimetric radar observations during an orographic rain event”
by M. Frech and J. Steinert

Recommendation

First I would like to apologize to the authors and the Editor for being late with my review.

The manuscript quality has significantly improved, in particular in the first part dealing with the description and explanation of the “mesoscale event”. The objective of the second part about the evaluation of the operational hydrometeor classification scheme has been clarified, but the term “qualitative” should be added before “evaluation” in my view to highlight the fact that only a qualitative comparison is performed, and not a quantitative one, needed for a thorough reliable evaluation.

Overall, I recommend to publish this manuscript after some minor revisions corresponding to the comments listed below have been addressed.

Specific comments

1. There are many typos overall the manuscript that should be corrected. I guess the manuscript will be edited later on.
2. L.110: I suggest to add “qualitatively” before “compared”.
3. L.130-135: some basic features like radial resolution, 3dB-beamwidth should be provided here.
4. L.227 (and throughout the manuscript): snowfall height is confusing (snowfall accumulation on the ground? Vertical extension of the snowfall layer?), I suggest to use “snowfall altitude”.
5. Figure 5: “panel” instead of “figure”.
6. L.297: a reference about the expected fall velocity in the ice phase would be welcome.
7. L.302: velocities above the ML can be in the order of tens of cm/s, even of 1 m/s... They would not be detectable with operational Doppler radar otherwise.
8. Figure 7: as I suggested in my first review (and despite the authors saying “OK” in their response), the color scale should be changed to have a clear color transition at 0. A commonly used color scale is blue for positive, white at 0 and red for negative velocities (or vice versa). It really facilitates the reading of this kind of figures.

9. L.335-336: maybe this sentence should be rephrased, as one does not expect any ML in a strongly convective system as a MCS. Maybe in its trail, but this should be clarified.
10. L.336: a non-published (and non accessible) manuscript should not be listed as a reference.
11. L.379: the precipitation rate provided by such an optical instrument is necessarily based on a strong assumption about the density of the solid particles. It is hence not very reliable, and this should be indicated in the text.
12. L.418: from Figure 5. I see a wind shear between 1500 and 2000 m, not 4000 m. I maybe wrong...
13. L.422: I would strongly recommend to show this “gradient Richardson number” as it strengthens the analysis.
14. L.428: wet snow pops up here unexpectedly, as riming and aggregation are mentioned just above (L.412-413). This should be clarified.
15. L.530: I actually see more dry snow points than wet snow ones in Figure 16 around 12 UTC.
16. L.564-565: “we show the current skills” is too strong in my opinion, as only a qualitative comparison/analysis is conducted in this section.
17. L.598: idem.