

Atmos. Meas. Tech. Discuss., referee comment RC2
<https://doi.org/10.5194/amt-2021-256-RC2>, 2021
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Comment on amt-2021-256

Anonymous Referee #2

Referee comment on "Detecting wave features in Doppler radial velocity radar observations" by Matthew A. Miller et al., Atmos. Meas. Tech. Discuss.,
<https://doi.org/10.5194/amt-2021-256-RC2>, 2021

The manuscript describes a method to detect wave like features in Doppler velocity radar data. The analysis is based on low elevation PPI scans as well as RHI scans. The impressive simulations and the examples show the functionality of the algorithm. The animations provided in the supplement are a great help to understand the situation. The manuscript is well written and deserves publication.

However, and this is my main criticism, I feel slightly unsatisfied since the manuscript describes only the very first (but of course important) step towards (automatic) detection of wave features. The authors do outline this point in the conclusion and have good arguments, but I would feel more convinced from the manuscript if for one of the examples additional steps could be shown. Especially since they admit that in one example wave features in are easier to locate in the difference plots than in the binary detection plot (lines 251 – 255).

Minor remarks:

Line 41: how to see vertical motion in low level Doppler data?

Line 43: somehow this first sentence should be given much earlier. Radar is mentioned already in the beginning of the introduction.

Line 50: precipitation fall speed is only relevant when elevation is high. You should mention that Ottersten and Stober use vertical pointing radars.

Line 50: it is tradition to outline the structure of the paper at the end of the introduction.

Line 64: maybe it's time to mention that in radar meteorology positive Doppler velocity are motion away from the radar. People from the lidar world often use the inverse notation. The analysis would also be interesting for long-range (app. 15 km) Doppler lidars.

Line 165: mention here that you are using also observations.

Line 172: what is the motion speed? I'm confused: if the waves move to the west, doesn't this imply that there is an easterly background field? Or is there an additional external force, which isn't relevant here, moving the system to the west?