

Geosci. Model Dev. Discuss., referee comment RC3
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Comment on gmd-2021-128

Anonymous Referee #3

Referee comment on "Verification of boundary layer wind patterns in COSMO-REA2 using clear-air radar echoes" by Sebastian Buschow and Petra Friederichs, Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2021-128-RC3>, 2021

Comments on "Verification of Near Surface Wind Patterns in Germany using Clear Air Radar Echoes"

The manuscript "Verification of Near Surface Wind Patterns in Germany using Clear Air Radar Echoes" by Buschow and Friederichs, submitted to the Geoscientific Model Development describes the use of Radar observed surface divergence field during clear sky conditions to evaluate the simulated surface winds in COSMO-REA2 regional reanalysis. The evaluation is conducted in terms of the dominant size, anisotropy and orientation of the spatial wind patterns. I believe such direct verification of the wind field of reanalysis data is very important, but seldom conducted, and I applaud the authors for carrying out this study. The manuscript is well-written, and I have only a few minor suggestions as listed below.

Not so major comments:

Fig. 7, Honestly, I found it difficult to compare the radar reflectivity patterns with the COSMO-REA2 10 m divergence. While the model data show coherent small-scale structures that are typical of the surface layer under convective conditions, the radar reflectivity field seems to be filled with much smaller "cellular" structures, and is somewhat noisy. Perhaps I am not well-trained in reading clear-sky radar echo, but I hope the authors could expand the discussion of Fig. 7, pick a case and help the readers compare these images qualitatively?

Minor comments:

Line 140, did you mean "SW/NW" instead?

Line 265, not sure what you mean by "at these time-steps".

Line 302-303, "It is however worth noting that, despite the offset, both data sets agree that the smallest-scaled patterns occur later in the day than at other stations", so what does such delay tell us?

Line 374, did you mean you mean "20,000" rather than "20.000"?

Line 396, fix the reference "(Banghoff et al., 01 Aug. 2018)".