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Comment on amt-2021-324

Anonymous Referee #2

Referee comment on "Improvement in algorithms for quality control of weather radar data (RADVOL-QC system)" by Katarzyna Ośródka and Jan Szturc, Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2021-324-RC2, 2021

The article "Improvement in algorithms for quality control of weather radar data (RADVOL-QC system)" by Katarzyna OÅ□ródka and Jan Szturc presents some newly developed and enhanced algorithms and methods of filtering and quality evaluation of weather radar data in the RAVOL-QC software developed in the Polish Institute of Meteorology and Water Management, mainly focusing on non-meteorological echo identification. It describes two method using dual-polarization data and two method using single-polarization data. The manuscript addresses actual problems, especially the detection of wind turbines and RLAN interferences. It is well written, clear and the cited literature is relevant and actual. The paper can be considered as very useful for the weather radar scientific community to further enhance the usage of weather radar data. It fits very well the topic of the selected journal.

The rather subjective evaluation techniques, not well described threshold and parameter selection and the lack of mention about some possible annual variability can be considered as shortcomings of the article.

I recommend accepting the manuscript after minor revision.

Specific comments:

Line 62 - Maybe indicate, that the polarimetric radars are depicted by red circles in the map.

Line 136 – How were the "ground-truth" classes determined?

Line 169 – Does the membership functions depend on the time of year (summer vs. winter cases)?

Line 174 – How were the weights obtained – some evaluation algorithm or expert knowledge?

Line 193 – Does the effectiveness depend on the time of year?

Line 199 – Consider replacing "a lot of" by "several" or some similar term.

Line 205 – Maybe a picture without the SPIKE algorithm should be more appropriate.

Line 214, 255, 287 – QI chosen by expert knowledge? Why not lower?

Line 220 – Why was sd(Zdr) excluded?

Line 228 – Does the threshold values depend on the time of the year (snow vs. liquid precipitation)?

Line 223 – Fig. 6 vs. Fig. 4 - inconsistency about sd(Phidp) – In Fig. 4 is everything below cca. 22° considered as meteorological, in Fig. 6 the threshold is set to 10°. Is there a reason to use different thresholds in the two algorithm?

Line 216 – It seems to me from the paper, that the DP.TURBINE was not intentionally designed to detect wind turbines, it just turned out to be better at this type of obstacles, as it is stated later in the line 247.

Line 271 – Fig 8. Text labels in the picture are duplicated.

Line 439 – The verification of DP.NMET, TURBINE and SPIKE is presented only in forms of some case studies – no statistical evaluation is present.

Section 5 – As the aim of the paper is to present the newly developed and enhanced filtering algorithms, it can be interesting to compare the results in Fig. 12 and 13 where RADVOL-QC is used with and without the new algorithms to see the effect of the presented methods.