Comment on egusphere-2022-692
Anonymous Referee #1

Referee comment on "Radio frequency interference detection and mitigation in the DWD C-band weather radar network" by Maximilian Schaper et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-692-RC1, 2022

General Comments

This paper describes an automated objective procedure for monitoring and prioritizing RFI in German C-band weather radar data. Results are provided, which show that the method works effectively, and that it helps the national regulation agency to track and shut down the offending sources. The procedure presented here should be of considerable practical interest to operators of C-band weather radars in other countries where RFI is a problematic issue. I recommend the publication of this paper after some minor issues are addressed and improvements are made to the English language (grammar, punctuation, etc.)

Specific Comments

Line 78: Does the SQI computation really involve correlation of received signal against the transmitted signal? My understanding of SQI is that only the received signal is processed (magnitude of autocorrelation lag 1 divided by autocorrelation lag 0).

Line 81: “…50 pulses are aggregated within one ray” Add “at the same range gate”

Line 93: What is “uncorrected reflectivity” (as opposed to corrected reflectivity)?

Line 100: How did you decide on the thresholds? It would be more objective if you could state that XX% of weather signals are above the SQI threshold or below the STD threshold, while YY% of RFI signals are below the SQI threshold and above the STD
threshold.

Figure 3: What is the significance of the dashed lines at SNR = 0 and 20 dB?

Figure 4: What is TSG?

Figure 8: The unit here is confusing. The scale is in %. Percent of what? The total amount is given as 0.051%, so how is the plotted values scaled (i.e., what is the denominator)?

Line 385: Simultaneous between what and what? Delete "simultaneous" or state what those things are.

Figure 9: What is “a⁻¹”?

Line 479: Shouldn’t the number of ray boxes be an integer?

Line 481: Get rid of decimals.

Technical Corrections

There is a mix of American (summarize, recognize, normalize, visualize, minimize, standardize, utilize, optimize, reorganize, emphasize, program, etc.) and British (prioritise, utilise, categorise, localise, etc.) spelling. Pick one and stay consistent. British spelling is recommended, since this is an European journal.

Use the term “Section” instead of “Chapter” throughout. This is an article, not a book.

Replace all instances of “dynamic frequency stepping” by “dynamic frequency selection.”

“RFI” should not be pluralized, so replace “RFIs” with “RFI cases” throughout.
Replace “WIFI” with “Wi-Fi” throughout.

Replace “short lived” with “short-lived” throughout.

Line 7: “interference” --> “radio frequency interference”

Line 8: “…network is operational since July 2017, which makes…” --> “…network, operational since July 2017, makes…”

Line 9: Delete “the”

Line 13: “(BNetzA)” --> “(Bundesnetzagentur, BNetzA)”

Line 15: 94.8% is more than just a majority. Change “The majority” to “Most”

Line 31: Delete “especially”

Line 35: No need to spell out what RFI means again here.

Line 39: BNetzA now spelled out earlier, so need to do so again here.

Line 39: “starts to act upon” --> “acts upon”

Line 50: “exists” --> “exist”

Line 150: “there” --> “their”

Line 185-186: “above zero” --> “greater than or equal to zero and less than ten”
Line 188: “greater than 10” --> “greater than or equal to 10 and less than 25”

Line 189: “greater 25” --> “greater than or equal to 25”

Line 196: No need to spell out ISN here and in subsequent instances.

Line 226: “has to antenna ports” --> “has two antenna ports”?

Line 246: DFS already spelled out previously, so no need to do so again here.

Line 251: “radar free” --> “radar-free”

Line 253: “arises” --> “arises, as in the following situations”

Line 255: Suggest changing to “The geolocation is deliberately or unintentionally set incorrectly, or the automatic setting is incorrect.”

Line 267: “Thereby, including many...radar.” --> “Thereby, many...radar are also included.”

Line 280: No need to spell out MHP again here.

Line 281: “next bigger”? Do you mean the biggest nearby cities?

Line 281: “in” --> “to”

Line 282: “from the radar” --> “in azimuth from the radar”

Line 287: “outdoor” --> “outdoors”
Line 314: Delete the opening “The”

Line 328: “to” --> “too”

Line 336: Delete “used”

Line 338: Delete “i.e.”

Line 340: “transmitter” --> “transmitters”

Line 347: “allows to detect any” --> “allows the detection of any”

Lines 355-356: “allow to draw a definitive connection” --> “allow a definitive connection to be drawn”

Line 356: “caused interference” --> “and the resulting interference”

Line 356: Delete “which would relate them to the detected RFI”

Figure 7: moderate: 0 <= S < 10, severe: 10 <= S < 25

Line 359: “Longterm” --> “Long-term”

Line 361: “here introduced RFI detection algorithm” --> “RFI detection algorithm introduced here”

Line 373: 61.58% is not most. Replace “Most” with "A majority"

Line 391: What is meant by “promising” here? Perhaps replace by “promised” or delete?
Figure 9: severe: 10 \( \leq \) S < 25, moderate: 0 \( \leq \) S < 10

Line 408: “at” --> “on”

Line 409: “block like” --> “block-like”

Line 411: “got” --> “get”

Line 422: “average several” --> “average of several”

Line 422: “improving the” --> “improving”

Line 428: “in respect” --> “with respect”

Line 447: Delete “only”

Line 458: “short term” --> “short-term”

Figure A1: “greater zero” --> “greater than or equal to zero”

Line 510: “in” --> “on”

Line 530: “During the data” --> “During data”

Line 540: “linux” --> “Linux”