

Interactive comment on “Enhancing the consistency of spaceborne and ground-based radar comparisons by using quality filters” by Irene Crisologo et al.

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General comments

This is a very useful combination of volume matching and quality characterization with the additional benefit that the solution is implemented in open source software. There are, however, some issues that require attention before the paper is in publishable form.

Specific comments

I can identify three fundamental aspects of this paper that require clarification and

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elaboration:

1. How to characterize data quality? Significant effort has been devoted to systematic representation of weather radar data quality in Europe, through COST Actions (717, 731) and EUMETNET OPERA, giving framework approaches for dealing with data quality. The authors have followed Zhang et al. (2011) for representing data quality resulting from beam blockage. It would be useful to have some context in the paper acknowledging previous work and including a rationale for choosing the Zhang et al. approach.

2. What advantages does this work offer when it comes to addressing topographical beam blockage with GR compared to previous work? The paper references Bech et al. (2003) which is a benchmark paper. There are other implementations of the same approach that use other DEM data, e.g. GTOPO30. The authors' use of high-resolution SRTM data is interesting, but are the results better than using ~1 km GTOPO30 data?

3. GR calibration. There is one sentence in 3.2(2) indirectly indicating that the Subic radar may have been calibrated during the time period covered by the study. This needs to be clarified. Was the radar calibrated during this time? More than once? Are the results available? Any other maintenance that could have impacted calibration levels? This is very important to understand results like those presented in Figure 8. Also, the methods presented in this paper have been applied to data from one GR, yet they would be much more valuable if also applied to data from a second GR. Doing so would reveal which radar is “hot” and which is “cold” and whether there are any other systematic differences that are unique to each GR.

Technical “corrections”

Including information throughout the paper on what software calls are available and have been used is irrelevant and should be avoided. Instead, I recommend a small section following the recommendations given by Irving: <https://doi.org/10.1175/BAMS-D-15-00010.1>

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References to Morris and Schwaller and Schwaller and Morris are inconsistent. In the list of references, both are given from 2011, but the paper references one from 2009. The Morris and Schwaller reference appears to be incomplete in the list of references.

2.1.2 Version 6 of the GPM 2AKu products is stated, but is not the current version 05B? Reference(s) to product documentation are needed. 2.3 Where does the information on bright-band height and width come from? Also precipitation type and rain indicators? Please add.

2.3 GR data are acquired every 9 minutes, but matched within a 5-min window. How is this done?

Figures 5-7. Sub-plot (e) is a great way to visualize this kind of result, but clearer colours are needed. I'm suspecting that light-gray points are covered by dark grey points. A colour table might be a better approach, perhaps combined with slightly smaller point sizes.

Figure 5 caption: Replace ZPR with ZSR

Figure 8. Might want to clarify in the caption that data from Jan-Apr are not used because this is the dry season.

Just a thought: what impact can radome wetting have on the results? Radome wetting is still an issue even if you exclude data near the radar. But is it an issue at all at S band?

Review rating

Scientific significance: 2 Scientific quality: 3 Presentation quality: 2

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