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Interactive comment on "Three-dimensional wind profiles using a stabilized shipborne cloud radar in wind profiler mode" *by* Alain Protat and Ian McRobert

Anonymous Referee #2

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To understand the quality of this manuscript, the reader only needs to read this one sentence of the paper on p. 6.

"The purpose of the remaining figures of this study is to demonstrate that this good agreement for the stratiform precipitation case holds true for different types of cloud cover, including a cumulus congestus case characterized by high vertical wind shear (Figs. 4 and 5), an altostratus case in a very light wind environment (Figs. 6 and 7), and a tropical cirrus case embedded in a north-westerly jet (Figs. 6 and 7)."

More than half of the figures in the text are explained in this one sentence with the conclusion that these figures represent "good agreement". No further explanation is

provided. No quantitative assessment is provided in the text. The reader is expected to examine the figures for herself and then be convinced that this is good agreement.

In short, high-quality scientific writing is not like this.

Although the authors are clearly working on an important and relevant problem that is appropriate for AMT, weaknesses in the presentation of the paper similar to the issue above detract from what could have been a quality submission.

1. Examine the abstract. There is no quantitative information about the comparison. There is no information about how many soundings are used. The sentences are vague and lack quantification when they should be clearly quantified: "small component of the Doppler velocity in most cases", "Statistical comparisons.... demonstrate that accurate 3D wind profiles can be obtained." There is no information about how much data is evaluated. What about the errors? How is accuracy defined? These are not quantified. How is the comparison performed? What metrics are used? This information is not provided. Thus, the abstract does not serve its role as a concise summary of the manuscript.

2. Paragraphs are not indented, making it difficult to read this manuscript.

3. Line 26: "very little has been done so far": Does this mean that there have been zero studies? If so, say so. If there have been some research, please discuss.

4. The data and code availability statement "upon request to [author]" does not presently adhere to the AMT standards for the data policy: https://www.atmospheric-measurement-techniques.net/about/data_policy.html

5. Line 175: Why four hours? Is this because of radiosonde travel time? If so, please state that to be more clear.

6. I am curious as to why v_x and v_y are analyzed separately. Wouldn't this analysis be sensitive to small errors in the wind direction? You may have better agreement showing wind direction and speed instead.

7. I am not sure whether this paper may be of use to you, but I offer it in case you find it useful. Trapp, R.J. and C.A. Doswell, 2000: Radar Data Objective Analysis. J. Atmos. Oceanic Technol., 17, 105–120.

8. Even with the analysis of Figs. 1–3 at lines 158–182, I feel that not enough is said about the quantitative metrics of the comparison in Fig. 2. How good is it? When combined with Figs. 5 and 7, what are the main results? Is there a mean error that can be quantified? I'm really hoping the authors can provide more quantitative measurements of the quality of the comparisons. Not doing so makes this contribution quite weak scientifically. Yes, you may not have sampled the large number of cases that you had hoped, but more needs to be said about the statistics of the cases you did analyze. Readers of a technical journal such as AMT should expect this information at a minimum.

Other minor concerns:

1. The authors tend to use "which" when they should use "that". Lines 23, 113, 131https://www.grammarly.com/blog/which-vs-that/

2. The authors need to be more careful in the proofreading with the correct use of hyphens versus en dashes. When using an en dash to connect two numbers ("2–4 km" in LaTeX), do not include spaces on either side.

3. Better proofreading is needed. I noticed some examples where commas were omitted.

4. Should the word "resolution" be changed to "data interval" (or similar). If there are data every 15 seconds, you can't resolve features that are 15 seconds. You need 5–8 time steps to resolve a feature.

5. Line 30: Should "in" be "of"?

6. Line 45-46 repeats earlier text.

7. Lines 95–96: The parentheses aren't italicized.

8. Line 99: Insert a comma after "sampling".

9. Lines 106 and 111: "Where" and "With" should not be capitalized., They are continuing from the previous equation. They are not starting new sentences.

10. Line 111: Change "which need" -> "needed".

11. Line 122: Change "since" -> "because".

12. Line 158: "Figs." should be "Figures" because it starts the sentence.

13. Equation 1: I didn't see that i and k were defined. My apologies if I missed it.

14. I kept wondering if the soundings were released from the ship. Could you provide a more clear explanation? If I missed that information in the manuscript, I apologize.

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