

egusphere-2025-1908
Responses (highlighted in red) to Referee#1
11 October 2025

I would still recommend a more objective approach to counting the updraft cores in their analysis, as just saying "it's more obvious from the figure" is not scientifically robust.

Thanks for Referee#1's comments. Since the performance of retraveled vertical velocity is still ongoing works for getting accurate one, qualitative definition was suitable for describe the vertical structure in present study. Therefore, the author have tied to provide a specific and reasonable definition for the updraft cores in the revision. The modified definition of updraft cores is that the vertical velocity is larger than 1.5 m s^{-1} with upward extension at least 5 km tall in the squall line.

This definition has been added in the texts as:

L498-499: Only one updraft core (defined as a vertical velocity over 1.5 m s^{-1} with upward extension at least 5 km tall, marked in dark orange color) was presented in scenario S (Fig. 9a),.....

egusphere-2025-1908
Responses (highlighted in red) to Referee#2
11 October 2025

Dear authors,

I have added some minor revisions that refer to the items listed in the first review under "Major Comments".

Thanks for Referee#2's comments. Please find our responses and the revised part as mark as red below.

1. Thank you for adding the clarifying points. I still have a comment regarding the concluding remarks. I am assuming that not only the performance of WISSDOM but the configuration would need to be changed for other systems, is that correct? If so, I would also add this in the concluding remarks (e.g., after your comment in L702-704). This would probably clarify that this finding is a great step forward but has only been tested in a squall

line-type system, geographically positioned so the current network and WISSDOM configuration has a positive result, but that for other cases, that configuration might change. Performance maybe does not change under another configuration, correct? It would only be under this configuration.

That should be stated clearly.

Also, in L702-704, did you mean to say, “Although the results are positive in this case study”?

Thanks for Referee#2 pointing out this problem. This is a valid point. Follow the reviewer comments, the authors provided the statement that the configuration may change with different cases or weather systems. The revised descriptions have been added in the revision as:

L706-709: Although the results are positive in this case study, the configuration of WISSDOM retrievals may vary case by case. This finding is a great step forward but has only been tested in a squall line-type system, geographically positioned so the current network and WISSDOM configuration has a positive result, but that for other cases, that configuration might change.

2. I suggest a review of the final text to ensure that there are no grammatical and spelling errors. For instance, the first sentence, does not make sense at is it right now. It is unfinished: “Because the sounding site (#47199) and three radar wind profilers (RWP-1–3) were collocated in the WISSDOM domain.”

The sentence have been revised completely as:

L347-351: Because the sounding site (#47199) and three radar wind profilers (RWP-1–3) were collocated in the WISSDOM domain, the mean bias (MB) and root mean square deviation (RMSD) between the retrieved WISSDOM winds, soundings, and RWP-1–3 observations were selected as the evaluation metrics in the present study, following the same approach used by Tsai et al. (2023) in evaluating wind retrieval in WISSDOM.

Also, please, change to read: “[...] the data had to be interpolated [...] “

Revised as comment in L353.

3. Please, clarify:

- Lowest radar data. Do you mean lowest elevation?
- I would suggest changing “eclipse of topography” by “topography blockage”.

Short expansions and the phrase have been revised as suggestion in L190-192: The lowest available radar data (i.e., useful radar reflectivity and radial velocity above ground) were obtained using a relatively high discrimination threshold. Radar data for each there was a topography blockage of more than 10% were removed to retain only realistic data.

• Please, change “radial winds” by “radial velocity” anytime in the text that is related to the direct radar moment. We do not obtain winds directly from radars.
The word has been revised throughout the manuscript.

• What is the unfolding method and the blockage removal manual? Or did you use any specific algorithm?

Yes, the algorithm was developed by Cho et al., 2006; Ye et al., 2015. They provided a standard QC procedure in Korea radar observations. The articles have been cited in the text, and the reader can get the information easily from their studies.

4. Would “realistic” fit better? (e.g., close to reality).

The word has been replaced.

Please, make sure also to have a final English grammar review of the entire document for consistency and before final submission. Some sentences could use some rewriting, and others are lacking verbs or consistency.

The English grammar in the final version has been edited through the native English speaker. The issue of lacking verbs should be disappeared in the revision.

Thank you.