

## Response to reviewer/editor for Paper #ESSD-2022-66

We thank the reviewers and the editor for their constructive suggestions for our manuscript. As outlined in our response document from 22 July, the reviewer's concerns and advice from the first review round guided us in re-evaluating the presentation of our results and helped us immensely to improve our manuscript. We are also very grateful to the Editorial Support Team, who has helped us a lot during the review process.

In his latest review, the topical editor requested a minor revision of the Abstract:

“A small addition. The referees have noted that 'mesoscale' is the main issue. This concept should be included also in the abstract (actually it isn't). I suggest to add a short sentence (line 6) before 'The multi-sensor system ...'. something like: Although the data sets can contribute to mesoscale and sub-mesoscale processes' studies, this paper is mainly focused on the mesoscale.

Thank you for this suggestion. We added a similar sentence to the end of the Abstract, where we believe it fits best. “While this dataset also has the potential to contribute to submesoscale process studies, this paper mainly highlights selected preliminary findings on mesoscale processes.”

“About the code availability, I agree with you: there isn't any innovative technique. It can be available under request.”

Yes, we agree and will keep it available on request.

In addition to these points, we have also implemented additional grammatical improvements based on Grammarly (as was suggested by a reviewer earlier), which hopefully further improves readability.

Finally, we modified the problematic Figures 4, 5, and A1 to be more color-blind friendly.

The last change we need to implement after acceptance of the manuscript is to adjust the links to the PANGAEA datasets, where the DOIs still need to be registered once the review process is successfully concluded. We hope that's ok.

Cheers, Mario, Ben, Ivan, and Fang