

Thank you very much for carefully reading our manuscript, we are pleased that we have already been able to improve the manuscript. Thank you for your further constructive feedback. This helps us again to increase the quality of the manuscript. We have addressed all the points raised in the review. The responses to the comments are in blue. The lines refer to the revised, resubmitted manuscript (without tracking changes).

The paper has been strongly improved due consideration of the comments of both reviewers. There is just one general criticism left. It concerns Fig. 6. I do not see that the 5 km resolution shows any additional mesoscale features compared to the 7.5 km resolution as stated in lines 266-299. The authors refer to a small-scale shearing, which I am unable to see. Speaking of additional mesoscale features, I would expect to see additional smaller-scale eddies etc., which are obviously are not visible.

To my understanding these mesoscale features are missing due to two possible reasons

- 1) In the period, which was investigated, the Skagerrak area is too strongly dominated by the basin-wide Skagerrak Gyre, and therefore no additional smaller scale features are observable.
- 2) An averaging over an entire season smooths out all small-scale features, which would be visible on a snapshot in the Eulerian framework. In the reply to my comment no. 1 the authors defended their proceeding, by mentioning that an averaging over a larger area is a common procedure. I can fully accept this point. However, my suspicion is, that the temporal averaging causes the major problem in this case, since in general, mesoscale features are time-dependent, non-stationary phenomena.

In both circumstances, i.e., the Skagerrak area does not show significant mesoscale features or the temporal averaging destroys all mesoscale features, the presentation of Fig. 6 is not meaningful, and hence, should be omitted.

Besides this issue mentioned above, I have no further concerns. And I would fully recommend the publication of this manuscript in ESSD.

Thank you very much for your comments.

We have reconsidered this aspect and agree that the temporal averaging largely smooths out the submesoscale processes. For this reason, we have adjusted the figure. First, we removed the comparison of the different resolution and added the trajectories to illustrate finer processes (lines 248-266). We think it is important that the Skagerrak is still presented, as the uniqueness of the dataset should be emphasized. The currents in the Skagerrak area differ significantly from the rest of the North Sea, as tidal effects hardly influence them but are strongly influenced by highly dynamic density-driven current processes (lines 315-331). In addition, the high resolution data enable the further development of models that cover submesoscale processes and can be used for further analyses of submesoscale processes (lines 332-348).

We have also adjusted our title accordingly because the focus has changed. The high resolution current data are now more emphasized and not the submesoscale processes.