

Response to comments from Referee #1

Review on the paper “The Arctic Front and its variability in the Norwegian Sea” by Roshin P. Raj, Sourav Chatterjee, Laurent Bertino, Antonio Turiel, Marcos Portebella. The paper is devoted to position clarification of the Arctic front in the Norwegian Sea based on TOPAZ Reanalysis data as well as satellite and atmospheric reanalysis data. Authors apply a new method of front detecting using so-called Singularity analysis. The results obtained are plausible and they are of great interest to specialists. The paper is written in good language and well-illustrated. Thus, I suggest that this paper might be published with minor revision.

Below I offer a few comments on the text of the article that can be taken into account by the authors.

We thank Prof. Belonenko for her constructive comments. A point-to-point response is given below.

P 2, line 13. “The NwAFC on its way to the north encounters three deep currents (Fig. 1), one over the Mohn Ridge flows in the opposite direction”. – Second part of this statement must be confirmed by the appropriate links.

We agree. This statement will be supported by the references (e.g., Orvik, 2004).

P 2, line 25. It seems “The location of the AF in the Norwegian Sea coincides roughly with the topography along which the NwAFC flows” is not a good phrase for the reader.

The text will be redrafted.

I suggest that the item 3.3 Singularity analysis should be described more detailed since this method is very few used and new. It is unclear main differences the Singularity analysis from the method of maxima gradients of scalar parameters to estimate front location. This is optional, but it would be good for the reader of the paper. An online service provided by the Barcelona Expert Center (<http://bec.icm.csic.es/CP34GUIWeb/>) is a Private Zone and cannot be checked.

Yes, we agree. In the revised version of the manuscript we will provide descriptive details of the singularity analysis in the Appendix Section. And we will remove the private link.

Orvik, K. A., 2004. The deepening of the Atlantic water in the Lofoten Basin of the Norwegian Sea, demonstrated by using an active reduced gravity model. Geophys. Res. Lett. 31, L01306, doi:10.1029/2003GL018687.