

Dear Reviewer #1,

We appreciate your final comments and suggestions. In the following, the comments by the reviewer are underlined and our responses to the comments are in normal characters. Modifications to the text are shown in quotation marks with bold characters indicating newly added text, and normal characters indicating text that was already present in the previous version. The line numbering is referenced to final version of the manuscript.

Sincerely Yours,

Igor Dmitrenko

On behalf of the authors

Review of revised version of “Arctic Ocean outflow and glacier-ocean interaction modify water over the Wandel Sea shelf” by Dmitrenko et al.

I appreciate the improvements that were made in this revised version, and I only have a few remaining remarks and suggestions. My biggest problem that I have with this paper is to really understand the importance of the Wandel Sea for the Arctic Ocean outflow. While all the map-figures in the paper provide some valuable information, I feel that there is still one map missing that would introduce the region with an intermediate zoom. The way I read the paper, the Wandel Sea is a tiny glacial fjord system, but it really is more than that. Zooming in on the northeastern half of Greenland on the IBCAO map gives a nice bathymetric overview of the region. Figure 1 is too coarse to show that, and figures 2-4 are too detailed. Based on your data, you infer a certain circulation pattern on this shelf, which might justify that you summarize these findings in a map with sketched-out current vectors. This would help the reader to better understand the implications of the analyses. The paper implies that the region features a number of processes (glacier-ocean interaction, shelf-basin exchange, and is an advective pathway or the beginning of the East Greenland Coastal Current), which could be emphasized in the abstract and in the summary. I would encourage the authors to consider these points, but I leave that up to their discretion. In my opinion the paper’s relevance could be increased without too much additional work.

Thanks for this comment. However, we still believe that collectively Figures 1, 2 and 3 give an appropriate introduction to the regional setting. We do not have sufficient amount of information for inferring the circulation patterns on the Wandel Sea shelf. Finally, the IBCAO map gives bathymetric overview entirely based on extrapolation of data from the continental slope onto the shelf area. We briefly described this problem in introduction.

A few more minor points:

- Fig 8: label the lines with „T“, „S“ etc

We labelled T and S lines in Figure 8.

- In my opinion, introductory sentences to following sections are not necessary (i.e. lies 398-400; 427-429)

We decided to keep the introductory sentences before sections 4.3 and 4.4 to provide a proper outline.

- L461-472: What is the idea regarding Siberian shelves river water? Is the freshwater advected with the Transpolar Drift to the NE Greenland coast or are you assuming a detour of the river water through the Canada Basin? This part could use clarification

We modified this sentence in lines 469-472 as follows: *“Moreover, water from the Siberian shelves, especially the Laptev Sea shelf also has the same salinity and temperature range [e.g., Dmitrenko et al., 2011] and can mix into and cool the summer PcW **advected with the Transpolar Drift to the NE Greenland coast**”*.

- L109: where is the ITP station on the map?

We pointed out in the text that the ITP mooring was deployed at position of station SN15-13 depicted in Figure 4b. We added reference to Figure 4b in the text as follows (lines 106-108): *“Additionally we used vertical profiles of the colored dissolved organic matter (CDOM) from an Ice Tethered Profiler (ITP) by McLane Research Laboratory that was temporarily deployed at SN15-13 from 21 April to 11 May (**Figure 4b**)”*.

- L132: profiles that were collected

Changed as requested, line 132.

- L192: ...which reveals or revealed...

Changed to *“**reveals**”*, line 192.