Earth Syst. Sci. Data Discuss., author comment AC2
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Reply on RC2

Mario Hoppmann et al.

Author comment on "Mesoscale observations of temperature and salinity in the Arctic Transpolar Drift: a high-resolution dataset from the MOSAiC Distributed Network" by Mario Hoppmann et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2022-66-AC2, 2022

This is a solid contribution to the field, it does have some issue with grammar and word choice throughout the text, however, it did not hinder my ability to read or understand the content, maybe the authors could run it through a grammar checking program (I use Grammarly).
#We thank the reviewer for the comment and advice. We now used Grammarly to correct the grammar. We also tried to improve the wording in some instances, although it is difficult to judge what words exactly the reviewer is referring to. We hope that the overall reading experience is better now.

From the title of the manuscript I expected the focus to be primarily on analysis of the data, however the focus of the paper is really on describing the buoy system and the handling of the data. I think that this does fit within the scope of the journal, but the authors may want to change the title to better fit with the focus of the paper. I have no issues with the substance of the paper, just a few comments to improve clarity.
#We appreciate the comment and concern about the title "Mesoscale observations of temperature and salinity in the Arctic Transpolar Drift: a high-resolution dataset from the MOSAiC Distributed Network". It is usually quite difficult to represent an entire manuscript by only a few words. However, we are not entirely sure why the title would suggest a focus on a scientific analysis, as words like "observations" and "dataset" should indicate that the focus is on the description of the data. We could probably have written a more technical paper and submit to a more tech-focused journal, but we wanted to put the focus on the dataset itself due to its uniqueness, but with the technical part still properly represented. In short, we do believe that the title is appropriate in its current form, but we are absolutely open and willing to change it if the editor thinks this is necessary.

The description of the data handling and QC is well thought out and helpful for others who are starting out with automated buoy systems.
#We appreciate the positive feedback.

Line 135. I was a bit confused by the statement "polled for an additional measurement by the buoy itself" I think that you mean that the CTDs recorded data every 2 mins and then they were also collected a measurement every 10 mins that was sent via iridium. This paragraph is not very clear.
#The other reviewers also criticised that this part was not very clear. The paragraph has

been completely rewritten as follows:
"In order to ensure an operational time of ~1 year, the individual CTDs were set to record data internally at 2 minute intervals, independent of the buoys' own sample and transmit intervals. The surface buoy itself recorded GPS position, surface temperature, and carried a submergence sensor. Furthermore, the buoy controller polled all CTDs for an additional measurement independent of the CTDs' internal sampling according to a pre-configured buoy sampling interval, which could in principle be adjusted by sending a reconfiguration command via iridium if necessary. However, throughout our experiment, all buoys were set to take a measurement and immediately transmit the corresponding data at a fixed 10 minute interval, chosen to ensure an operational time of at least one year. Thus, the internal sampling interval of the CTDs was 2 minutes, while an additional CTD measurement was obtained and transmitted by the buoy every 10 minutes together with the corresponding auxiliary (meta)data."

Line 404: 'air-line distance' do you mean the the straight line distance rather than the distance along the drift track.
#This is correct. We changed it to "straight line distance".

Line 404: Is there a better way to visualize the MLD in Figure 7?
#Actually, the evolution of the MLD can't be continuously determined from the present fixed-depth observations, and thus can't be visualized in Figure 7. See more detailed comments to reviewer 1.