Remaining comments on “Dynamic Thinning and Grounding Line Retreat in Porpoise Bay, Wilkes Land, East Antarctica”

by Weatherley et al. 2025

Dear Authors,

Thank you for your meticulous responses to the reviewer comments. There is a clear improvement of the manuscript, with the figures and the organization of the text. I believe you have adequately responded to most of the comments that I raised on your initial submission. However, there are a few key things that I would like to see addressed before final publication of the manuscript. Once the comments are addressed, I believe the manuscript will be a valuable addition to the scientific community, particularly those interested in East Antarctica.

The major comment I have remaining is how the mCDW is discussed throughout the text. In some cases, it reads as if the mCDW is new in this region, thus causing the grounding lines to retreat in the recent decades. However, the data do not clearly support a change in the presence of mCDW. Therefore, I highly suggest going through the text and making sure the writing clearly articulates a characterization of the ocean properties, and not a change in properties. Please also see the comments on specific sections below.

I also suggest including the calculated uncertainties in the results and discussion sections.

The other comments are minor:

Line 138 – typo firm should be firn.

Line 153 – again, firm should be firn. – Please check throughout the document (line 514 also).

Line 155 – what do you mean by ground finding errors?

Line 165-168 – I’m not quite sure what you mean by this sentence: “Ice surface velocity profiles were extracted along the central flowlines using the 2021 annual velocity mosaic for each outlet glacier”. Do you mean that you used 2021 to determine what the central flowline was and then used that line for the rest of the years? Please clarify in the text.

Line 171 – Can you add the mean error as well?

Line 193 – there is an extra period in this sentence.

Line 225 – missing “line” next to “grounding”

EN4 and MEOP data – In the reviewer responses, you mention that the MEOP casts are used to build the EN4, and in the paper, you say that you show them to supplement the EN4. I would be

more explicit about how the two datasets are related and what they uniquely show. Additionally, I'll insist on plotting the time series of the MEOP data (even though the data varies in space). This will improve your assertation that there is the intrusion of mCDW and clarify if there are indeed any ocean warming trends in the region. Please also see comment below.

Regarding Figure 12 – What this figure is showing (and that strange line) is still unclear. The figure caption says "Oceanic properties derived from the MEOP casts…" – this makes the reader believe that the data is seal tag temperatures collected from the MEOP program - but your reviewer response says "*The line of data points is likely from an Argo float. When the float is under ice, it cannot transmit its location; the position is typically interpolated between the last known location before ice cover and the first transmitted location after the float resurfaces. In this case, the float was likely under ice for a prolonged period and collected multiple profiles during that time."* So, is it an ARGO float or is it seal tag data?

Section 3.3. – Can you add the uncertainties of the calculated elevation changes for each glacier for both datasets here?

Table 3 – I suggest changing the word "statistic" in the table caption. These are not actual statistics but rather characteristics of the glaciers that you have investigated.

Line 520 – How do you make sense of the East GL retreating the most, but having only a minor thinning rate, especially when taking into the account the uncertainty associated with the elevation data? Also, in line 348 it states "Schröder et al. (2019b) and Nilsson et al. (2023) observed elevation change at an average rate of −0.41 and −0.40 m yr−1 for Holmes East Glacier", which is different than what is written on line 520. Please check for consistency throughout. The assertion in this paragraph that there is a relationship between grounding line retreat and ice surface thinning rates does not align with what you have in Table 3 and in fact, brings up many more questions. I suggest removing this paragraph entirely.

Section 4.2 – Here, are you suggesting that your results show that mCDW has been there all along? Since your results do not show increasing temperatures at depth, do you think mCDW has been there since the 90s – the start of your EN4 data? Please expand on this!