Dear editor, please find the reviews below, with our point-by-point reply in green.

Reviewer 1:

Thank you for your work to improve the manuscript. The additional experiment and new metric for nonlinearity of melt response make this study stronger and the updated figures are easier to interpret.

We thank the reviewer for their constructive comments and positive overall review. Please find below our reply to the remaining comments.

In this version, you refer at several points to a feedback between melt and stratification/buoyancy, which is not explicitly described nor is a reference provided. This first comes up in line 109-110, again in line 209-211, and also in line 254-255. Please explain what you mean and be specific about why you expect that the estimated melt sensitivities may be conservative as a result.

We agree that this process was insufficiently explained. The reference previously provided is Lambert et al (2024). We have now included that reference in line 109-110 and expanded the relation between this feedback and melt sensitivities as follows:
"By assuming a constant density across the experiments, we do not account for the increasing stratification which would result from the increased input of freshwater into the ocean. As shown by e.g. Lambert et al. 2024, this increased stratification can amplify the subsurface warming and thereby further increase the sensitivity of ice-shelf melt to ocean warming. By ignoring this feedback, our melt sensitivities may be conservative estimates."

Also note that the abstract still references a warming of 1°C while the new version of the manuscript includes two warming experiments.

Thank you for pointing this out, we have now additionally mentioned the 2°C

Reviewer 2:

The revised manuscript of Lambert and Burgard analyses the sensitivity of five different basal ice shelf melting parameterisations to an idealised warming of 1 °C and 2 °C, while the five analysed and widely used basal melting parameterisations differ in complexity. The authors of the revised manuscripts have taken up almost all raised issues and suggestions by the reviewers. However, I would like to suggest some last-minute changes. I recommend the publication of the manuscript after very minor corrections.

We thank the reviewer for this positive review and their constructive comments. Please find our point-by-point reply below.

General comments
The manuscript addresses the basal melting enhancement for increased ocean temperatures. In the revised manuscript, the authors have performed an additional simulation for a warming of 2 °C. Since the brief communication shall be concise, the authors may summarise very general information about the reference and the two warming scenarios of 1 °C or 2 °C in a simple table. What do the authors think about the following example (please see attached pdf file)? The information could be provided as supplementary material if space is an issue.

We agree that this table may contain useful quantitative information for some readers and have therefore adopted the reviewer's suggestion to add this table as supplementary material.

As a supplement material, you may provide the spatial melting response to the 2 °C warming, like Figure 2 of the 1 °C warming.

Similar to the table, we have followed the reviewer's suggestion and added this figure to the supplementary material.

Specific comments
Main document
Line 2–3/L 2–3: The authors may mention both warming scenarios in the abstract, e.g., "to an idealised sub-thermocline 1 °C and 2 °C warming … ."

Thank you for pointing this out, we have now additionally mentioned the 2°C

L 72: Please drop the "e.g." because you use a specific implementation. You may write: "We use the implementation by Burgard et al. (2022) but include an .... ."

Agreed and corrected

L 15: You may add: "... currently remain rare and computationally too expensive to run ... ."

This line was already there in the resubmitted version.

L 133: What is the unit of the K value? Please add the unit.

As defined in Burgard et al. 2022, K is a dimensionless parameter. We have now specified this explicitly in the text.

L 138: What is the unit of the turbulent heat exchange (γ*T) value? Please add the unit.

Thank you for pointing out that these units were missing. The unit for \gamma is m/s and for C it is m^6/s/kg. We added the units in the manuscript.

L 142: I am unsure about the style guide of Copernicus journals, but should there be a space between the number and the following unit?

Agreed, we have corrected this and made the inline presentation of calibrated parameters consistent throughout the paragraphs.

L 165: If the provided numbers in Figure 1 are taken, the deep amplification factor for PICO is 2.1. Please double-check.

Thank you for spotting this inconsistency, we have corrected this value and one more rounding error in the text.

L 187: As before, the authors may also add here the factor by writing: “... the lowest deep amplification (1.7), which is a ... .”

Agreed and adopted

L 193: Should it be: “These sensitivities have a factor between 1.7 (PICO) and 5.5 (Quadratic) higher than the ice-shelf average values.”?

No, the sentence in the manuscript is correct. However, we reformulated to clarify what we mean by “deep sensitivities” as follows: *“These sensitivities in the deep regions are a factor 1.7 (PICO) to 5.5 (Quadratic) higher than the ice-shelf average values.”*

L 226: The authors may rephrase “Quantitatively, however, the intermodel spread is very large” to “Quantitatively, however, the intermodel spread is considerably large."

Agreed and adopted

L 279.: The authors may add a sentence summarising the results for 2 °C: "For 2 °C, the increases range from xx % to xx %, with a mean of xx %."

Agreed and adopted