

Review:

EGU-2026-1396: Temporal evolution of the Petermann Ice Shelf estuary constrained by remote sensing observations

Overall Statement:

The resubmitted manuscript has addressed all my concerns from the first round of revisions. Below, I list several small changes that should be made before the manuscript is considered for publication. This is a great piece of work that the authors should be proud of and a useful contribution to the cryosphere scientific field.

We are pleased to hear that the reviewer now thinks that our paper is ready to be published.

Below, please find the reviewer's remaining comments in black and our responses in blue; any new or edited text that has been added to the revised paper is shown in purple.

We would also like to highlight that we have realized the hyphen in 'Ice Shelf' in the title is not required, given these words are part of a name in this instance (Petermann Ice Shelf). We have changed this in our revised paper, but please can you ensure it is also changed on the online EGU Cryosphere page for our paper. The corrected title should now read: "**Temporal evolution of the Petermann Ice Shelf estuary constrained by satellite remote sensing observations**"

Larger Comments:

Grounding zone and grounding line both used in the manuscript. Please stick with only one of these expressions.

We have made the change to "grounding zone" throughout the manuscript.

Specific Revisions:

Abstract:

Li 21: Suggest to change "thermal erosion" to "melting".

We have made this change.

Li 28: Based on the last round of revisions, I thought that it was inconclusive that seawater intrusion should reduce bottom melting of the surface channel. Please change this text to read:

"... and resultant flow reversal which shifts the dominant melt pattern from vertical incision to lateral erosion."

We have edited the sentence as suggested.

Introduction:

Li 34 – 37: According to Hill et al. (2018) <https://tc.copernicus.org/articles/12/3243/2018/tc-12-3243-2018-discussion.html>, Steensby lost its ice shelf already and the remaining ice shelves are as follows: Petermann, Ryder, 79 N, L Bistrup Brae/Storstrømen (the downstream ice shelf).

Please amend this text accordingly.

Thank you for directing us to this reference. Upon further review, there seems to be some debate as to whether Steensby has collapsed completely (Hill et al., 2018) or only partially (Millan et al., 2023; Wang et al., 2024). We have chosen to leave it included in the list of remaining ice shelves, as these two more recent references include analyses through 2020 and 2022 respectively. That said, we have now added Bistrup Brae/Storstrømen to the list of remaining ice shelves.

Li 62 – 67: Please support this sentence with the following reference:

Geyer, W. R., & MacCready, P. (2014). The estuarine circulation. *Annual review of fluid mechanics*, 46(1), 175-197.

[We have added this reference.](#)

Li 67: “enhance ice-shelf instability” is slightly awkward. Suggest to reword to “contribute to destabilizing the ice shelf” or something similar.

[We have rephrased to “contribute to destabilizing the ice shelf” as suggested.](#)

Data and methods:

Li 162 – 164: Please add another sentence here that further describes how this shift should, in theory, overlay the same ice from one year to the next. As it is written, it is not entirely clear.

[We have added the following sentence to clarify: “This is done to account for any ice motion between the two data acquisitions so that the same area of ice is being compared.”](#)