Question 1:
I try to look quickly into cold-spells and also the heatwaves which you mention on Line 20. Do you think the heatwaves lessen in area? It seem that in Fig. 2 of Gurumoorthi & Luis, 2026, your area is also one of not-hot areas in their study which is nicely consistent with your cold-spells.

Response:
This is a thoughtful suggestion. We agree that comparing our marine cold-spell results with marine heatwave behaviour provides a useful additional perspective. Using the same workflow but adjusted to the 95th percentile threshold and `coldspells=FALSE` argument in `heatwaveR`, we therefore checked marine heatwave cumulative-intensity trends (Fig. A) and yearly marine heatwave fields (Fig. B) for the same Adélie Sill–Commonwealth Bay domain.

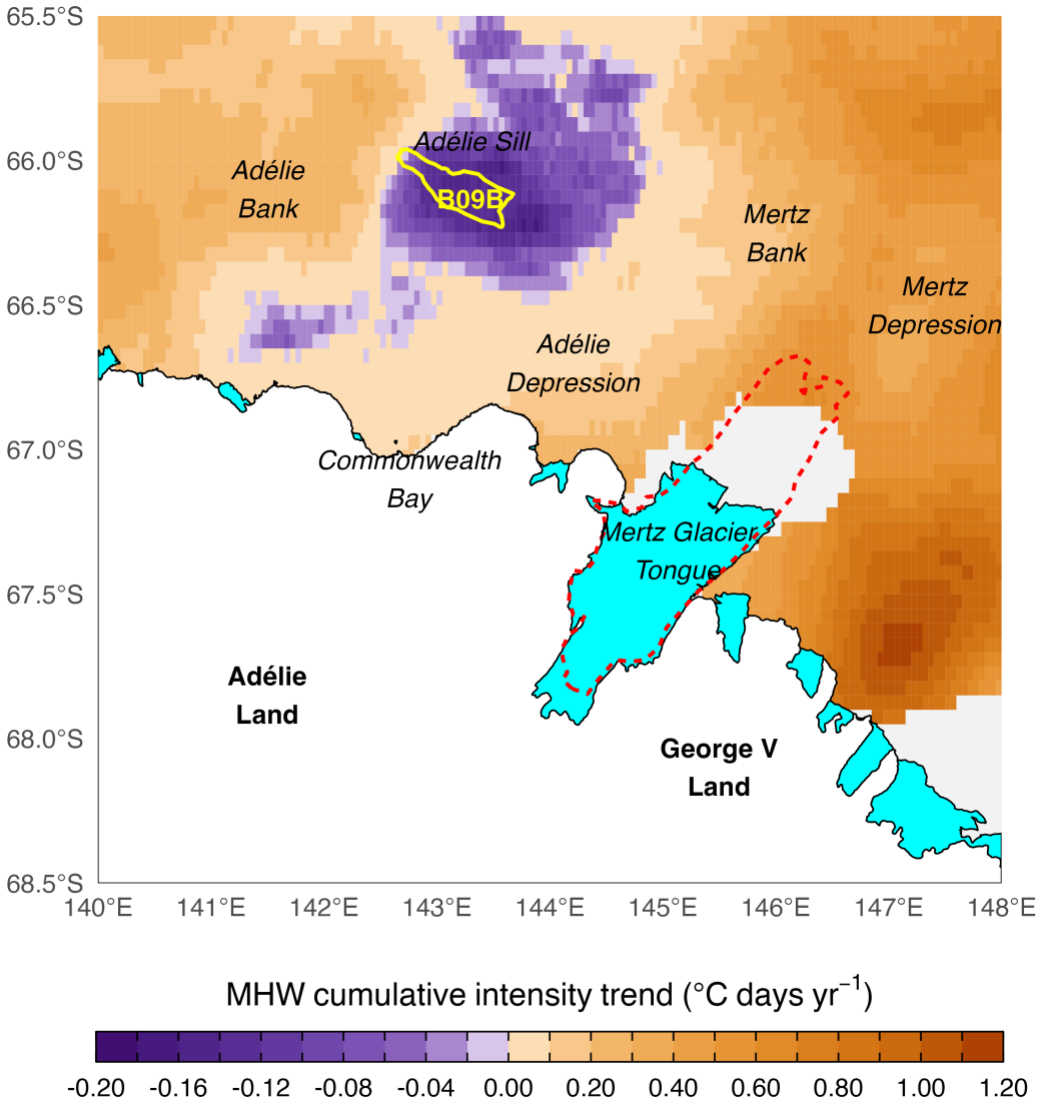

Figure A. Marine heatwave cumulative-intensity trends in the Adélie Sill–Commonwealth Bay region. Spatial trend in annual marine heatwave cumulative intensity from 1982 to 2024, expressed as °C days yr^{-1}. Purple colours indicate decreasing or weak marine heatwave cumulative intensity, while orange colours indicate increasing cumulative intensity.

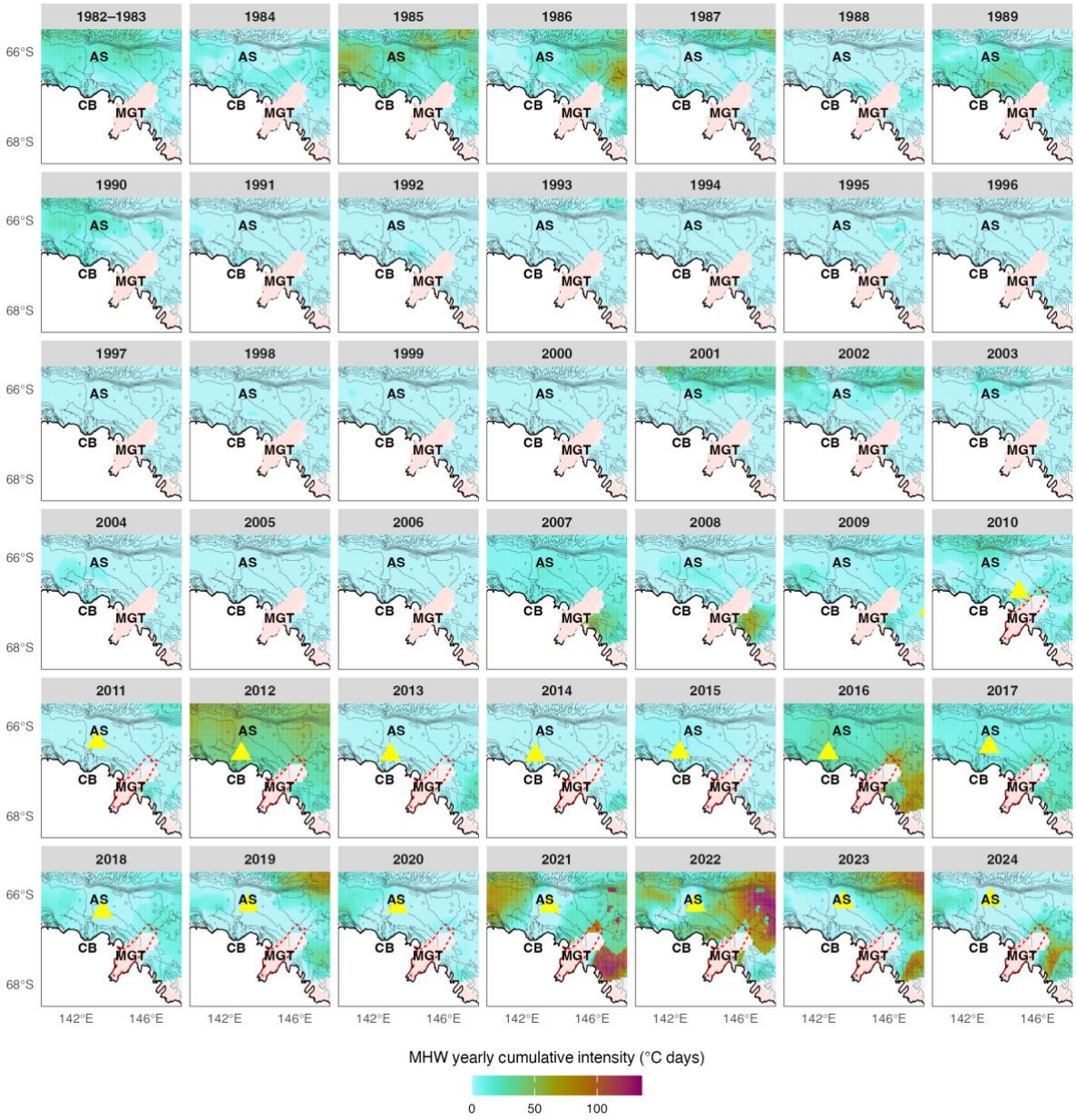

Figure B. Yearly marine heatwave cumulative intensity in the Adélie Sill–Commonwealth Bay region from 1982 to 2024. Each panel shows annual cumulative marine heatwave intensity, expressed as °C days, using the same study domain as the marine cold-spell analysis. The yellow triangles indicate yearly iceberg B09B positions, and the dashed red outline shows the pre-calving Mertz Glacier Tongue extent. Marine heatwave activity occurs in several years before and after B09B arrival, but the yearly pattern is less spatially locked to the Adélie Sill/B09B sector than the marine cold-spell signal.

The trend map (Fig. A) supports your observation, but with an important spatial nuance. Across the full study box, marine heatwave cumulative intensity generally increased, with a median trend of 0.309 °C days yr^{-1} and a mean trend of 0.369 °C days yr^{-1}. However, the Adélie Sill/B09B core behaved differently: its median trend is slightly negative (−0.024 °C days yr^{-1}), 61.6 % of pixels show negative trends, and 98.4 % show either negative or very slow positive trends (≤0.1 °C days yr^{-1}). A Wilcoxon rank-sum test also indicated that trends in the sill / B09B core were significantly lower than those in the rest of the study box ($p < 2.2 \times 10^{-16}$). We therefore agree that the B09B/sill sector is

not a strong marine heatwave hotspot, and this is broadly consistent with your observation from Gurumoorthi and Luis (2026) that this sector appears relatively “not-hot” compared with other Southern Ocean marine heatwave regions.

The yearly marine heatwave fields (Fig. B) add a useful overview. Marine heatwave activity increased after 2011 at the scale of the full study box, with mean annual cumulative intensity rising from 4.44 °C days before 2011 to 15.5 °C days after 2011, and the mean active-pixel fraction increasing from 37.2 % to 78.7 %. However, this increase was much weaker in the Adélie Sill / B09B core, where mean annual cumulative intensity increased only from 3.98 to 7.04 °C days, and the median annual intensity changed only slightly from 1.17 to 1.38 °C days. The top-year comparison also suggests that the marine heatwave signal is not as tightly linked to B09B as the marine cold-spell signal: in the full study box, 6 of the top 10 marine heatwave years occurred after 2011, but in the Adélie Sill / B09B core only 4 of the top 10 years were post-2011. The strongest core years include both post-B09B years, such as 2012 and 2016, and earlier years, such as 1985 and 1989. This suggests that marine heatwaves and marine cold-spells are not simple mirror images in this region. The cold-spell response appears more directly organized around the post-2011 sill and iceberg configuration, whereas marine heatwave activity is more spatially variable and less clearly tied to the grounding event.

We will check this comparison carefully and consider adding a short note in the Results and Discussion to place our marine cold-spell findings in the broader context of Southern Ocean marine heatwave patterns.

Question 2:
Good that there is "3D" data for many variables in Line 125 in B-SOSE. I checked the linked and there was an archive of SOSE (not yet the B-SOSE now) for until back 2005. Do you think adding this is great for your Fig. 3 or the one now is sufficient?

Response:
Thank you for checking the SOSE archive and for raising this useful point. We agree that extending the subsurface diagnostics farther back in time would be valuable. The SOSE archive from 2005 includes several relevant fields, including potential temperature, salinity, velocity components, surface freshwater and heat fluxes, sea-ice concentration, mixed-layer depth, and sea-ice effective thickness. However, it is not a direct one-to-one extension of the B-SOSE diagnostics used in Fig. 3, because some variables differ in temporal averaging, product structure, and availability relative to the 2008 onward B-SOSE iterations used here.

For the present manuscript, we focused on the B-SOSE iterations that directly cover the 2010 Mertz Glacier Tongue calving and subsequent B09B grounding, since this transition period is central to our interpretation and provides internally consistent diagnostics for the post-calving state. We agree that the earlier SOSE output could be useful for an additional sensitivity test, especially for pre-2010 subsurface and sea-ice conditions, but we consider the current B-SOSE coverage sufficient for the main

objective of this study. We will clarify this limitation and future opportunity where appropriate.

Question 3:
Can you italics the penguin scientific name in Line 395 on next correction? I think it is better that way.

Response:
Thank you for catching that. We agree that the penguin scientific name should be italicized. It seems that the LaTeX formatting initially used for *Pygoscelis adeliae* did not carry through correctly in the R Markdown output. We will correct this in the next version.

Question 4:
Can you choose between the 2 Fischer on Line 470 on next correction? Maybe it was not taken when correcting, so it appears double now.

Response:
Thank you, you are exactly right. We were polishing the bibliography file before submission, and this duplicate Fischer reference was not fully cleaned up in the compiled version. Both entries refer to the same Scientific Reports paper, so we will keep only one Fischer et al. (2025) reference and make sure the in-text citation and reference list are consistent in the next version.