Response to Editor

EGUSPHERE-2024-3490 | Research article

Challenges in identifying Antarctic coastal polynyas in satellite observations and climate model output to support ecological climate change research

Laura Landrum[1], Alice K. DuVivier[1], Marika M. Holland[1], Kristen Krumhardt[1], Zephyr Sylvester[2]
[1]NSF National Center for Atmospheric Research, Boulder, CO, USA
[2]INSTAAR, University of Colorado, Boulder, CO, USA
Correspondence to: Laura Landrum (landrum@ucar.edu)

Responses in blue italic text.

Editor Comments

Public justification (visible to the public if the article is accepted and published): I am satisfied that the latest round of revisions have addressed the reviewers minor comments and so I am happy to accept this article for publication in The Cryosphere. However I have chosen "subject to minor revisions (review by editor)" because there is a small item that occurred to me whilst I was checking through the manuscript that I would like the authors to consider.

Specifically Figure B2 illustrates the "Sea ice concentration required to result in 312.5 km2 of open water within a grid cell" but the values of SIC quoted seem very high. Crunching the numbers I find that to obtain 312.5 km2 of open water a 51 km x 111 km grid-cell would need SIC=94.48 and a 44.4 km x 111 km grid-cell would need SIC=93.66.
Of course the grid-cells for the 1 degree case are not rectangular (although they are depicted so in Fig B2) and so there should be some discrepancy here.

So I would ask that the authors check the numbers quoted in the Fig B2 caption. If the discrepancy is simply caused by grid-cell shape (or in fact anyway) then please consider adding a small note/caveat to the Fig B2 caption to state that the 1 degree grid-cells are not actually rectangular but are depicted so in panels b. and c. for ease of illustration.

Thank you for catching the errors in our calculations for Appendix Figure B2 and noting the possible confusion with the illustration. We've corrected the errors in the text and added another panel to the figure to provide geographical context for the illustrative grid boxes, along with an additional explanation in the figure caption.