

The revised version of the submitted manuscript has addressed all the major points I raised in round 1 (as well as those of reviewer #2) and, where necessary, implemented appropriate changes. These most prominently concern some initial gaps with regard to a long-term characterisation of the results and an assessment of seasonal effects in the approach to detecting polynyas. To this end, new, high-quality figures have been added and some previous figures have been moved to the appendix. Overall, this has noticeably improved the manuscript as a whole. In its current form, I see no major obstacles that could prevent its swift publication (other than potential minor technical issues such as notations, etc., in the course of typesetting).

Just two final bonus questions out of curiosity from my side:

- (1) A question that came up only after my initial review when rereading e.g. line 32 (“In these regions, they then use a fixed threshold in sea ice properties to distinguish polynyas from the pack ice”): I did not find any mention of another old but rather frequently used polynya detection method – the Polynya Signature Simulation Method (“PSSM”, [Markus and Burns \(1995\)](#)). Any thoughts or even experience on how this approach would compare to your results, and/or how it could even be utilized to some extent in future ML approaches?
- (2) Speaking of future ML approaches for automatic polynya detection approaches and your own depiction of “paving the way” for these: In what areas do you expect to see major methodical advancements in the next few years for A) your presented low-computational-cost approach and B) a hypothetical high-computational approach that fully utilizes higher spatial and temporal resolutions from both observations and (km-scale) modelling?