

## Comments from Topical Editor and **responses from the authors**

**Topical Editor Decision: Publish subject to minor revisions (review by editor)** (02 Jul 2021) by [Xin Li](#)

Comments to the Author:

This paper presents decadal datasets of snow and ice thickness from newly developed automatic algorithm based on SIMBA observation data. This is worthy of publication for numerical and satellite validation. I am pleased to inform that the paper is now can be accepted for publication with some minor revisions as follows:

1. This paper used an automatic algorithm for calculating snow and ice thickness. While Figure 6 gives several results from manual identification. Is it possible to provide some statistics for validation of the automatic results against the results of the manual method?

Thank you for the comment. A decent statistical analyses is difficult to make since the in situ observations are very limited for 2019/2020. However, a more reliable validation of SIMBA result has been done in early study, so we added the following text before Figure6:

“A few in situ observations (symbols in Fig. 6) were made during ice season. Point comparison between SIMBA algorithm detected and in situ observed values ranged from 2 centimeters up to 12 centimeters. The mean biases are 5, -1, 3 and 2 cm for snow depth, freeboard, granular and total ice thickness, respectively. Small values were largely due to the compensation effect. To validate algorithm, a lot more in situ observations are needed. Such analyses can be found in Cheng et al., (2020).”

2. The text and images on Figure 1 are not very clear, can they be replaced with a clearer image?

Indeed, the text was very small, so we incorporate a figure 1 using landscape layout and the text is now much bigger and clear.

A few more minor updates:

- We modified a few places to replace “manual” with “in situ” for better clarity, so “manual” will mainly refer to a “manual procedure” to process the SIMBA data. “In situ” will refer to the in situ observations made on site.
- Helsinki was added in author’s affiliation for 1)
- Last sentence in the Acknowledgement was modified.