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Virtual radar ice buoys – a method for measuring fine-scale sea ice drift

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1 Response for the editor and reviewr comments

Dear Prof. Haas and reviewer of my manuscript,

Thank You for the constructive comments on my manuscript! In the following I have tried to response to all the presented comments.

Sincerely,
Juha Karvonen, FMI

I think overall most of my comments were carefully considered and the quality of the paper was much improved. The manuscript has become readable and shows the scientifically new findings. Now I feel that the manuscript has become acceptable for the publication in The Cryosphere. I hope the technique developed by this paper will be applied to improve our understanding of the sea ice behavior on a sub-grid scale. I acknowledge the author for all his efforts made for revising the paper.

My suggestions (mostly technical) are below:

(P4L10) “moving of deforming” might be “moving or deforming”?

Corrected.

*(P6L10) “hare” should be “here”.

Corrected.

*(P6L22) Could you add some explanation about what “radar artifacts” is?

There are many possible sources for these, I added some in parentheses i.e. those caused by weather phenomena, radar noise or clutter, electromagnetic interference.

*(P7L26) “close” might be “compact”?

The ice was classified as "very close drift ice" (IC=9-10/10) in the met.norway ice chart.

*(P11 Eq.5) What does “T” stand for?

T is a threshold value. Explanation added.

*(P11L4-6) If possible, some additional explanation would be helpful to understand this.

I included some additional sentences on this.

*(P11L19) What does “Rb” stand for?

Rb is explained in the manuscript on line 13 of page 11 (the page and line number refer to the previous version of the manuscript, not the verison updated now).

*(P12L1) “we performed one tracking iteration” might be, for example, “we repeated the tracking of individual VB’s using successive images to trace their positions for the observation period.”

The VB’s are initialized by performing just one tracking iteration for the two first images of an image sequence, so I only slightly modified the sentence.

*(P16L27) “a” should be italic.

Corrected.

*(P19 section 6.2) The author did not take the ship motion into account. However, I wonder if it was not possible to obtain the ship velocity just by using the onboard GPS record.

It was not possible because we did not have the ship GPS when performing the study. If the ship GPS is available it is possible.

*(P20L14) “a a study” should be “ a study”.

Corrected.

*(P20L26) “error due to the internal deformation within the VB area.” Although this is just my opinion, we do not call this “error”. I prefer “reduction in ice area due to the internal deformation within the VB area”.

True, I changed the sentece to "...changes due to possible internal transformations within the VB area". The transformations can also be diverging, not only deforming.

*(P21L25) “of the time (?)”. Please remove “(?)”.

There was a typing error in the reference name and latex produced the question mark. Corrected.

*(P23L2) “ A n” should be “an”.

Corrected.

Dear Juha,

thank you for the changes to your manuscript, which you can see have satisfied most of the reviewer's concerns. Please address those final comments. I am happy to accept your paper for publication now. However, I feel that there are many more writing errors and typos and double words than were identified by the reviewer. Please could you carefully go through the manuscript again before you submit the final version. Congratulations to a nice paper and best regards

Christian

Thank You!

I have tried to make some corrections, but probably some will still remain as I am a bit blind to errors in my own text.

Sincerely,
Juha K.