

Interactive comment on “Estimation of Degree of Sea Ice Ridging Based on Dual-Polarized C-band SAR Data” by Alexandru Gegiuc et al.

Anonymous Referee #2

Received and published: 17 October 2017

Summary. This paper examines radar backscatter and texture parameters derived from Radarsat2 dual polarization imagery to determine ridge density in the Baltic Sea. A classification algorithm is described that derives several levels of ridge density, a useful parameter for shipping. Helicopter electromagnetic induction and manually derived ice charts are used for comparisons.

The paper described the concept, approach and methods adequately and was satisfactorily written, albeit some grammatical editing is needed. My primary suggestions are the following: 1) A final summary/set of conclusions of the basic findings is needed to be added. The discussion speaks in generalities about the need differences in the ice charts for both icebreakers and non-ice breakers in the Baltic plus shipping issues elsewhere in the Arctic. It seems like a key result is that the results are much better

C1

in March than January and February. Please include a statement as to why you think this is the case. Also these differences in interpretation of the ice charts for the two types of ships seems important enough to include earlier in the paper, as it impacts final comparison results.

2) I suggest a final section be added in Section 4 that describes value of each polarization, with the HV of seemingly little to marginal value except as was pointed out perhaps in March, and the other texture parameters, in terms of what were the most important parameters in deriving ridge statistics. Could the algorithm be successful with fewer parameters? What parameters were really needed to identify ridges?? I am suggesting a further evaluation of Figure 4 basically.

Detailed comments. 1. Page 13, line 14 mentions green in Figure 5 which I assume should be red/pink. Line 15 left off Figure number, which I assume to be 5.

2. Page 13, line 25. 'to SW' I assume this means towards the SW.

3. Page 13, lines 30-31. The sentence "In areas with IC 80-90% the amount of open water is rather high..." I think they may mean that in a relatively high ice concentration area, the relatively low amount of open water can still have a strong impact on the overall backscatter, particularly during high winds. Please rewrite.

4. Page 14. Line 8. A question mark appears in text without any apparent meaning.

Interactive comment on The Cryosphere Discuss., https://doi.org/10.5194/tc-2017-127, 2017.

C2