

Interactive comment on “Sea ice in the Baltic Sea – revisiting BASIS ice, a historical data set covering the period 1960/1961–1978/1979” by U. Löptien and H. Dietze

Anonymous Referee #1

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General comments:

The authors have transferred the BASIS ice databank to common gridded formats and have also interpreted the data in terms of standard ice variables. Facilitating the access to these data sets is in itself excellent. However, the main problem with the BASIS data is not the coding, which is quite easily deciphered, but the interpretation of the data. The report of Udin et al is a basic reference that needs to be read with the present paper, but leaves several details uncertain. A single BASIS 5-digit code seeks to encode the ice conditions within a 15x15 NM box from a graphical Baltic style ice map. Often only part of the information in the box could have been included. What can be

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relied upon is that in the ice chart box there has been present the ice type or ice feature reported by the code, and for the maximally two different ice types the dominance. Everything else, especially determining concentration and thickness, requires assumptions with varying degree of adhocness. To get concentration the authors report their assumptions, while ice thickness is left undiscussed.

There is a danger that the gridded data made available is taken at its face value especially by researchers not familiar with the Baltic charting practices. To avoid this, the assessment of the reliability of the data should be much more systematic. Also, the ice type and feature terminology of BASIS follows their use in the ice charts which differs from the current ice model context usage. A proper discussion and indication of caveats should be added. In general the more I read Udin et al the more unsure I am on the interpretations, and the authors would do a great service in clarifying the matter once and for all. Now this unsure feeling is transferred to the present paper. Maybe some gray reports, comparing to charts, and contacting the BASIS researchers could help. Detailed comments follow below.

A strange omission is that the use of BASIS to prepare two climatological ice atlases is left unmentioned. This was after all the goal of the effort and the atlases have served as a basic reference of Baltic ice conditions. A chapter describing the atlases should be added, and the authors should compare their assumptions to get concentration with those used in the atlases.

Specific comments:

1. Discuss Baltic charting practices and make clear how the variables and types of the code relate to the hatchings and symbols of the charts, and what can the presence of different ice types in a cell mean (as there are only limited possibilities to describe mixtures of ice types as understood when eg. onboard ice observations are made, make clear that these are two different things). There are also differences between Swedish and Finnish chart symbols, how does this affect. Also the charting styles

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have changed – older charts have detail especially on the floes.

2. Consolidated ice is the same as compact pack ice (C 100%)so this can be treated as 'pack ice' and not as a separate type ('consolidated' may be misleading; terminology in the charts varies as well).

3. If there is only one type the concentration is probably mostly 100% (although this is an assumption as well). Discuss more the interpretation problems that may arise when there are several ice types, and check what the atlases have assumed. It would be good to have some statistics on the amounts of data with one/several ice types and an estimation of the errors that may arise from the adhoc assumptions. I have understood that the concentration given to a type refers to the type (ship point of view)and not to the relative coverage within the cell (modeling view, however I am not quite sure about these). Maybe it would be good systematically separate concentration (of an ice type) and the coverage of the type in a cell.

4. Ridged ice is normally superposed on the dominant ice type and rarely appears as own ice type (I assume as ridge triangles are modifier symbols in the charts), so if the ridged ice is secondary type so this does not change primary type concentration. Was this your interpretation also (very unclear in Udin et al, what is the meaning of consolidated/not consolidated ridged ice there?) or did you separate 'ridged' and 'nonridged'. Does the ridge concentration refer to the type, ice with ridges present, or the actual area from ice surface covered by ridges? Some cautious discussion is due as even the present state of art is hardly yet able to retrieve ridging quantitatively.

5. Compact slush and shuga I assume refer to what is now called windrows or brash barriers, describe shortly these features.

6. I do not quite understand where is the difficulty in interpreting the surface temperature code. Does not patching the shorter strings with zeros in the beginning do the trick?

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7. The ice thickness is undiscussed although it is the other basic variable. What is the percentage of existing thickness readings in the code? The ice charting practice of characterising large areas with rough thickness ranges should be expounded and the fact that only level ice thicknesses are described (not total thicknesses including deformed ice).

8. Table 1 can be omitted as it only repeats Udin et al.

9. Granskog et al, Sea ice in the Baltic Sea: A review would be a good additional reference in Intro.

Technical corrections:

The period of the BASIS in the abstract misses end year.

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