

## ***Interactive comment on “IcePAC – a Probabilistic Tool to Study Sea Ice Spatiotemporal Dynamic: Application to the Hudson Bay area, Northeastern Canada” by Charles Gignac et al.***

### **Anonymous Referee #1**

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This paper present a new tool (IcePAC) to visualise, study and predict sea ice conditions in the Hudson Bay area. This tool uses a probabilistic approach based on past observation/data outputs. This tool is relevant to the studied field (sea ice) and provides added-value information/products to potential end-users.

The methodology is, in my opinion, very robust but needs minor clarifications (see attached pdf). The probabilistic approach has been used in the past and thus is not necessarily new but the tool provides more flexibility and a better spatio-temporal resolution than many studies. The validation and approach here is excellent and the tool itself is innovative for end-users who are not familiar with the approach.

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I do have concerns in some aspects though: 1. In the introduction, I feel like the authors do not fully understand the area of interest. The ice conditions in the Foxe Basin/Hudson Bay areas are very different than the ones found in the Hudson Strait. Studying some products available like the ones on the CIS website would be useful to better understand the ice conditions in the AOI. 2. I feel like the authors need to tone down the language when saying that this is a completely new approach. There are many studies that have used very similar approaches in the past in other AOIs. A more thorough literature review might be needed. The method and the validation of the data and results are thorough here and this is not always clear in other studies. This is a strength, in my opinion, of this study. 3. I understand that the different ice products are scattered everywhere on the web and there are many (probably too much to cite them all). I would be careful to say that no similar products exists. Many products exists, not necessarily in the same format and many are not necessarily accessible to the public but the outputs can be seen in different products of National Ice Services (Canadian, US, Finnish, Danish, etc.). If IcePAC is planned to be accessible to the public, I would underline it since it will be of great use to many. I would tone down the language on this topic as well.

Some minor English editing is needed but I want to underline that "meltdown" is not appropriate in this context. I would replace everywhere in the text and figures by "melt".

Minor comments: see comments in attached pdf.

Please also note the supplement to this comment:

<https://www.the-cryosphere-discuss.net/tc-2018-178/tc-2018-178-RC1-supplement.pdf>

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Interactive comment on The Cryosphere Discuss., <https://doi.org/10.5194/tc-2018-178>, 2018.

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