

2nd review of **Presentation and evaluation of the Arctic sea ice forecasting system neXtSIM-F** by Williams et al.

The authors have addressed my main concerns. I recognize the huge amount of work that was put in order to evaluate the performances of nextSIM-F and to improve the paper. I just have a few additional minor comments to improve the clarity of the text. I recommend that the manuscript could be published once these minor comments will have been addressed.

1. Minor comments

1) You often refer to viscoplastic models. To be consistent with the literature, I suggest you use the expression viscous-plastic.

2) p.1 line 12: ...greatly improveS...

3) p.3 line 5: Parenthesis are missing for the references.

4) p.2 line 22: OSISAF is not assimilated in RIPS. In the paper (Lemieux et al. 2016) it is written:

”Retrievals of sea ice concentration from passive microwave (Special Sensor Microwave Imager, SSM/I; Special Sensor Microwave Imager/Sounder, SSMIS) and advanced scatterometer data, and manually produced sea ice charts from the Canadian Ice Service (CIS) are assimilated by the 3D-Var system.”

5) p.2 footnotes: The ”S” in RIPS and RIOPS stands for System...not Service.

6) p.3 line 12: ...enterED into operations in...

7) p.3 line 23: I would be surprised that mariners currently plan their operations based on forecasts of leads. The only thing I heard of is that the US navy is using

NRL's lead forecasts for their submarines...

8) p.5 line 1: Please rephrase.

9) p.5 line 28: Please rephrase (I don't understand "at the ice velocity").

10) p.6 line 23: Rampal updated the paper of Rampal...this sounds weird. Something like: "Following the work of Rampal 2016, Rampal 2019 evaluated..."

11) p.6 line 24: "Addition" is repeated twice...please rephrase.

12) p.7 line 2: k_1 should be unitless while k_2 should be in Nm^{-3} . Here is an important comment: The suggested (and optimized value) of k_1 is 8 not 10. This clearly explains why nextSIM overestimates landfast ice in the Laptev and East Siberian Seas. As nextSIM tends to simulate ice a bit too thick you could even use $k_1=7$.

13) p.8 section 3.2: It should be clearer that this is done only at the beginning of the free run and before the first forecast. Some people might be confused that this is done to initialize all the forecasts.

14) I am confused with all the different variables that are used for concentration (c_t , c_U , c_y , c_F , c_B , etc.). I am sure you can simplify this. For example, if I am right, $c_B=c_O$ and $c_t=c_F$.

15) p.9 line 19 (and at other places): It is not clear what you mean by ice mask.

16) p.10 line 26: You mean "lower" not "greater"?

17) p.11 line 4: Replace "reflected" by "reflecting"

18) Fig. 3: there is no shaded area as mentioned in the caption.

19) p.14 line 1: You refer to Jan-Feb in Figure 4 but it does not exist. Do you want to write "not shown"? Same idea for Nov-Dec.

20) Fig. 5: the text is very small. Please improve this.

21) p.22 line 13...: You use too much "we" in this paragraph. For example: "...we are systematically lower in concentration...". Replace by: "The forecasts are systematically...". Same idea for "...we score..."

Congratulations for your paper!

Jean-François Lemieux