The Cryosphere Discuss.,
https://doi.org/10.5194/tc-2018-25-RC3, 2018

The Cryosphere Discussions
Open Access
EGU

Interactive comment on "Medium-range predictability of early summer sea ice thickness distribution in the East Siberian Sea: Importance of dynamical and thermodynamic melting processes" *by* Takuya Nakanowatari et al.

Anonymous Referee #3

Received and published: 19 March 2018

This manuscript investigates the forecast skill of the sea ice thickness distribution in the East Siberian Sea in early summer for a lead time from a few days to 10 days. The description and validation of the TOPAZ4 reanalysis utilized for this analysis are clear. They demonstrate the characteristic time evolution of the prediction skill and suggest the reasons for such as the abrupt reduction of the skill after 4 days. Their explanations by using simple models are reasonable and useful for the community of the Arctic sea ice monitoring and prediction. Therefore, I recommend this manuscript to be accepted for publication in the Cryosphere.

Printer-friendly version

Discussion paper

Please check the minor comments as described below.

L53: "CMIP" firstly appears here.

L212: The bias quantities described in this paragraph seem to depend on the definition of the ESS with negative biases in the north and positive biases in the south (Fig. 1c). This should be mentioned here and the conclusion section. I believe it does not degrade the analysis of this study and help to avoid too much damaging the pedigree PIOMAS data.

L230: I consider that the 2nd "errors" can be eliminated.

L252: The abrupt reduction in October in Fig. 5 is not clear to me. Please chick this.

L261: Please weaken the statement "the SIT distribution has a zonally homogeneous pattern".

L272: "directed southward" should also be weakened if it is not exactly southward.

L277: "a deficiency at predicting Arctic cyclone". Please check this "at". (I am not a native English speaker and sorry if this is correct.)

L312 and L313: I think the units "cm s-1" should be "m s-1". Please check them.

L320: Since the authors describe on the reduction of the prediction skill in the 4th day, some words should be added to "remains at high level after the lead time of 4 days" on how high it is in order to avoid confusing.

L358: "controlled by the weak skill of atmospheric prediction" is not clear to me.

L366: "Figure 13" -> "Figure 12"

L370: "Fig. 14a" -> "Fig. 13"

L371: Please provide the significance of the difference between these two correlation coefficients if possible. Even if it is not significant, please do not consider to delete this interesting section. The sample number will be increased in the future to determine its

significance as described in the final section. However, more careful discussion seems to be required for the conclusion in this section, since 1) the SIT and SIC time series can be resemble and 2) reproduction of SIC in the TOPAZ4 reanalysis is not validated in this study.

Interactive comment on The Cryosphere Discuss., https://doi.org/10.5194/tc-2018-25, 2018.