



*Supplement of*

## **Enhancing sea ice knowledge through assimilation of sea ice thickness from ENVISAT and CS2SMOS**

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The figures in this appendix show the detrended bfRMSE results for sea ice extent prediction, and bfRMSE and ACC results for sea ice thickness prediction in additional regions of the Arctic Ocean. These are regions defined by Bushuk et al. (2017) which were not the focus of the main text but may be relevant or of interest to readers. The data used to produce these plots is from the same experiments as for the main text.

## References

Bushuk, M., Msadek, R., Winton, M., Vecchi, G. A., Gudgel, R., Rosati, A., and Yang, X.: Skillful regional prediction of Arctic sea ice on seasonal timescales, *Geophysical Research Letters*, 44, 4953–4964, 2017.

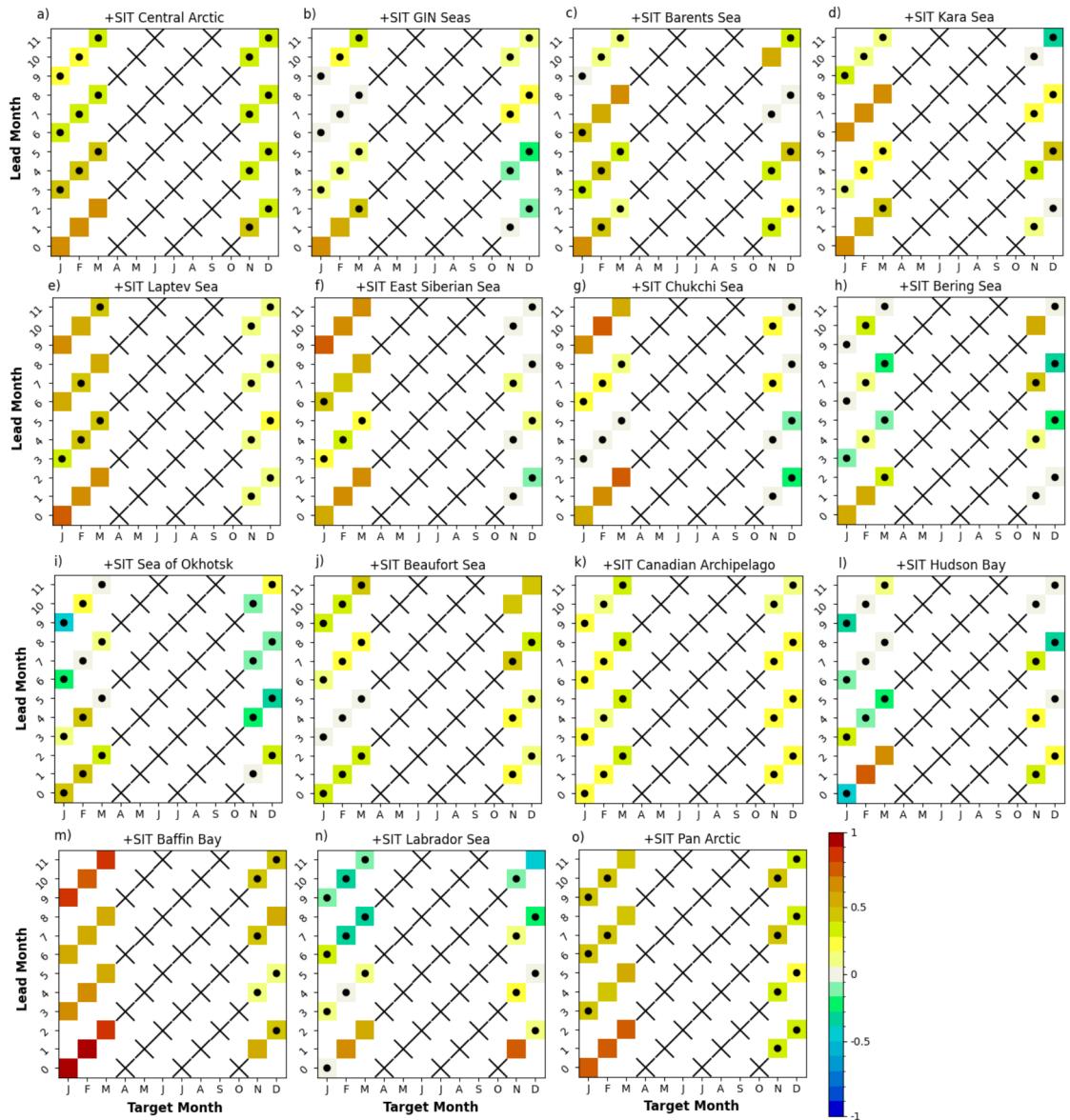


Figure S1: Detrended ACC of SIT from the +SIT experiment against observations from CS2SMOS. The regions are as defined by Bushuk et al. (2017)

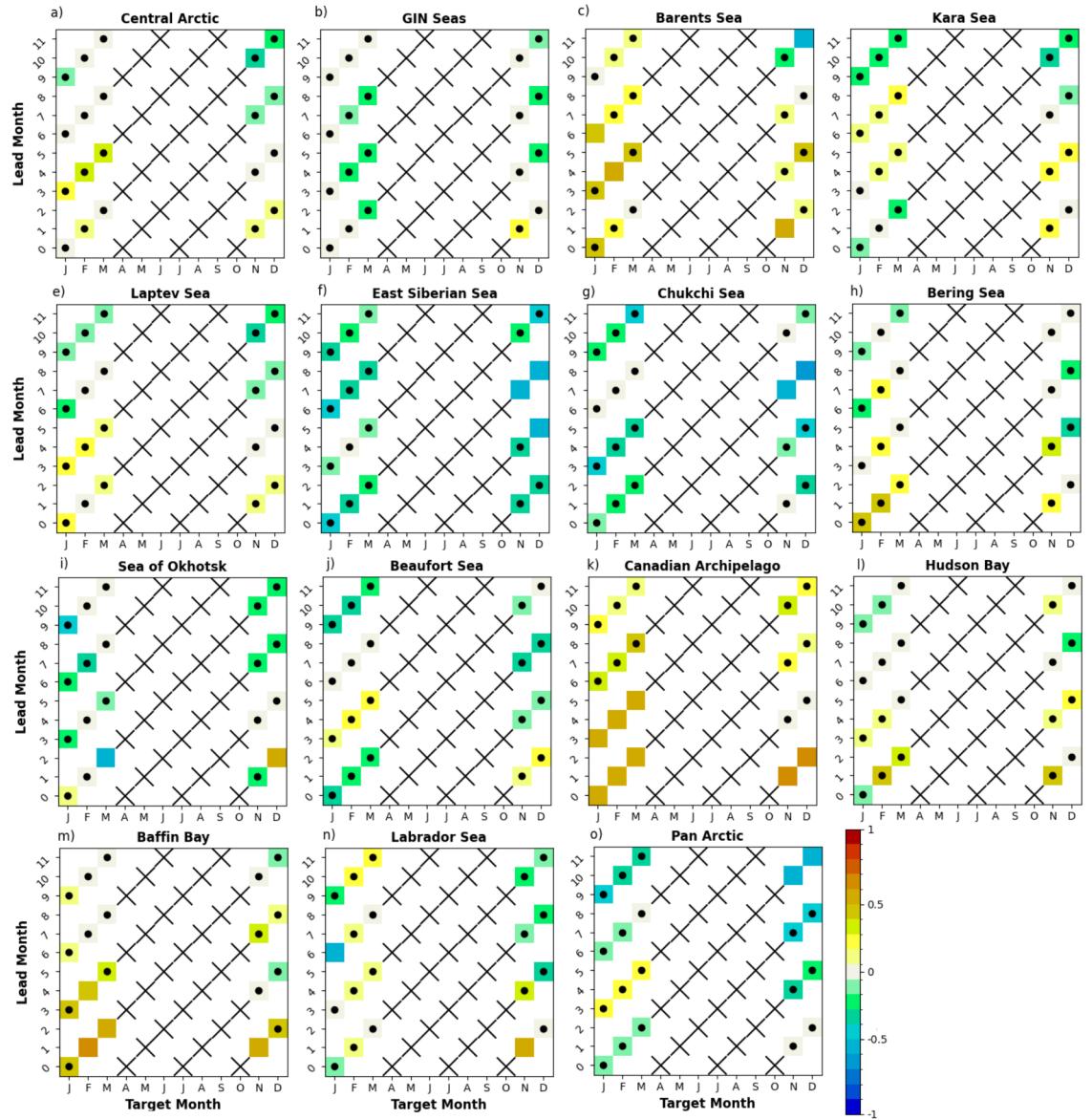


Figure S2: Detrended ACC of SIT from the CTRL experiment against observations from CS2SMOS. The regions are as defined by Bushuk et al. (2017)

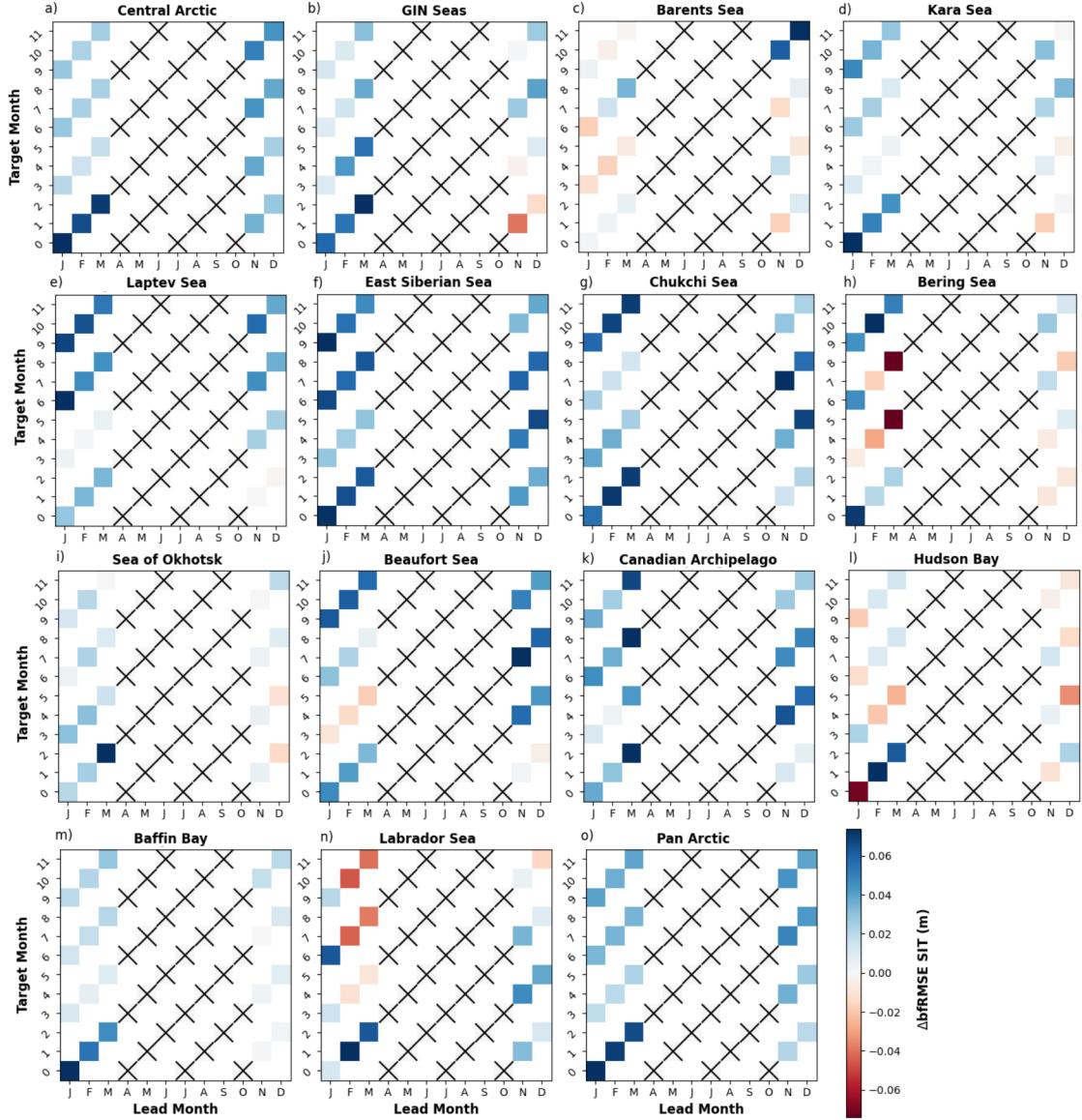


Figure S3: Differences in detrended bfRMSE of SIT from CTRL and +SIT experiments against observations from CS2SMOS. Blue (red) colour indicates +SIT is better (worse) than CTRL. The regions are as defined by Bushuk et al. (2017).

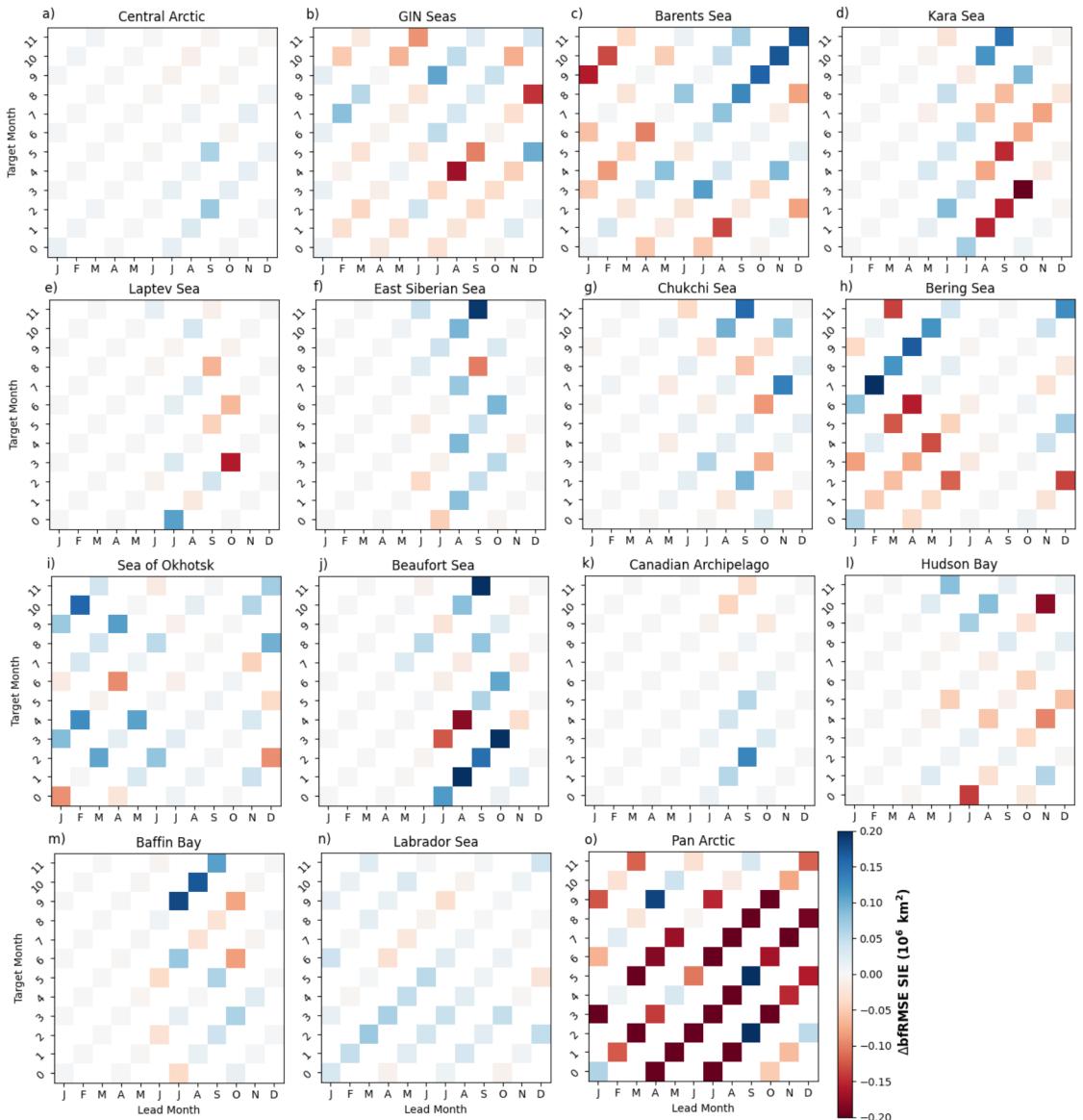


Figure S4: Difference in detrended SIE bfRMSE of CTL and +SIT predictions computed with observations of SIE from NOAA in all Arctic regions. Blue (red) indicates that +SIT has lower (higher) bfRMSE than CTRL. The regions are as defined by Bushuk et al. (2017)