Supplement of The Cryosphere, 19, 6381–6402, 2025 https://doi.org/10.5194/tc-19-6381-2025-supplement © Author(s) 2025. CC BY 4.0 License.





## Supplement of

## **Extended seasonal prediction of Antarctic sea ice concentration using ANTSIC-UNet**

Ziying Yang et al.

Correspondence to: Jiping Liu (liujp63@mail.sysu.edu.cn)

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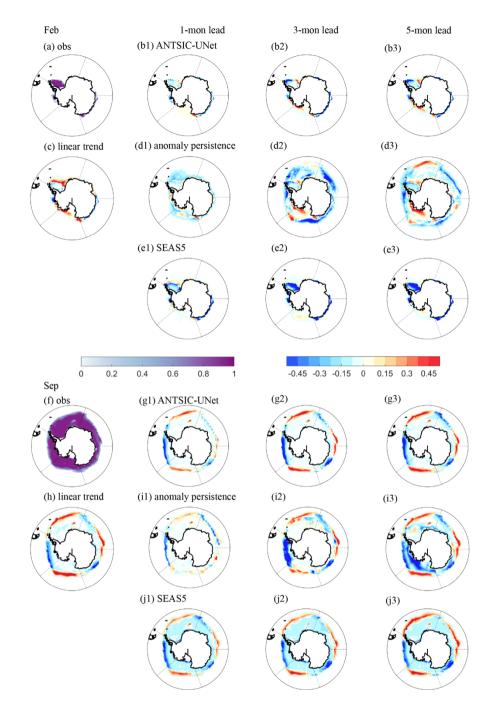


Figure S1. The monthly mean sea ice concentration of the NSIDC observations for (a) February and (f) September, and the errors predicted by ANTSIC-UNet (b1-b3, g1-g3), the linear trend model (c and h), anomaly persistence model (d1-d3, i1-i3) and SEAS5 (e1-e3, j1-j3) at lead time of 1, 3, and 5 months for February (upper panel) and September (lower panel) for 2017.

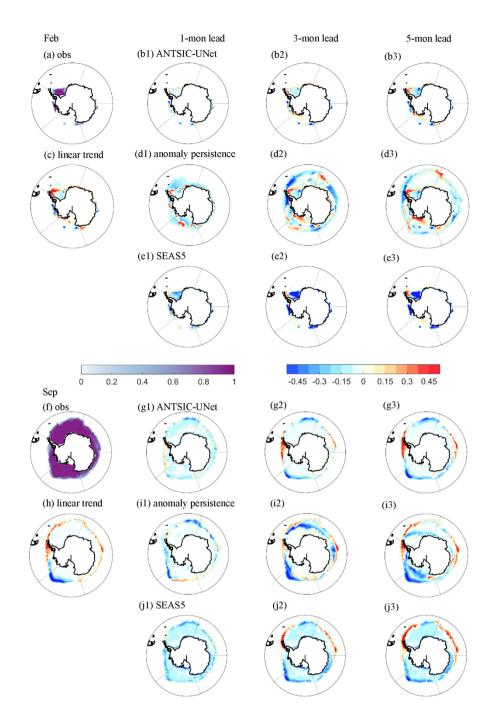


Figure S2. Same as figure S1 but for 2022.

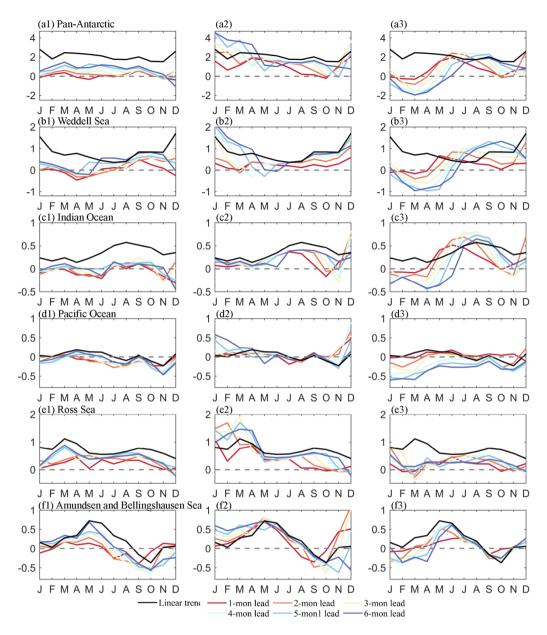


Figure S3. Seasonality errors of the Pan- and regional Antarctic monthly mean SIE (SIC > 15%) between NSIDC observations and ANTSIC-UNet (a1-f1), anomaly persistence model (a2-f2) and SEAS5 (a3-f3) predictions at different lead times for 2017. The black lines show the seasonality SIE errors between observations and linear trend model. (units: million square kilometers)

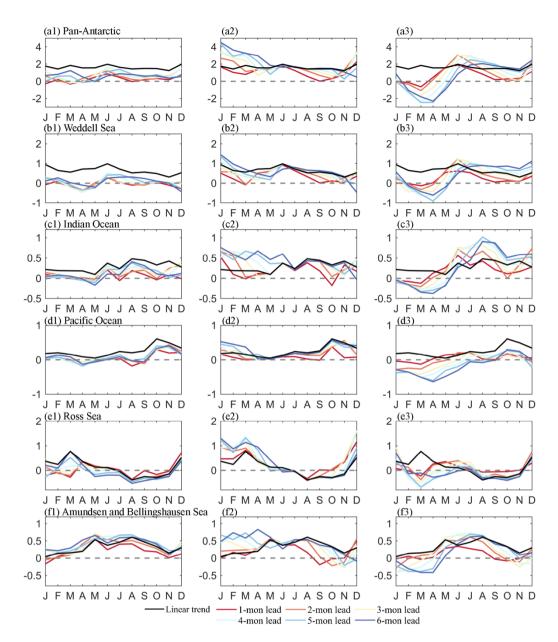


Figure S4. Same as figure S3 but for 2022.