



*Supplement of*

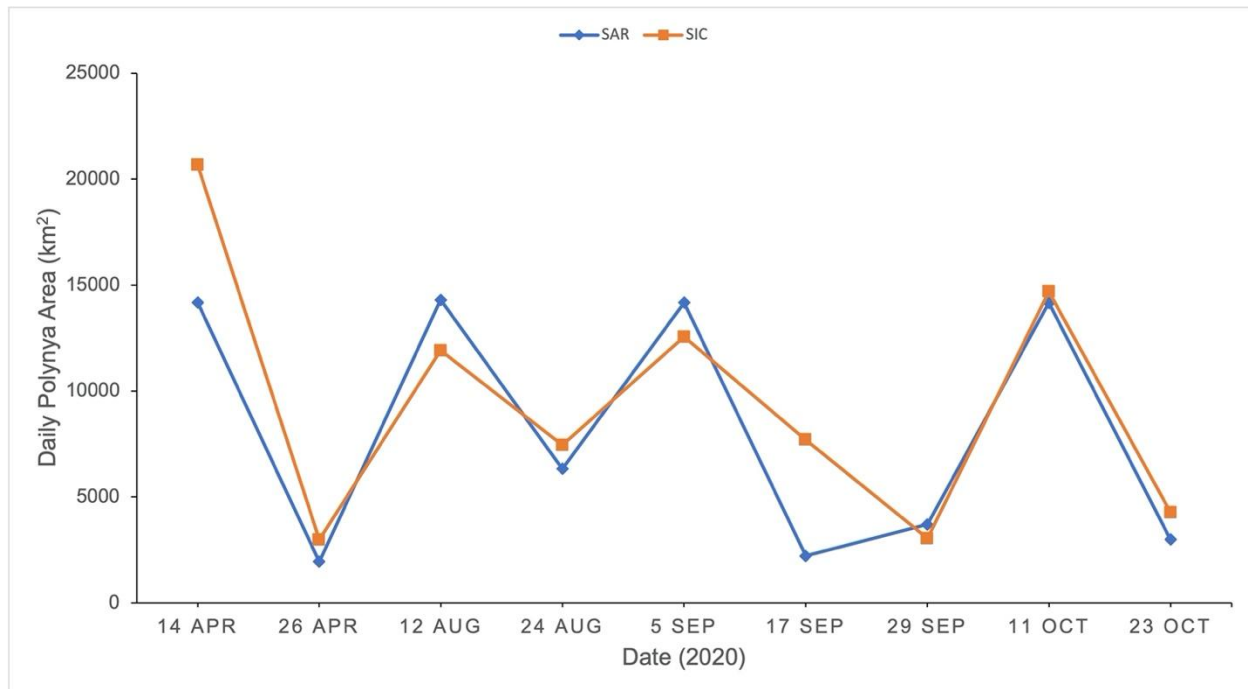
## **Evolution of the dynamics, area, and ice production of the Amundsen Sea Polynya, Antarctica, 2016–2021**

**Grant J. Macdonald et al.**

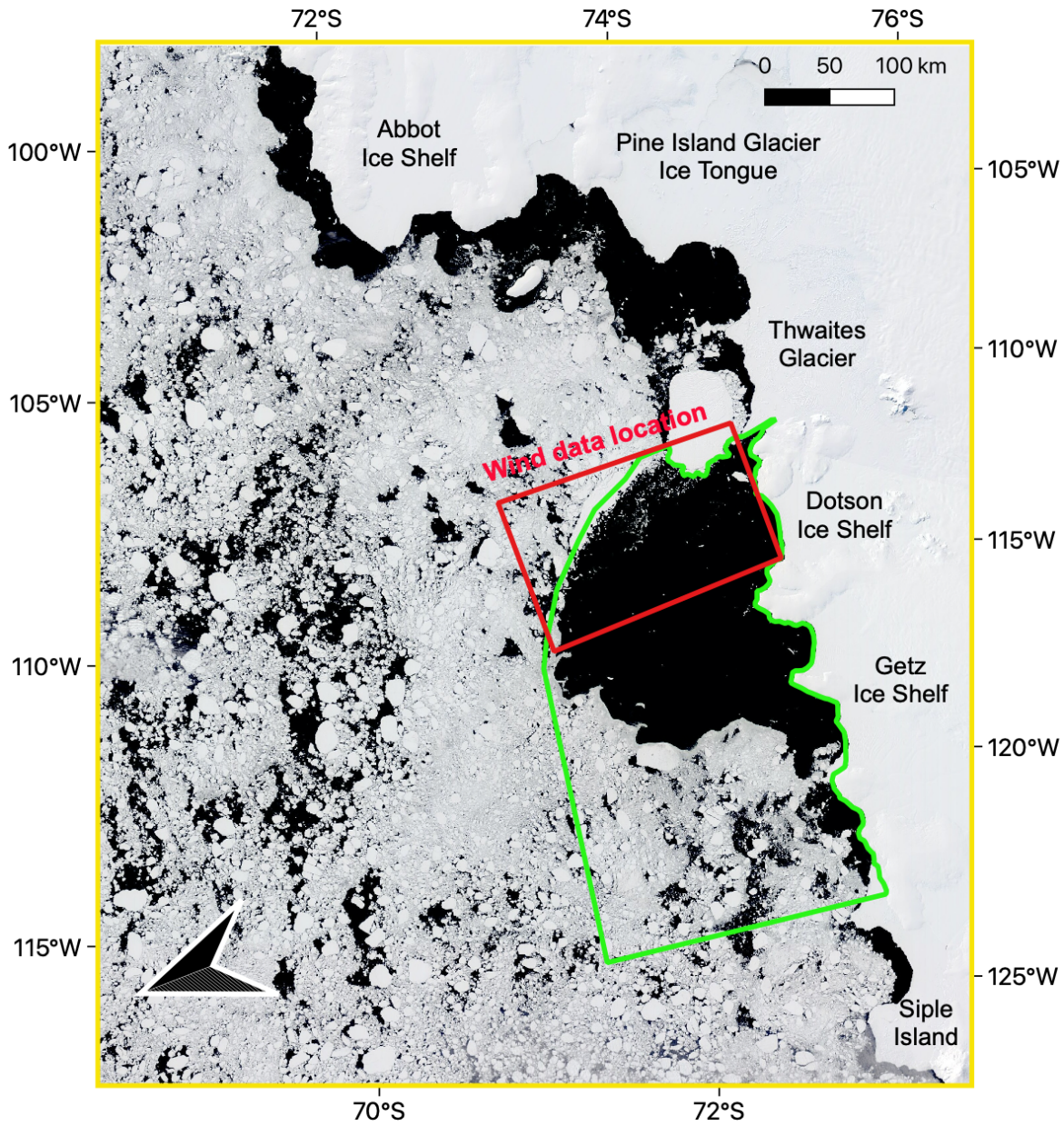
*Correspondence to:* Grant J. Macdonald ([grantmacdonald@uvic.ca](mailto:grantmacdonald@uvic.ca))

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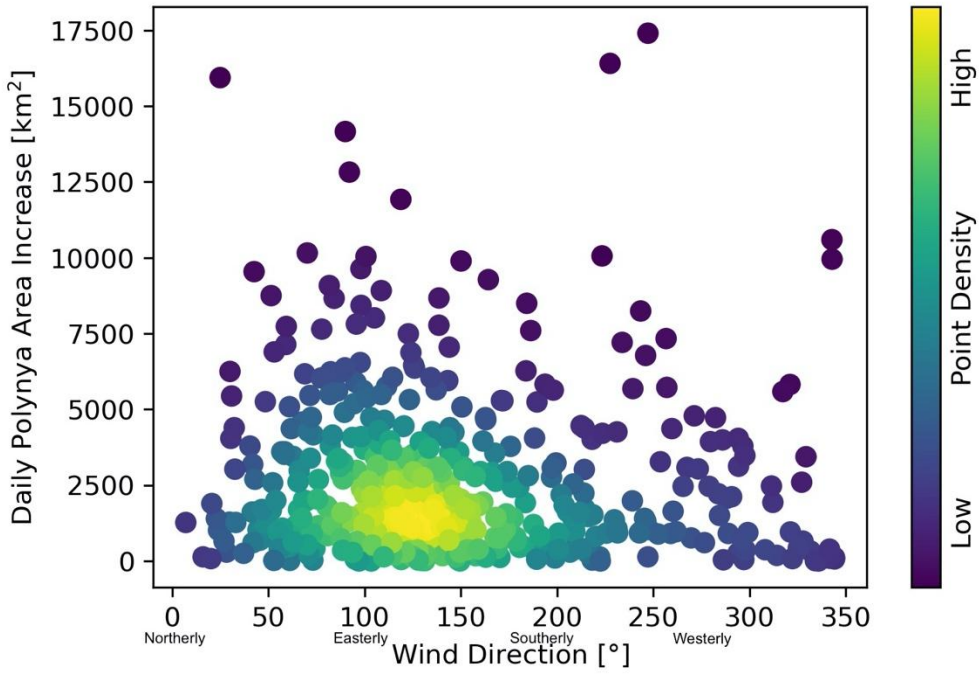
## Supplementary Figures



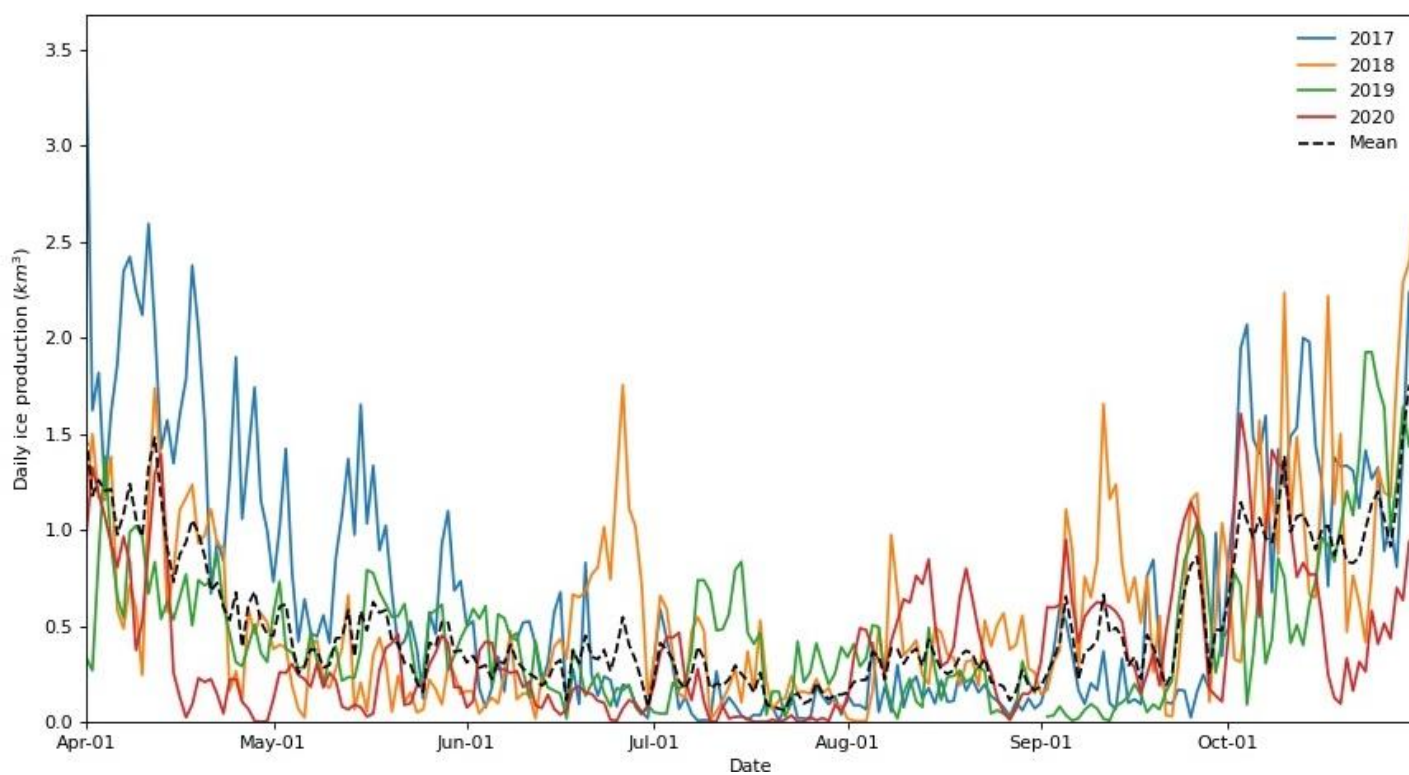
**Fig. S1.** Daily active polynya area for select dates in 2020 as measured manually from Sentinel-1 SAR imagery (blue diamonds) and from SIC data (orange squares) on the same dates.



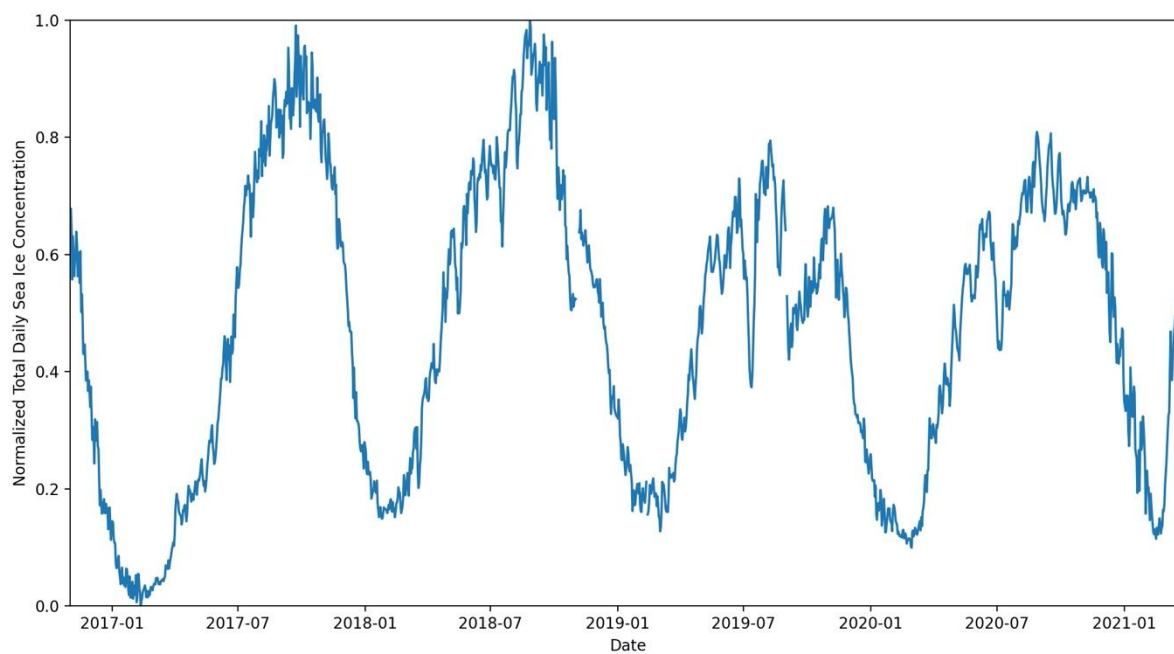
**Fig. S2.** The red boundary shows the region used to calculate daily wind speed at the ASP as shown in Figs.8; S3; S5. The whole ASP study area is shown by the green boundary. The background image is the same true-color MODIS image from 12 December 2020 shown in Fig 1b.



**Fig. S3.** Daily increases in active polynya area plotted against wind direction for all winter (April-October) instances, 2017-2020. The color indicates the density of the distribution of points as measured using a kernel-density estimate using Gaussian kernels.

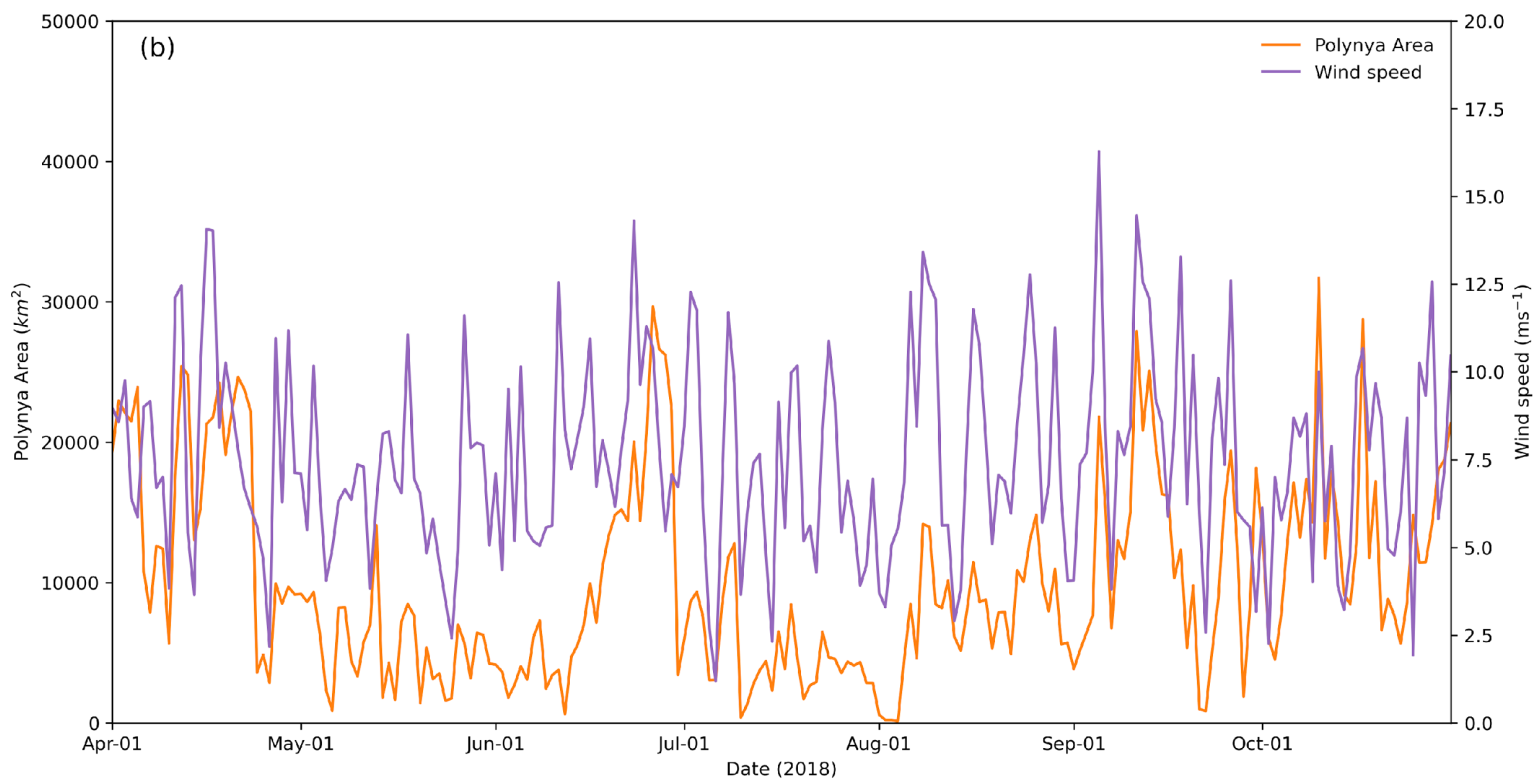
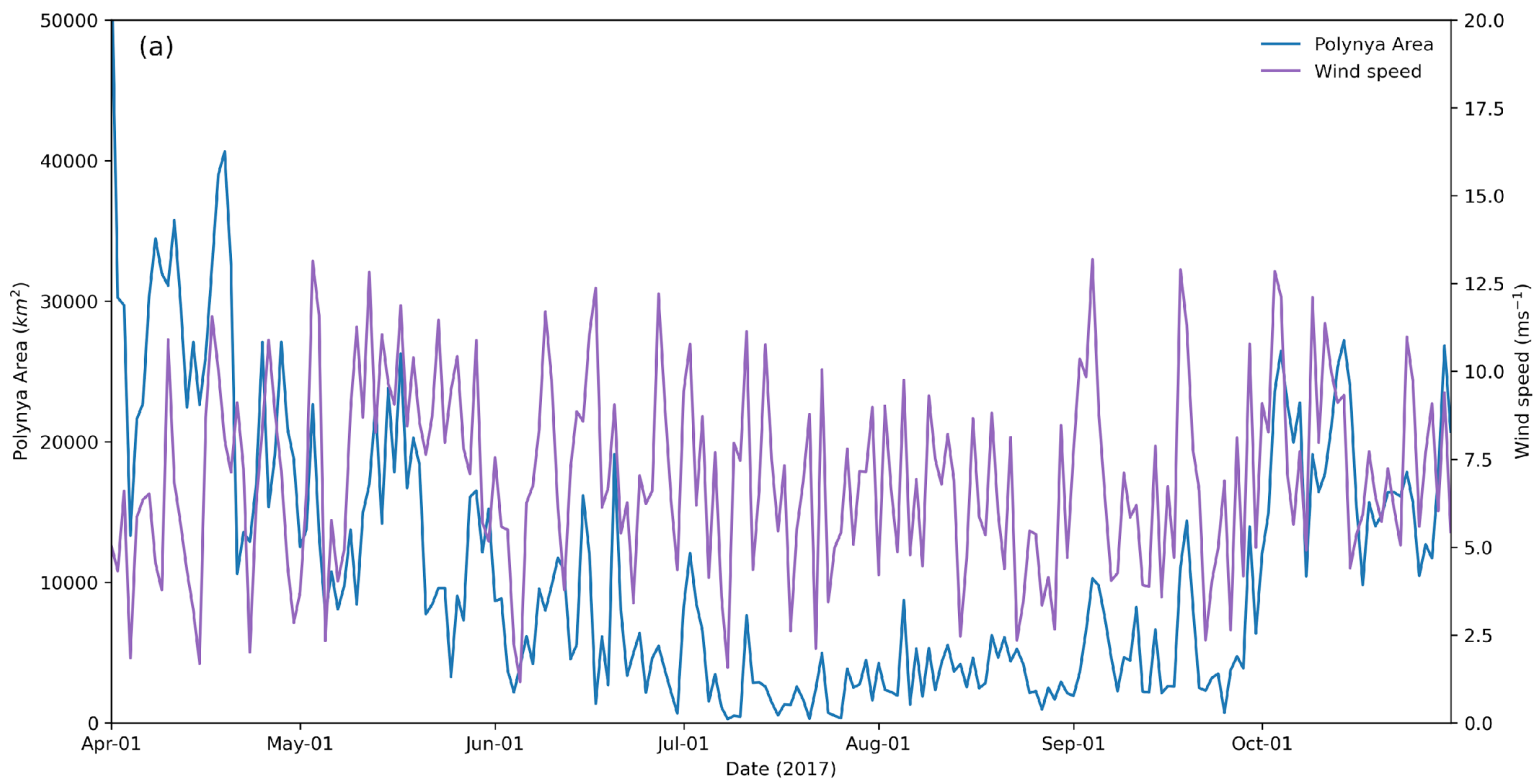


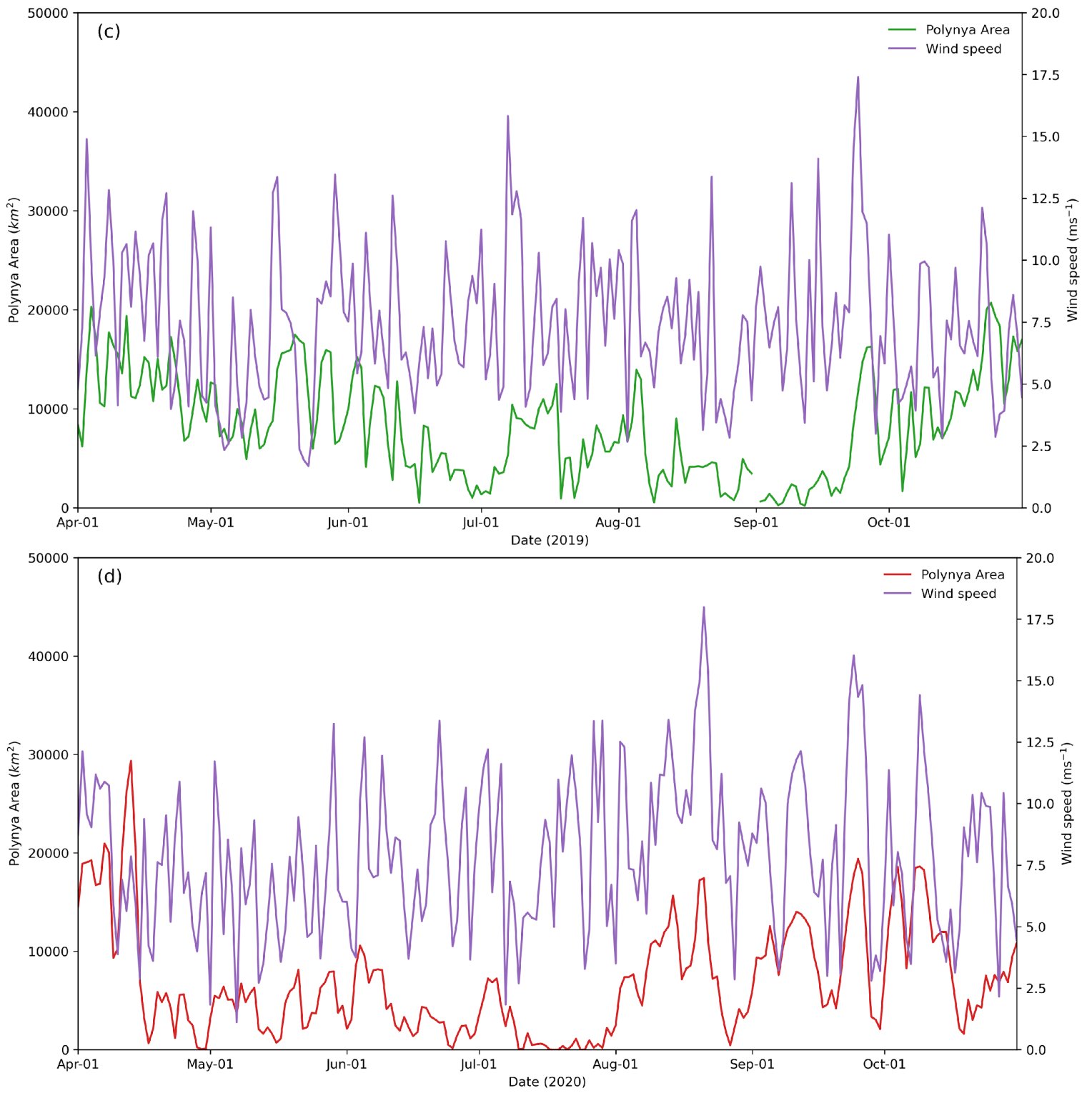
**Fig. S4.** Daily winter (April-October) ice production for each winter 2017-2020, and the daily mean for the whole period, as measured using heat-flux modelling of ERA-5 data and AMSR-2 SIC data.



**Fig. S5.** Total daily SIC from 1 November 2016 to 31 March 2021 for the broader region defined by the red box in Fig. 1a.







**Fig. S6.** Daily wind speed and polynya area during the winters (April-October) of (a) 2017, (b) 2018, (c) 2019 and (d) 2020