

# Supporting Information for "Breaking the Ice: Exploring the Changing Dynamics of Winter Breakup Events in the Beaufort Sea"

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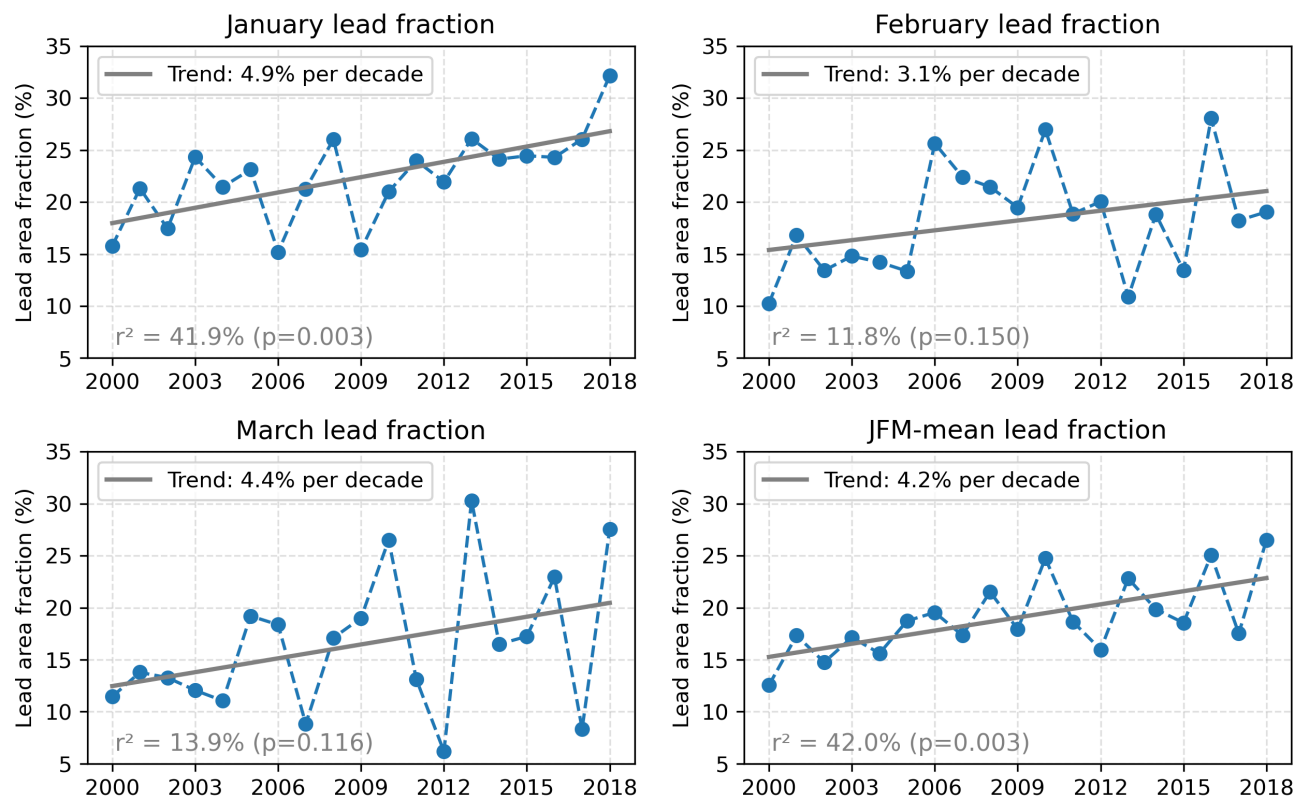
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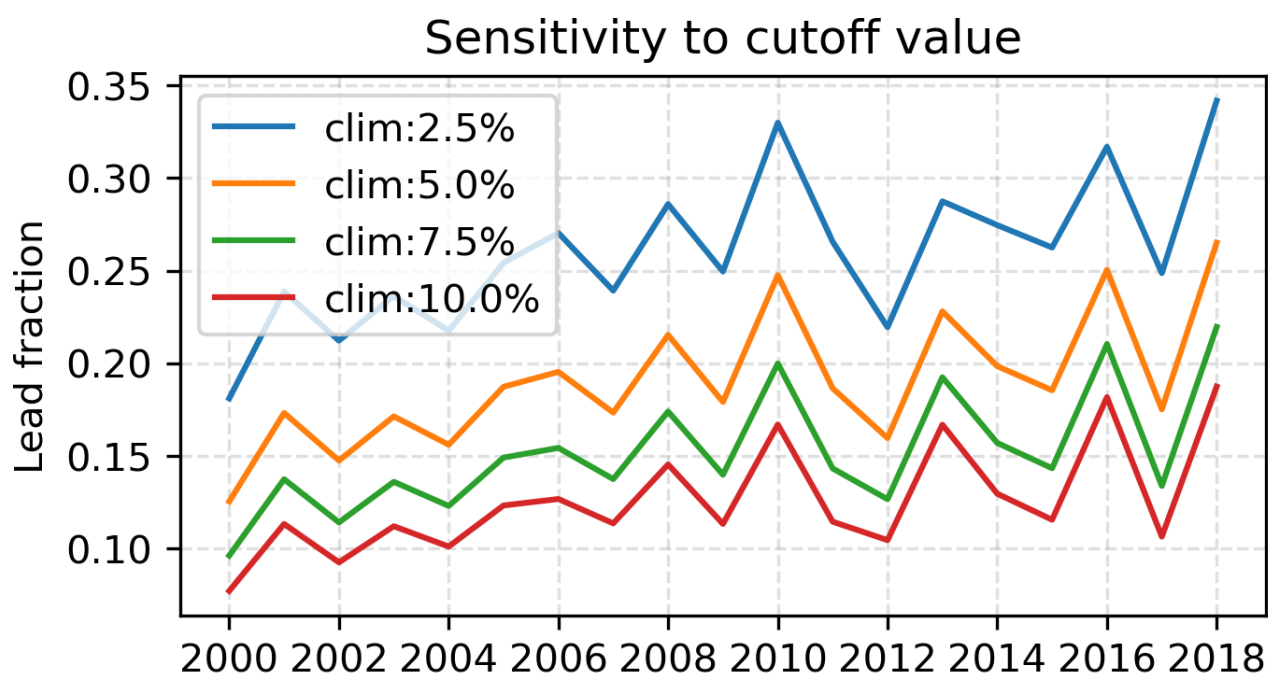
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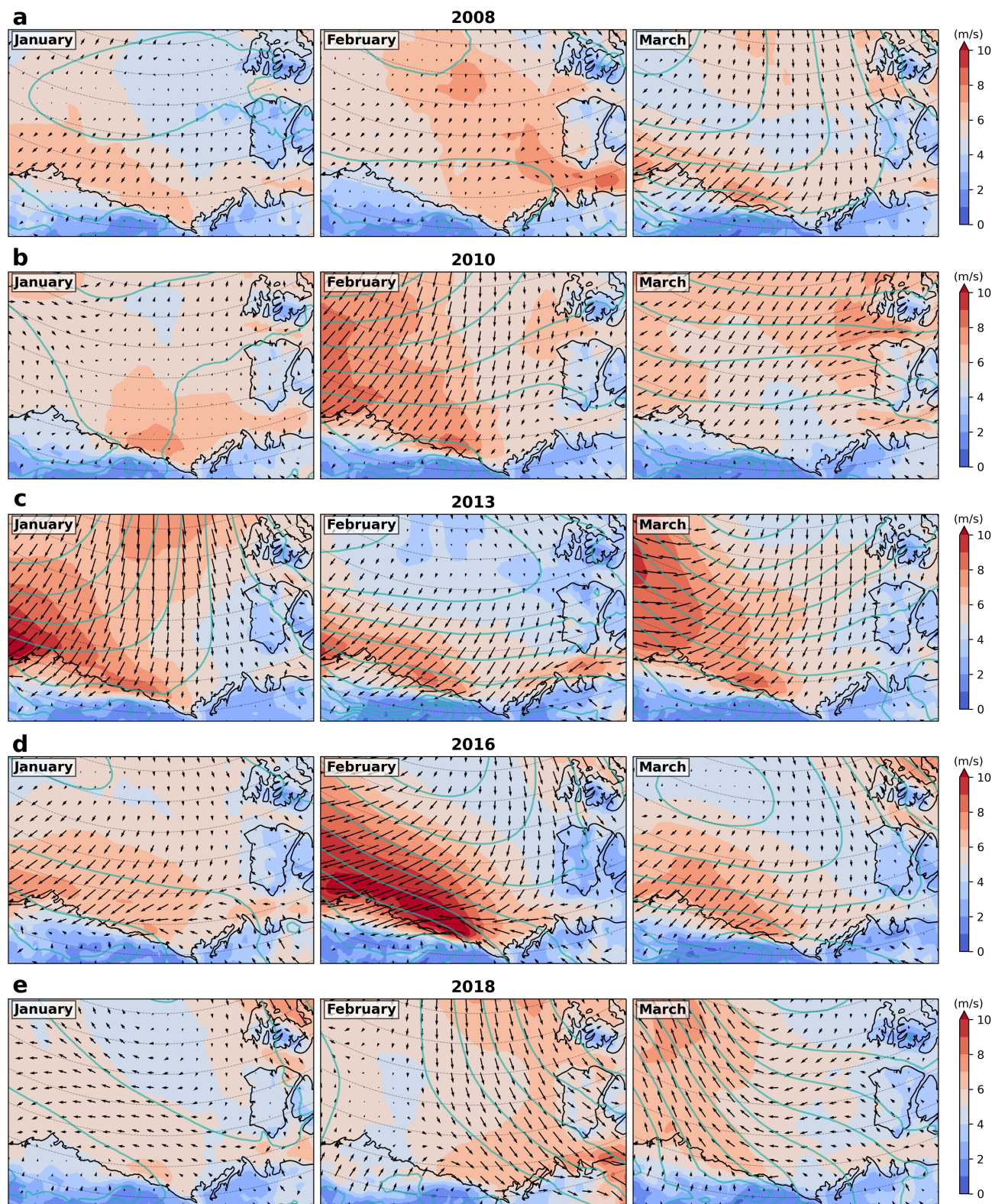


**Figure S1.** Simulated lead area fraction in the Beaufort Sea (%) for January, February, March and the JFM-mean. Linear trend is shown by the grey line.

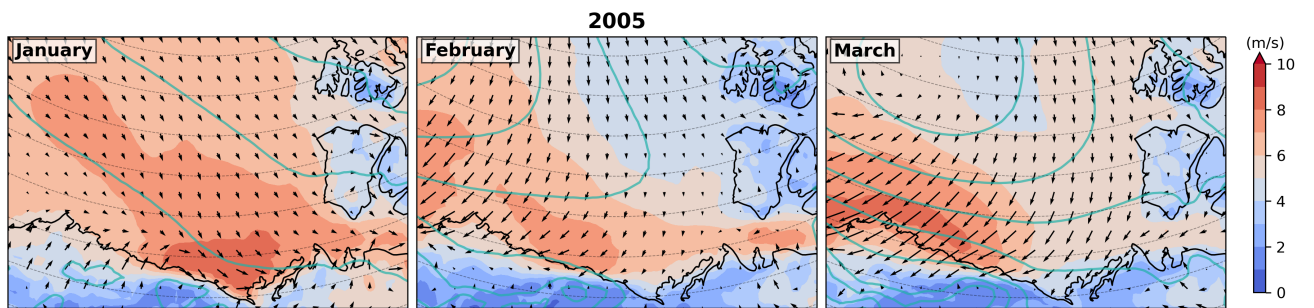


**Figure S2.** Sensitivity of lead area fraction to different cutoff values. The default used is 5%.

Lead fractions are calculated as the fraction of open water and thin, young ice for January-March.



**Figure S3.** Atmospheric conditions during breakup events (years 2008, 2010, 2013, 2016, and 2018). Monthly average ERA5 wind speed (shading), direction (vectors) and sea level pressure contours for January, February and March. Contours are shown at 2 hPa intervals.



**Figure S4.** Atmospheric conditions in Beaufort Sea for the 2005 winter, showing ERA5 wind speed (shading), direction (vectors) and sea level pressure contours (shown at 2 hPa intervals) for January, February and March.