

Supplementary Information for: The forward cascade of sea ice floes in the Weddell Sea

Authors

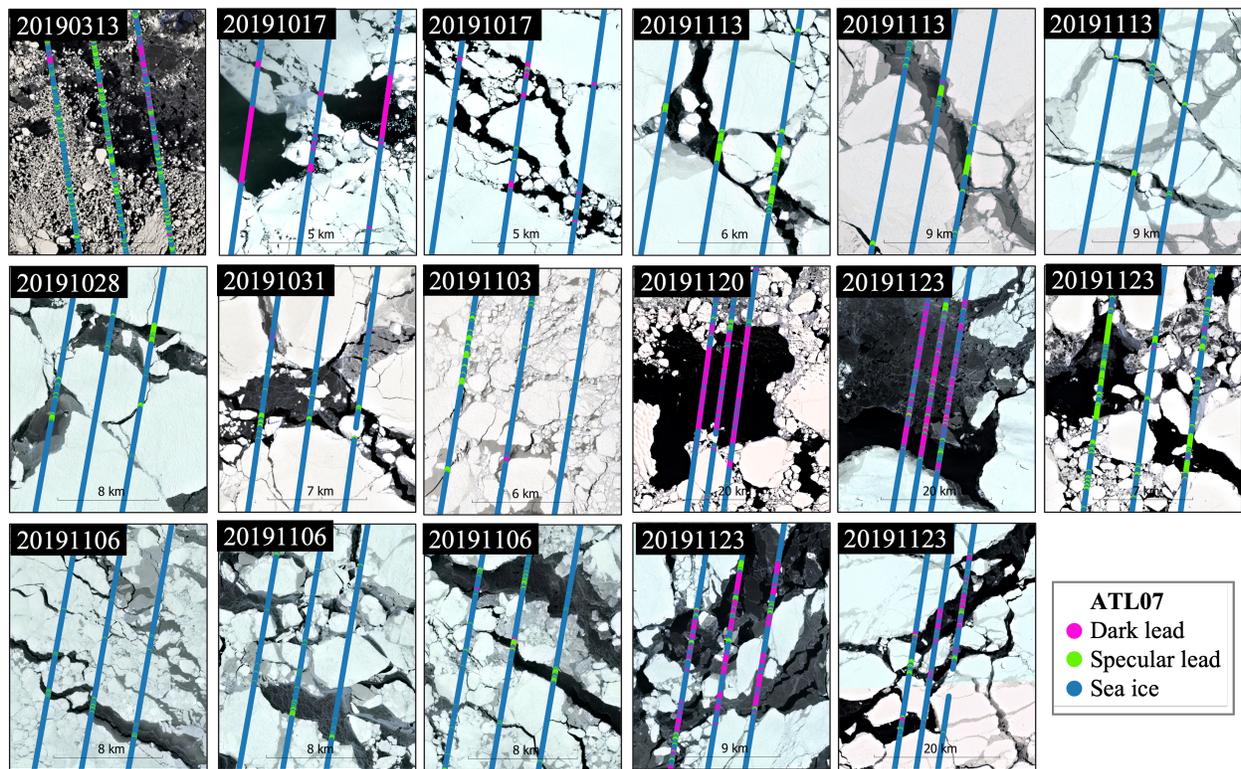


Figure S1: Lead detection along a sample of cloud-free ICESat-2 ATL07 tracks overlaid upon Sentinel-2 images taken at coincident times within a 2-hour period. These data were taken in the Ross Sea but similar characteristics were noted in the Weddell Sea.

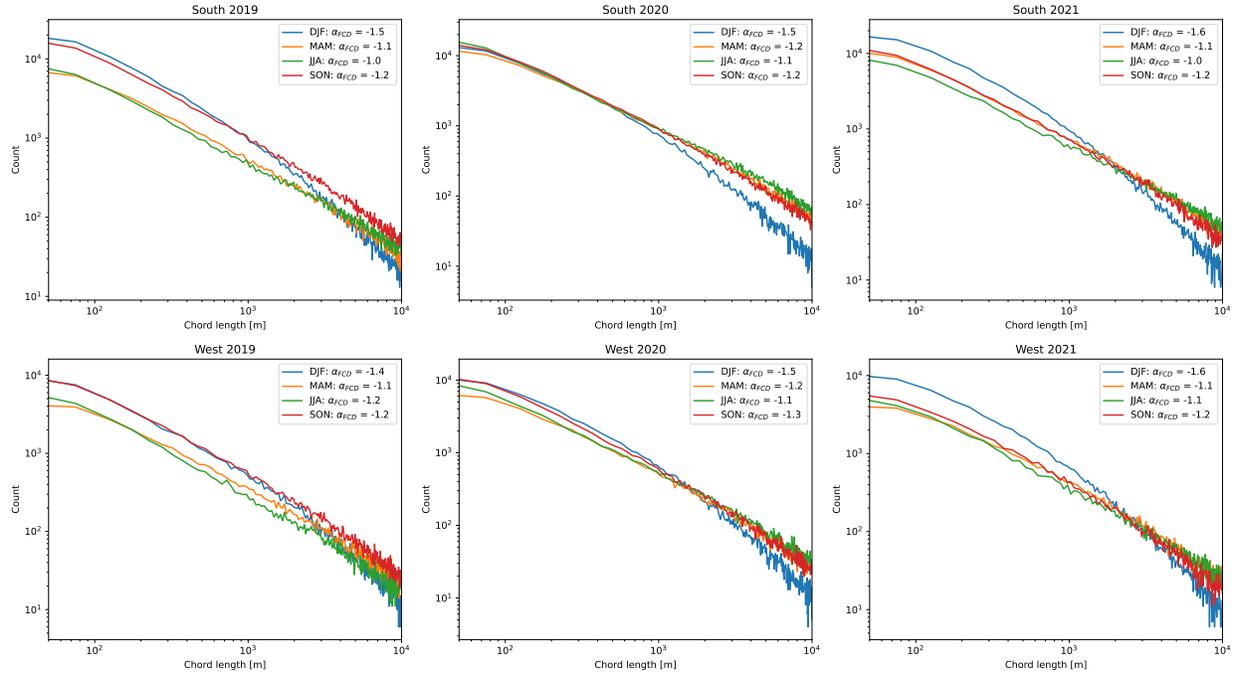


Figure S2: Floe chord distributions (with 50 m bin size) obtained from ICESat-2 tracks and aggregated over seasonal groupings (DJF, MAM, JJA and SON) for years 2019, 2020 and 2021 within the Weddell Sea’s perennial sea ice pack. The legend indicates the best fit slope α_{FCD} for each grouping.

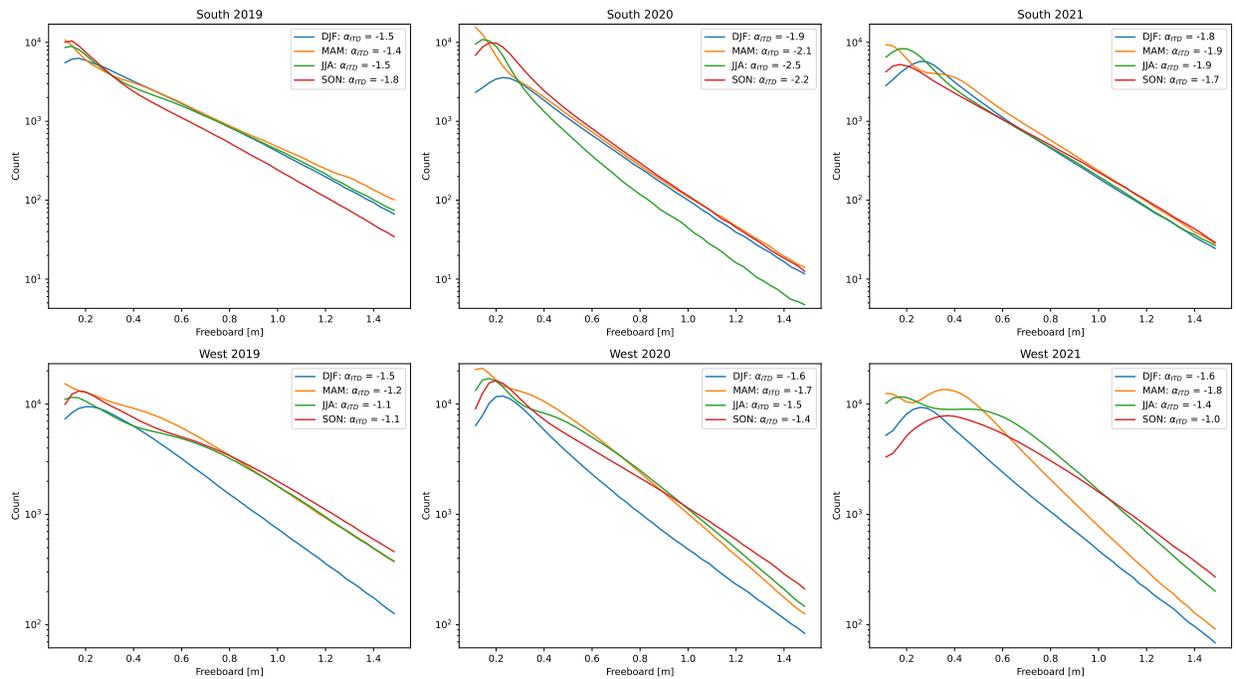


Figure S3: Freeboard ice thickness distributions (with 0.02 m bin size) obtained from ICESat-2 tracks and aggregated over seasonal groupings (DJF, MAM, JJA and SON) for years 2019, 2020 and 2021 within the Weddell Sea’s perennial sea ice pack. The legend indicates the best fit slope α_{ITD} for each grouping.

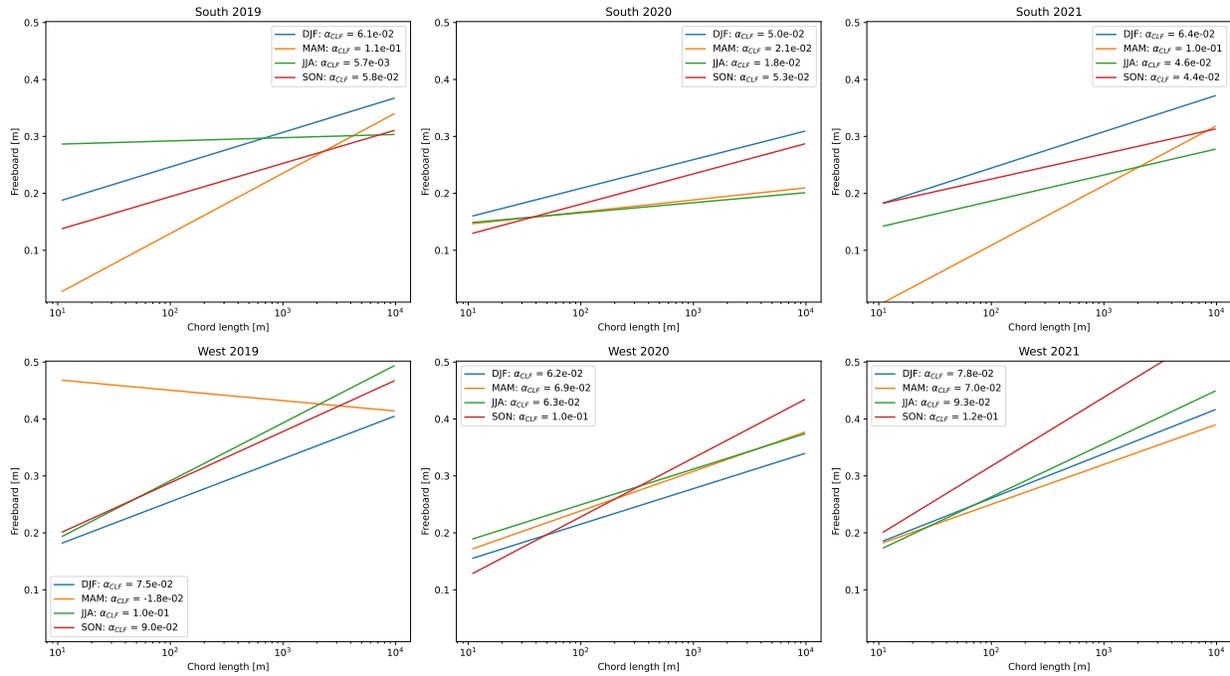


Figure S4: Best fit line between floe chord length and freeboard thickness obtained from ICESat-2 tracks and aggregated over seasonal groupings (DJF, MAM, JJA and SON) for years 2019, 2020 and 2021 within the Weddell Sea’s perennial sea ice pack. The legend indicates the best fit slope α_{CLF} for each grouping.

Movie S1: Sea ice concentration in the Weddell Sea for MYI (top left), FYI (bottom left), YI (top right), and total ice (bottom right).