

Supplement

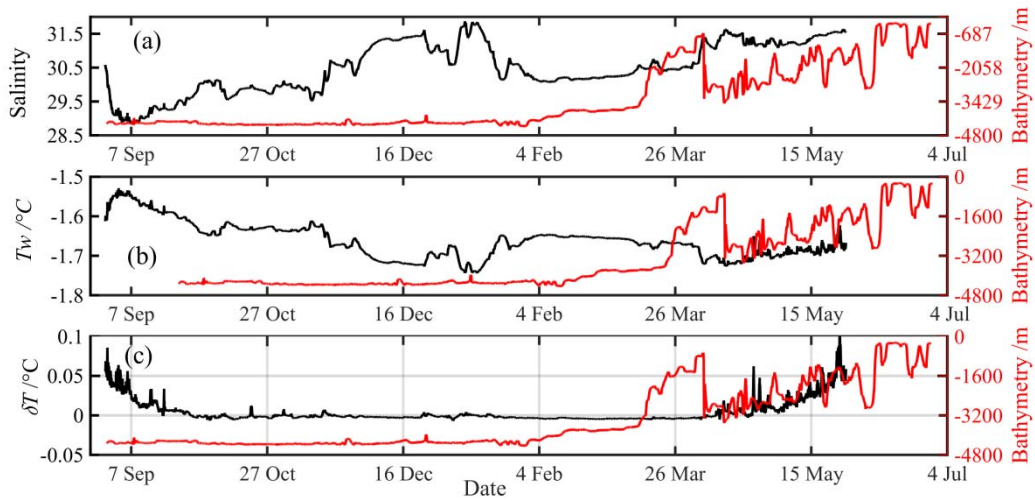


Figure S1. Seasonal evolution of (a) salinity, (b) temperature, and (c) deviation of seawater temperature from the freezing point at a depth of 10 m. Also shown is the water depth along the buoy's trajectory.

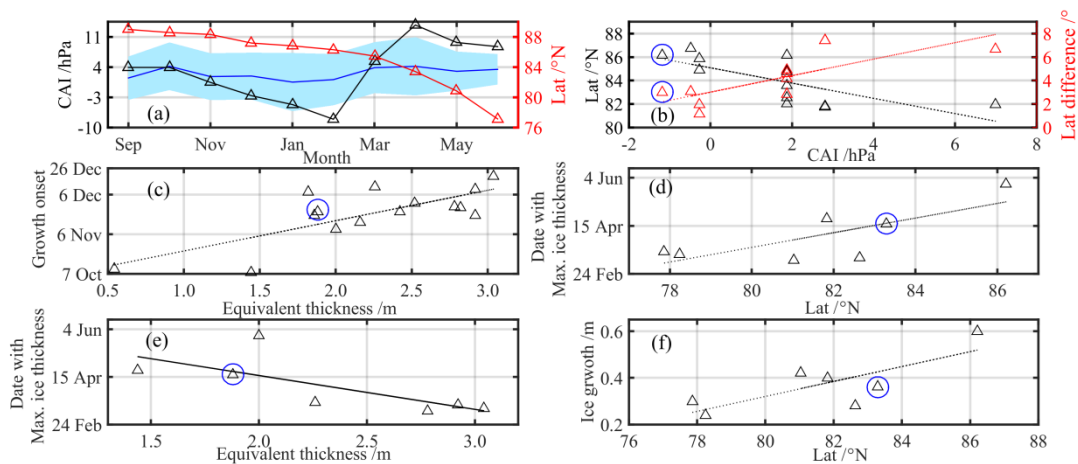


Figure S2. (a) Monthly Central Arctic air pressure gradient Index (CAI) in 2020–2021 (black line) and 1979–2021 average (blue line with blue shadow). Also shown is the monthly averaged latitude; (b) statistical relationship between the latitudes ($R^2 = 0.52$, $P < 0.01$) on 1 March (also the latitude difference from 20 September to 1 March; $R^2 = 0.53$, $P < 0.01$) of various buoys against the monthly average CAI from September to February; statistical relationships (c) between the onset of ice basal growth and equivalent ice thickness ($R^2 = 0.57$, $P < 0.01$), (d) between the date of maximum ice thickness and corresponding latitude ($R^2 = 0.53$, $P < 0.05$), (e) between the date of maximum ice thickness and equivalent ice thickness ($R^2 = 0.58$, $P < 0.05$), and (f) between total ice basal growth and corresponding latitude of maximum ice thickness ($R^2 = 0.61$, $P < 0.05$). The above statistical

relationships were obtained from measurements by all buoys shown in Figure 1.