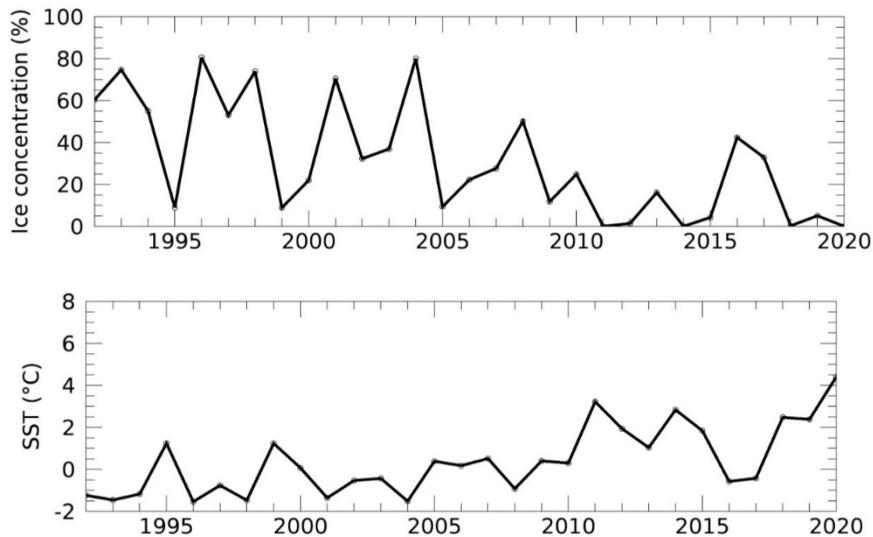
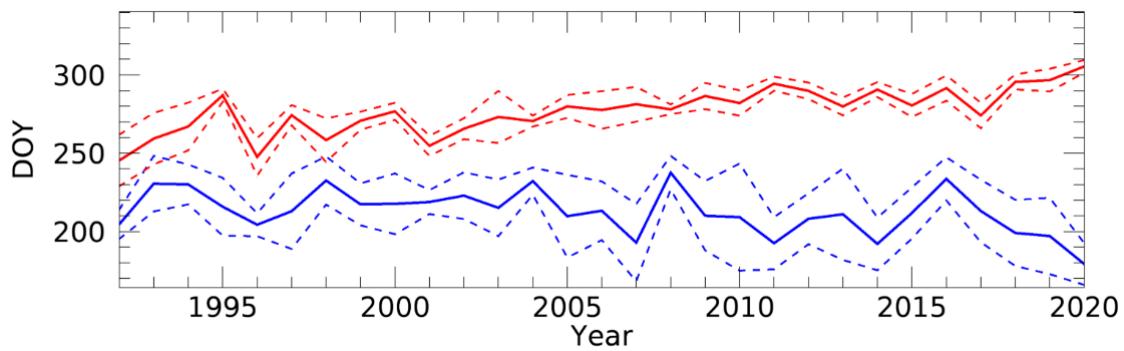


## *Supplementary Material*

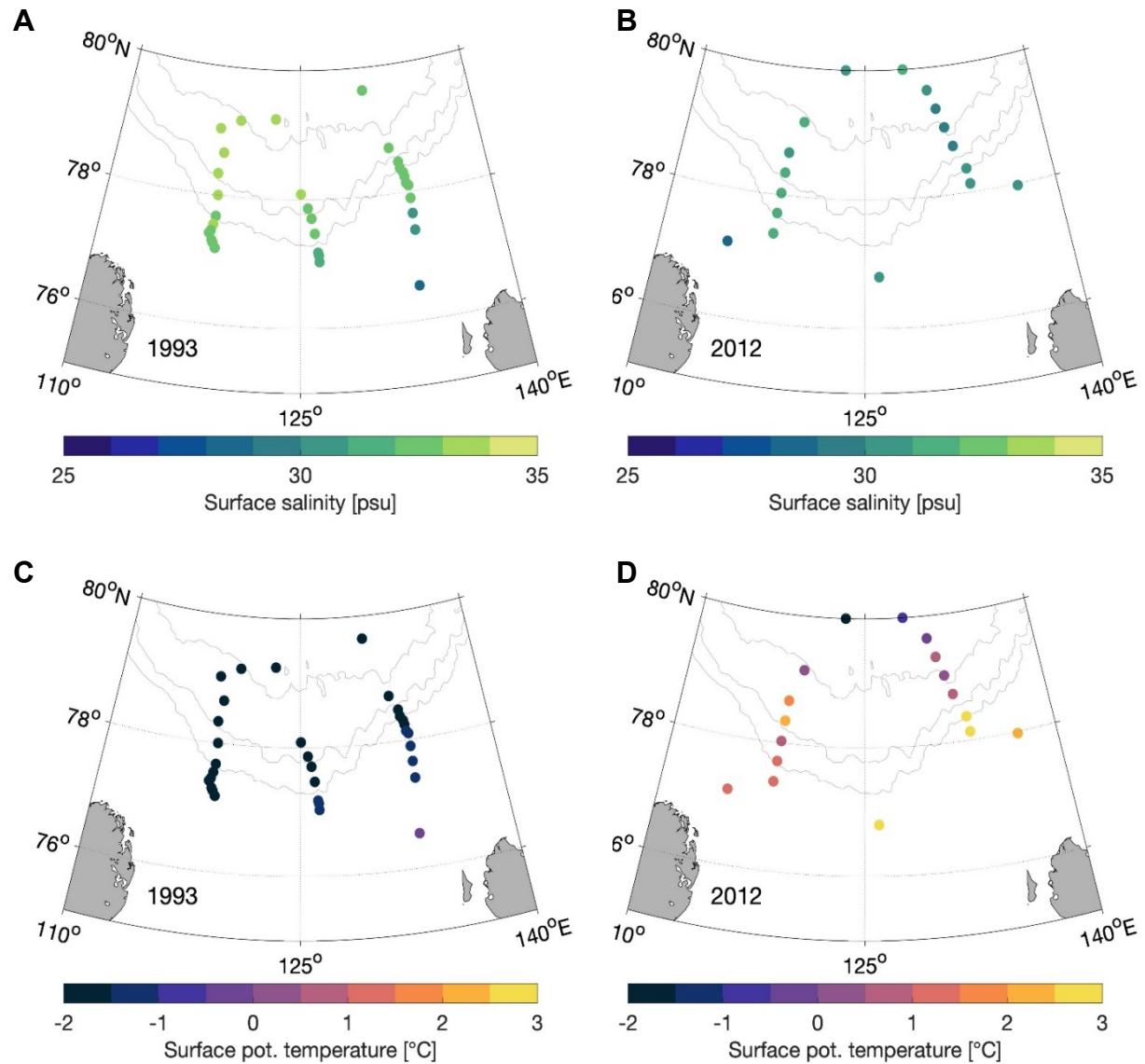
### Supplementary Figures



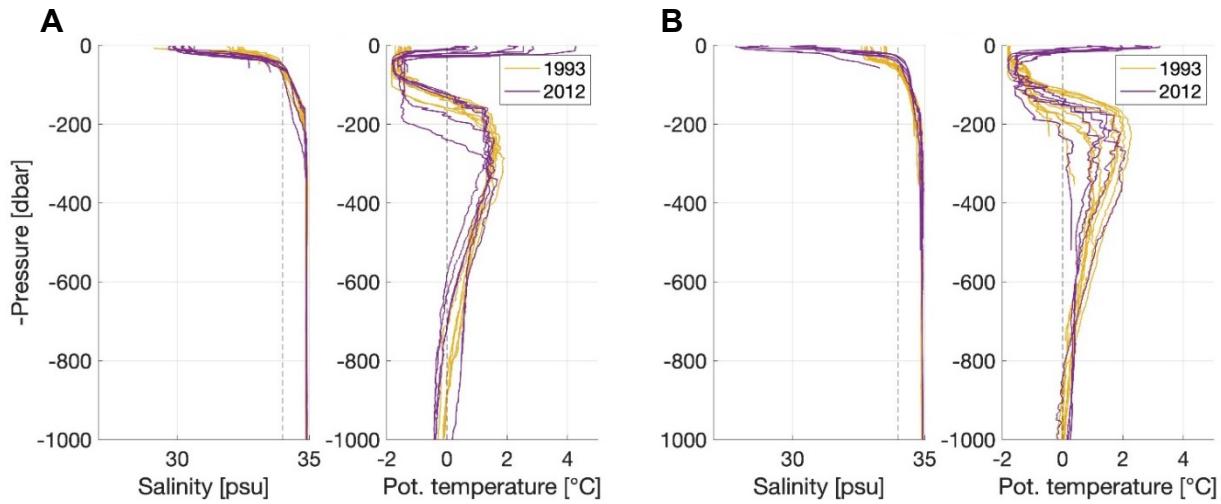
**Supplementary Figure 1.** Average ice concentration and sea surface temperature (SST) for the periods 15 August - 14 September between 1992 and 2020. Values are averages over the Laptev Sea area of interest.



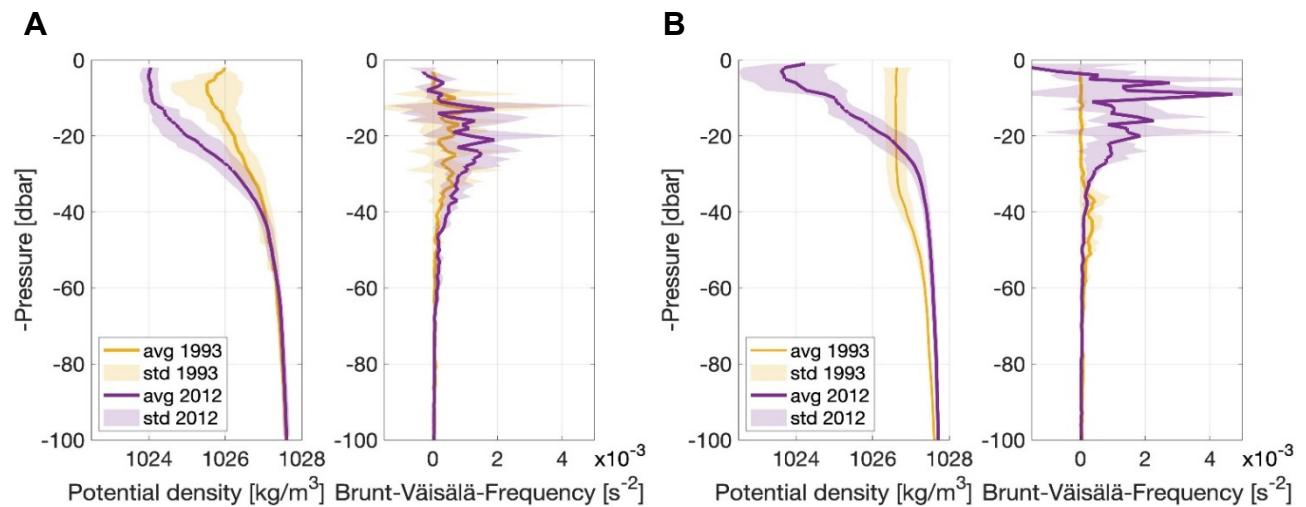
**Supplementary Figure 2.** Time-series of ice break-up (solid blue line; standard deviation indicated by dotted blue lines) and freeze-up (solid red line; standard deviation indicated by dotted red lines) for the area of interest from 1992 to 2020. DOY – Day Of Year.



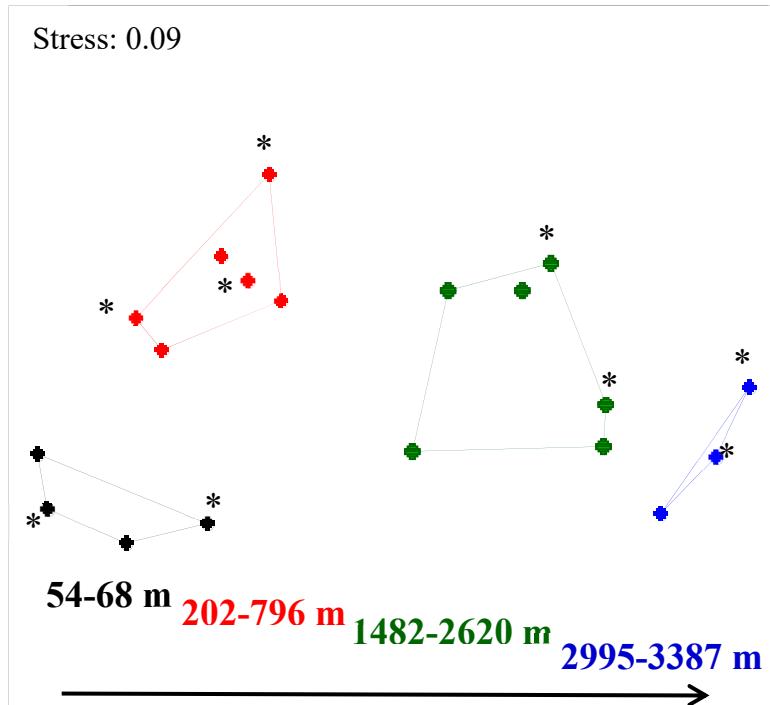
**Supplementary Figure S3.** Sea surface salinity (a-b) and potential temperature (c-d) at 10 dbar from selected profiles of the CTD surveys in Aug 1993 (a, c) and in Aug/Sep 2012 (b, d).



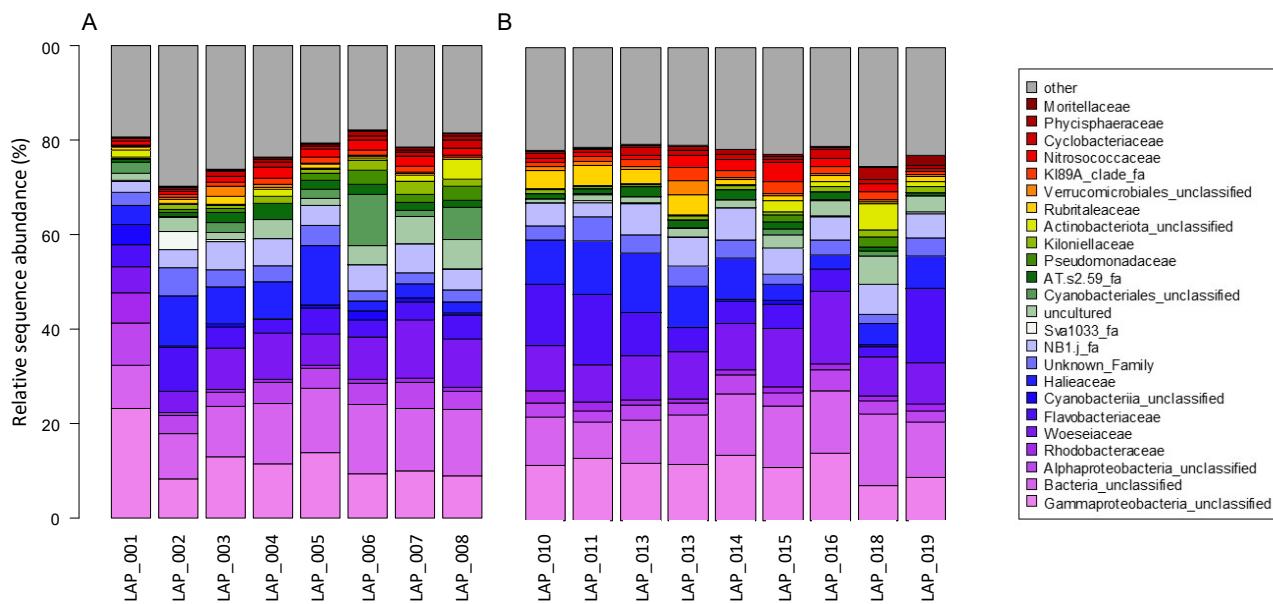
**Supplementary Figure S4.** Salinity and potential temperature depth profiles across the upper 1000 dbar for the eastern (A) and western (B) Laptev Sea slope region from CTD profiles obtained in Aug 1993 (orange lines) and Aug/Sep 2012 (purple lines).



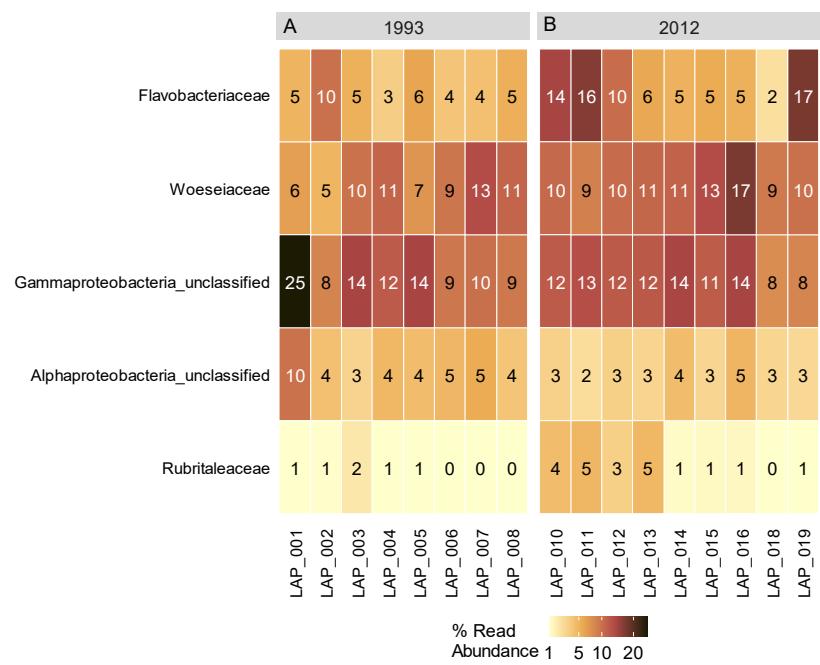
**Supplementary Figure S5.** Potential density and Brunt-Väisälä-frequency across the upper 100 dbar for the eastern (A) and western (B) Laptev Sea slope region from CTD profiles obtained in Aug 1993 (orange) and Aug/Sep 2012 (purple). Bold lines indicate averages of the respective profiles and shaded contours display one standard deviation from the mean.



**Supplementary Figure S6.** Differences in bacterial community structure with water depth. Non-metric multidimensional scaling plot based on Bray-Curtis dissimilarities of ARISA fingerprinting data (data from Bienhold et al. 2012). Samples from 2012 are marked with an asterisk (\*).



**Supplementary Figure S7.** Bacterial community composition at family level in surface sediments along a water depth transect (increasing water depth from left to right, also see Table 1) down the Laptev Sea continental slope in (A) September 1993 and (B) August/September 2012.



**Supplementary Figure S8.** Changes in relative sequence abundances of selected families in surface sediments along a water depth transect (increasing water depth from left to right, also see Table 1) down the Laptev Sea continental slope in 1993 (A) and 2012 (B).