55. O. Hoegh-Guldberg, R. Cai, E.S. Poloczanska, P.G. Brewer, S. Sundby, K. Hilmi, V.J. Fabry, S. Jung, W. Skirving, D.A. Stone, et al., *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2014), chap. The Ocean, pp. 1655–1731

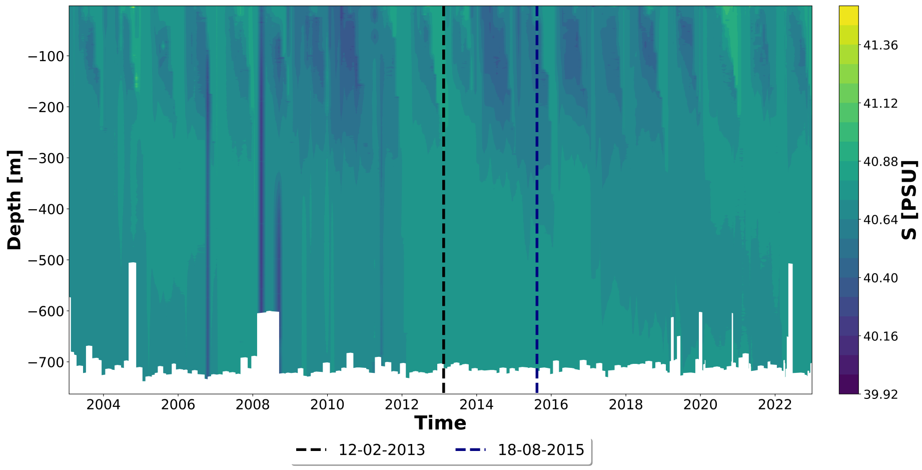

Fig. S1 Water Salinity (in PSU). The black and blue vertical dashed lines indicate two specific dates whose potential temperature and salinity profiles are plotted in Fig. 4.

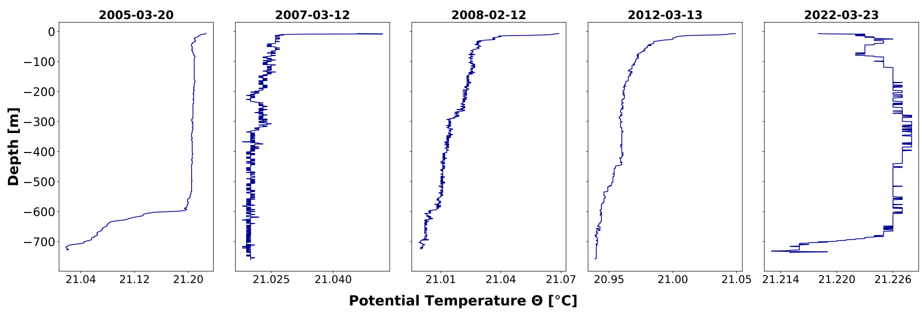

Fig. S2 Potential temperature profiles of a few deep mixing events arranged in ascending order with respect to time (indicated by the arrows in Fig. 3). The deep mixing events become less frequent with time. The deep mixing events plotted here are characterized by a temperature difference of less than 0.2°C between the 50 m depth and the deepest measurement.

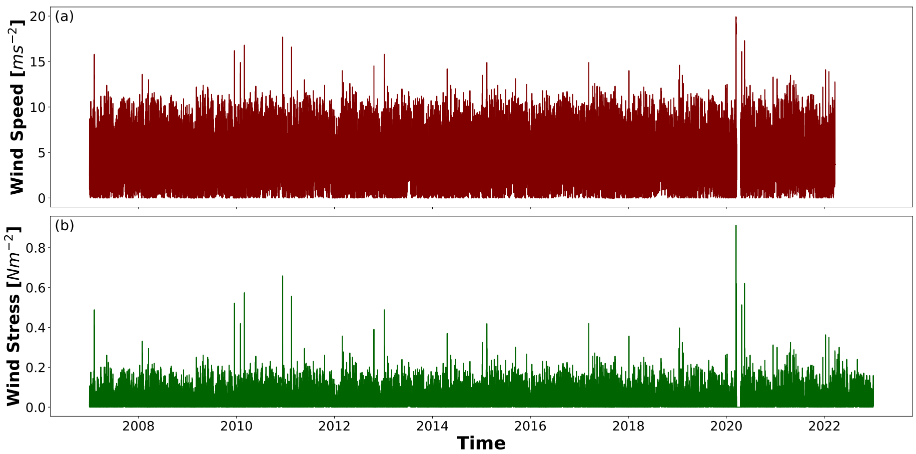

Fig. S3 Time series of 10-minute data of the (a) wind speed and the (b) wind stress. Note the absence of clear trends in these two variables.

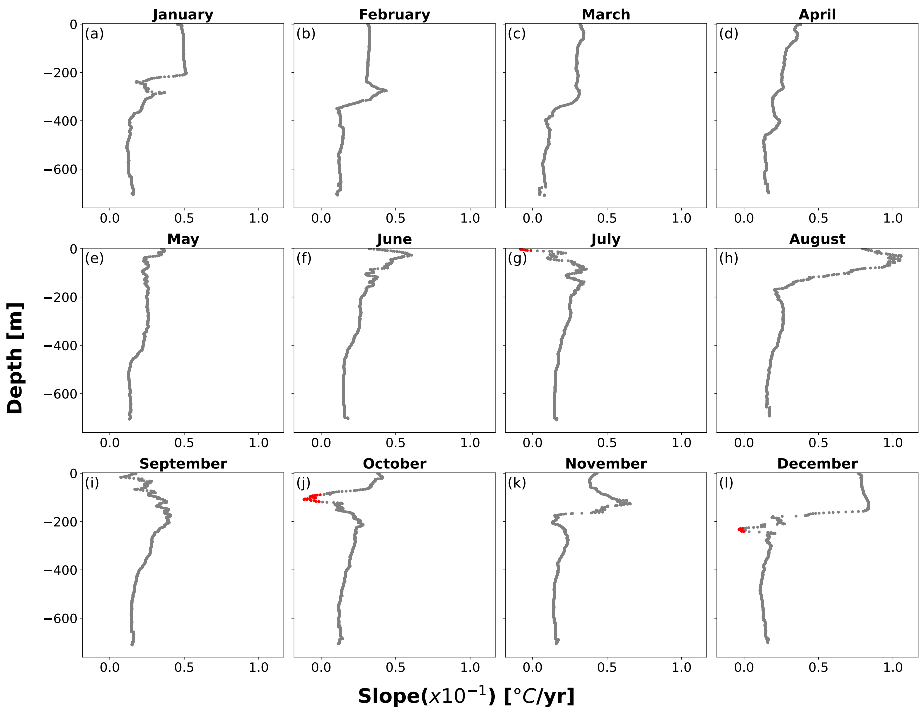

Fig. S4 Slopes of linear regression of the water temperature time series after month-wise segregation. The red portion in the curves represents negative slopes, which are present only in certain depths of July, October, and December, which can be the consequence of variability of the depth of the mixed layer through the seasonal cycle.

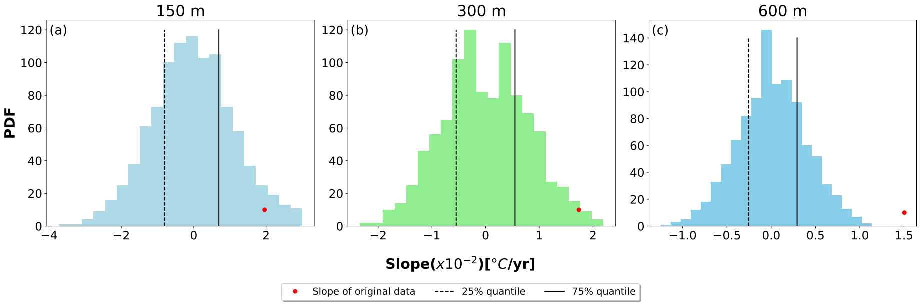

Fig. S5 The results of shuffling the water temperature time series by years; i.e., the time series of each year's water temperature remains unchanged while the order of different years is randomized. The PDF of the slopes of these shuffled time series at a depth of (a) 150 m, (b) 300 m, and (c) 600 m. The dashed and solid lines signify the 25% and 75% quantiles and the red dot denotes the slope of the original time series, indicating a significantly increasing warming trend even when using this weak shuffling.

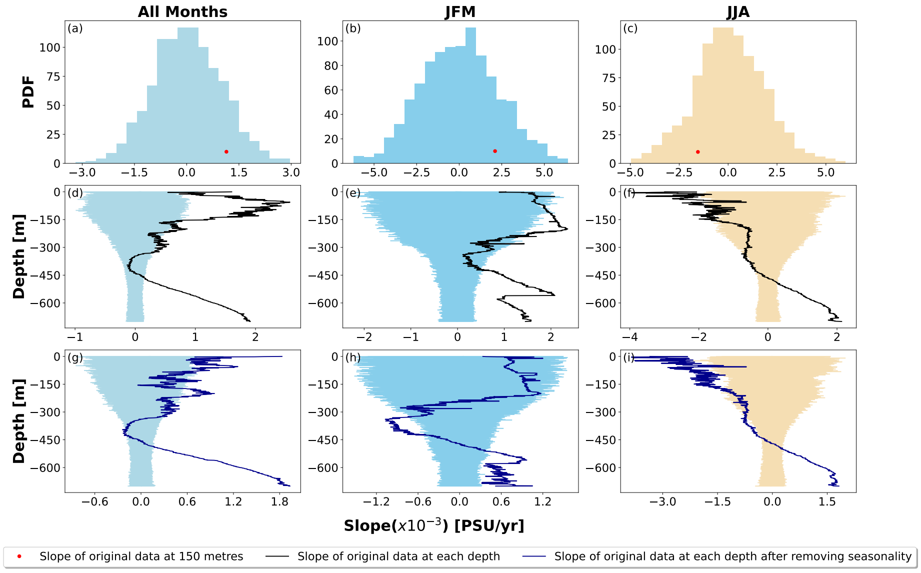

Fig. S6 Same as Fig. 6 for Salinity. Probability distribution function (PDF) of the slopes of the shuffled time series of 150 m depth for (a) the complete time series, (b) of the winter months (January, February, and March stacked together), and (c) of the summer months (June, July and, August stacked together). The red dot in panels a-c indicates the slope of the original time series. The slope of the regression of the original time series versus depth (black line, in PSU yr^{-1}) and the 25%–75% confidence interval (shading) of the slopes of the shuffled time series versus depth based on the (d) original time series (e) the stacked data of the winter months (JFM) and, (f) the stacked data of the summer months (JJA). (g), (h), (i) Same as d-f but for the anomaly time series.

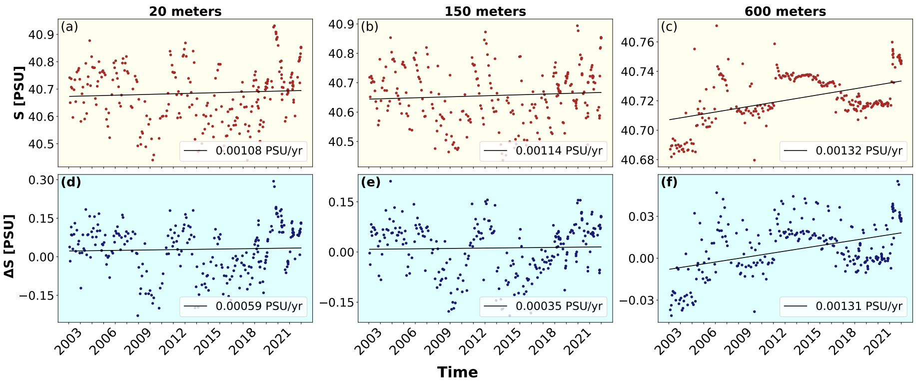

Fig. S7 Same as Fig. 5 for the salinity.

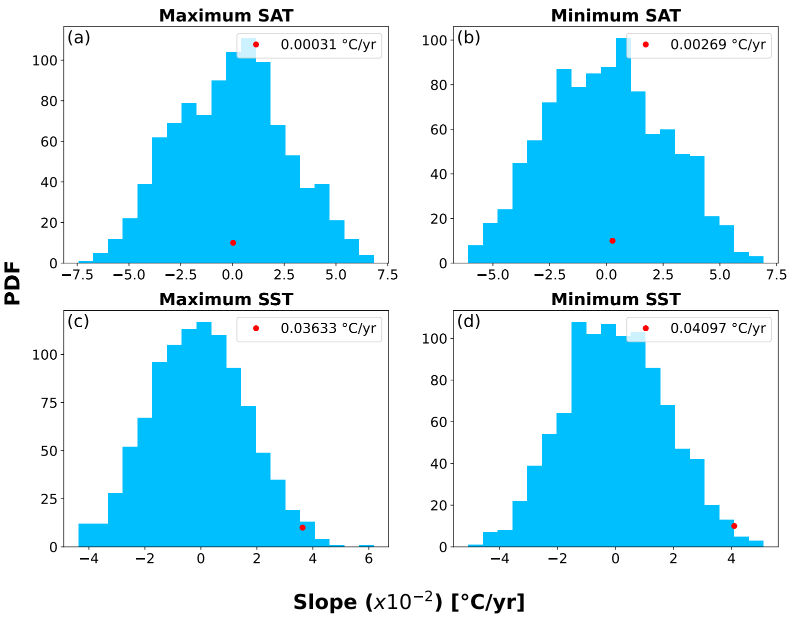

Fig. S8 Same as Fig. S5 for the (a) daily maximum surface air temperature (SAT), (b) daily minimum SAT, (c) daily maximum SST, and (d) daily minimum SST. Note that the analysis indicates a non-significant trend for the SAT and a significant trend for the SST.

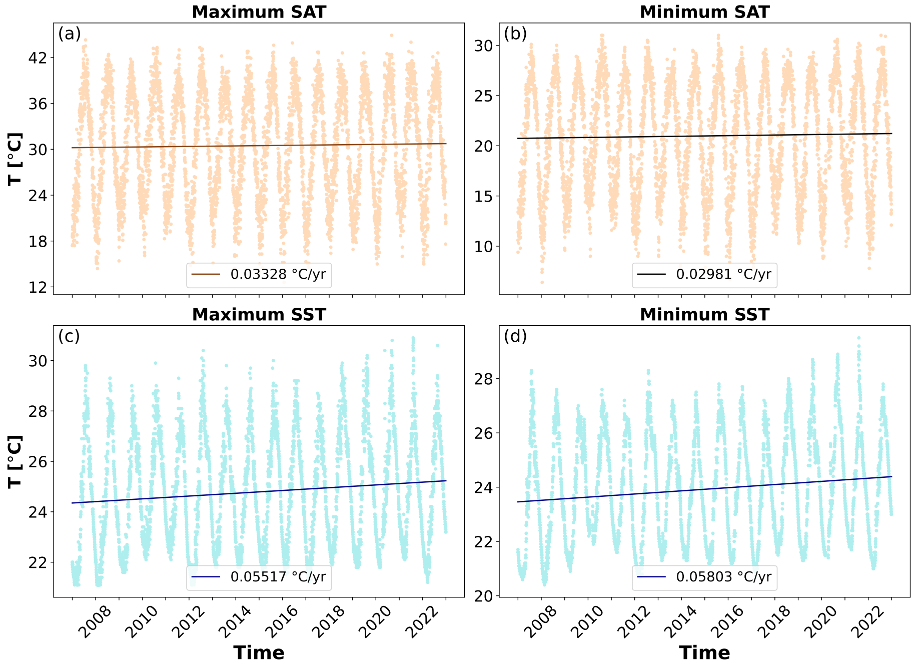

Fig. S9 Same as Fig. 7 for original data of maximum and minimum of surface air temperature (SAT) and SST.

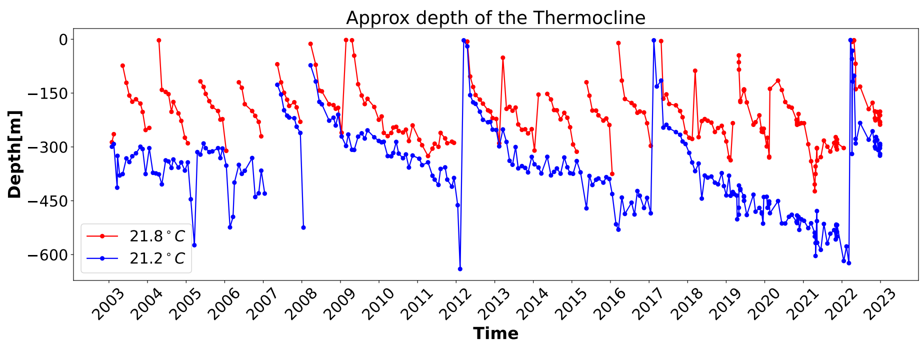

Fig. S10 An approximated depth of the upper thermocline. Here we have plotted the depth of the 21.8°C (red line) and 21.2°C (blue line) isotherms for all the casts.

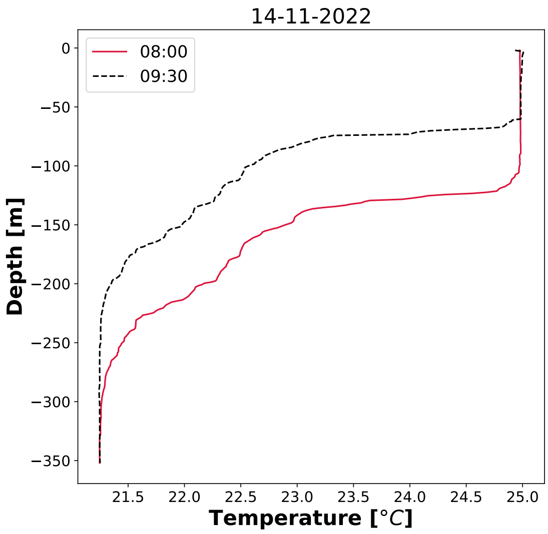

Fig. S11 In-situ temperature profile of two separate casts on 14-11-2022 at 08:00 (red line) and 09:30 (black dotted line).