

Figure S1. The annual mean of longwave radiative flux (W/m^2) artificially added to the sea ice model in ICE_21 compared to ICE_20. The direction of longwave radiative flux is downward.

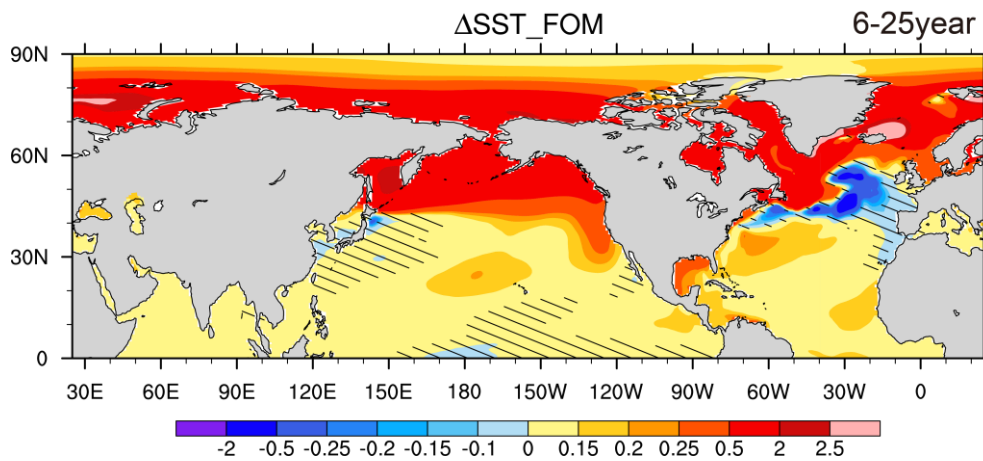


Figure S2. The average of 6-25 year response of SST ($^{\circ}\text{C}$) to Arctic sea ice loss in FOM. Values not significant at the 95% confidence level are hatched.

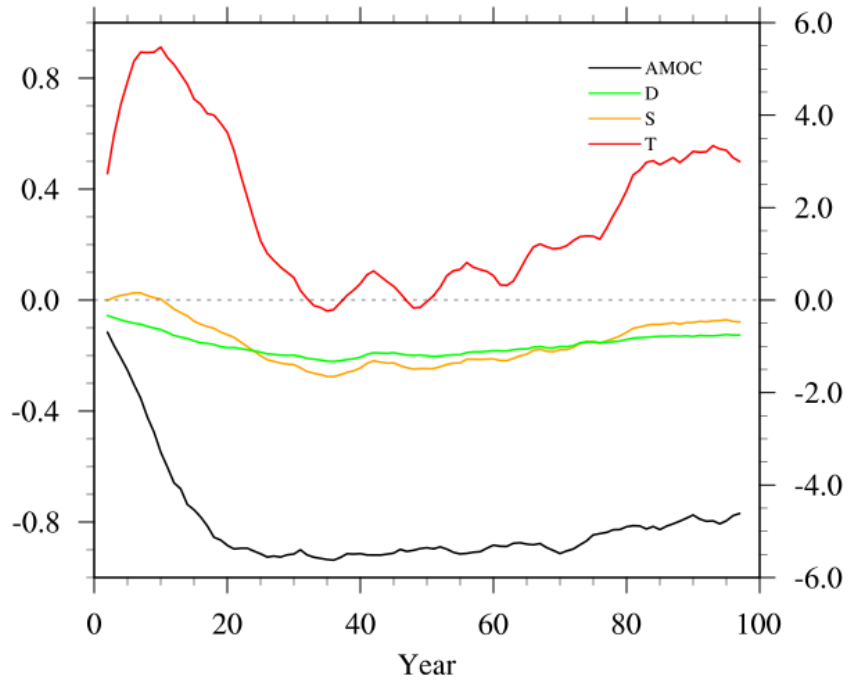


Figure S3. Temporal evolutions of the responses to Arctic sea ice loss in FOM. The black curve is for the AMOC index; the green for potential density (kg/m^3); the orange for salinity (psu); the red for potential temperature ($^{\circ}\text{C}$). The right y-axis is for the AMOC index, and the left, for the other variables. All variables, except for the AMOC index, are averaged over the box of 56°N - 62°N , 50°W - 58°W and 0–200 m in the Labrador Sea.