



Supplement of

Increased ocean heat transport to the central Arctic despite a well working Barents Sea Cooling Machine

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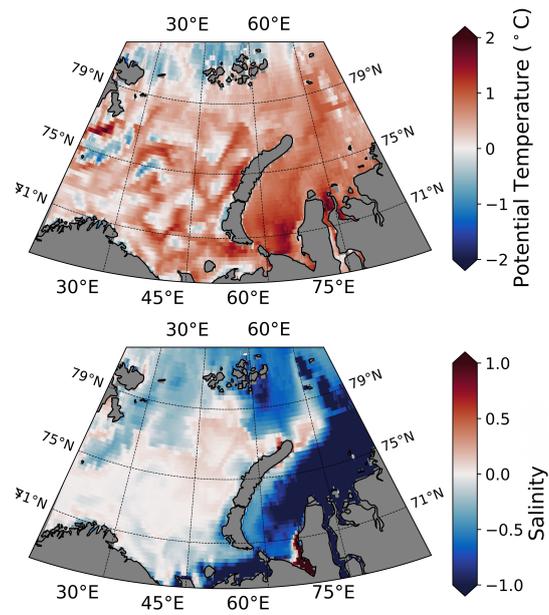


Figure S1. Difference between SODA4 and WOA23 time mean, depth-averaged Potential Temperature (Top) and Salinity (Bottom). A warm bias is evident in the Kara Sea and NE Barents, with intermittent regions of cold bias in the southern Barents.

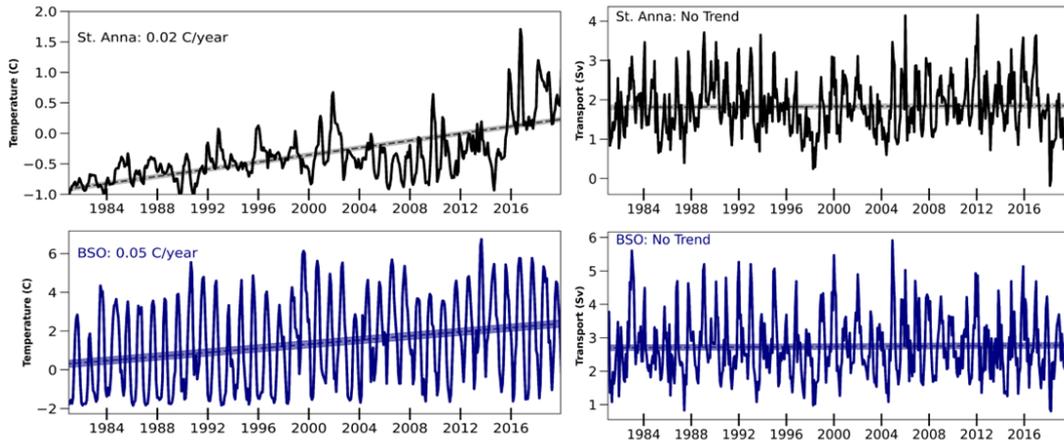


Figure S2. (left) Time series of the average temperature at the Barents Sea Opening and St. Anna Trough. A clear upward trend is evident at both openings. The ratio of the trends in average temperature is roughly equivalent to the ratio in trends of heat transport through either opening. (right) Time series of the volume transport through the Barents Sea Opening and St. Anna Trough. There is no discernible trend in the volume transport through either opening.

Table S1. True Heat Convergence of the Barents Sea

Source	Heat Convergence (TW)
Smedsrud et al., (2010)	74
SODA4	77
GLORYS12	120

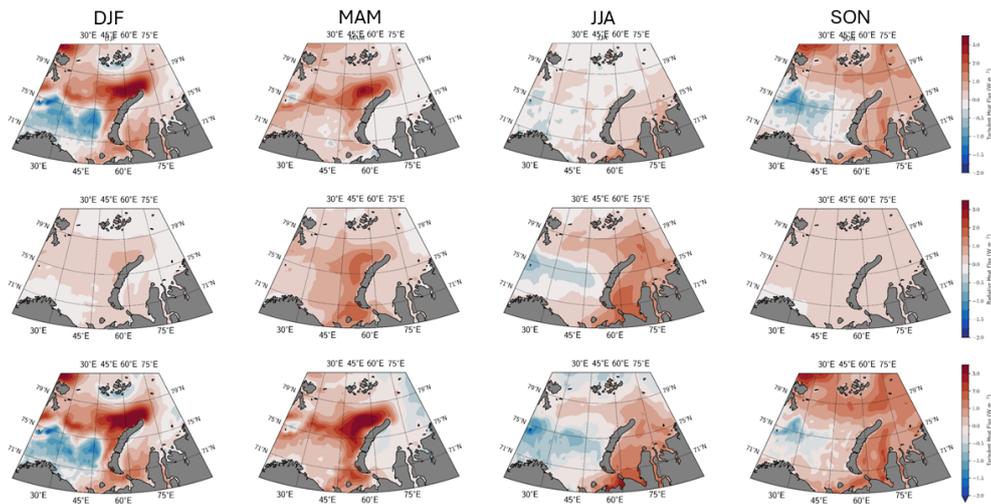


Figure S3. Change in decadal averaged Turbulent (top), Radiative (Middle), and total (bottom) heat fluxes from the 20s relative to the 80s for each season.

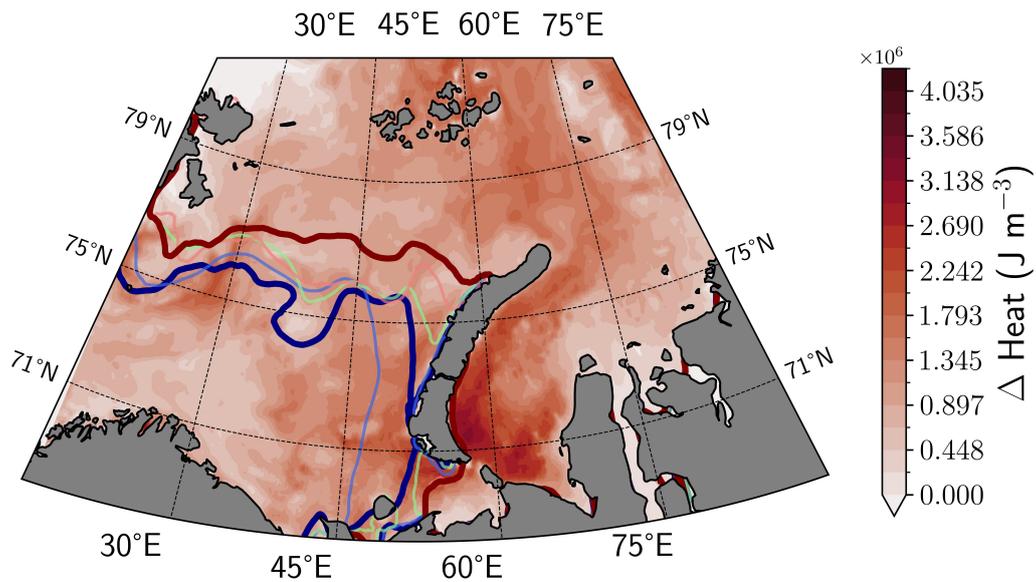


Figure S4. Change in decadal averaged ocean heat content per unit depth from the 20s relative to the 80s. Also indicated is the mean ice edge for each decade.

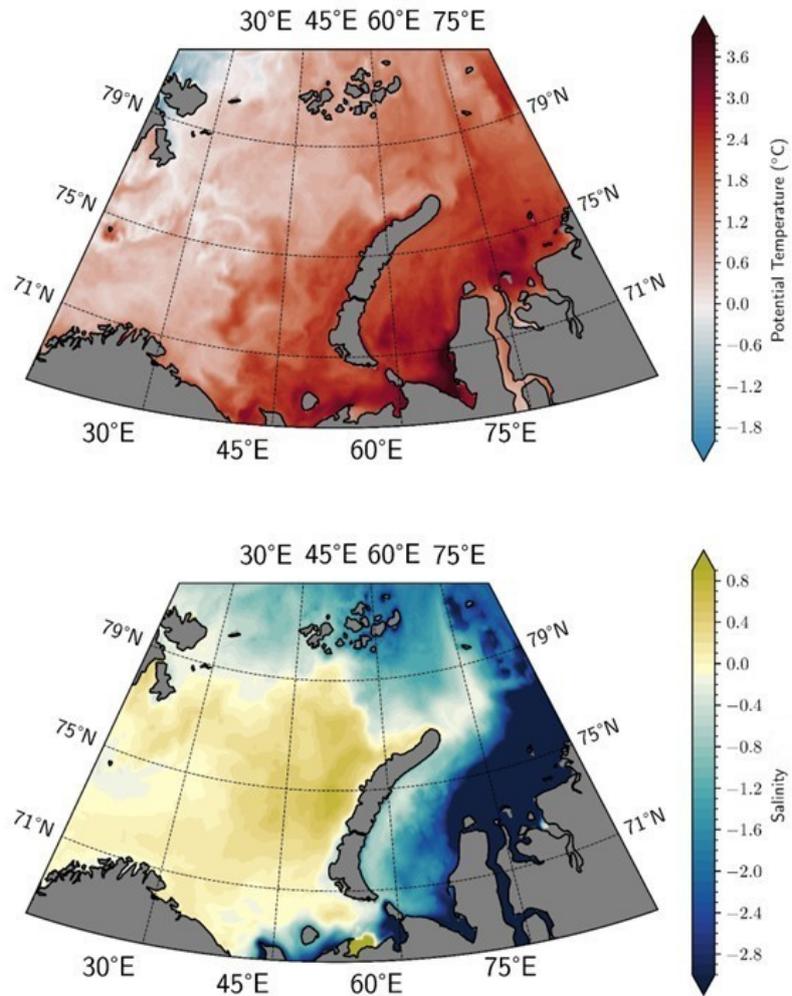


Figure S5. Change in decadal averaged (top) potential temperature and (bottom) salinity from the 20s relative to the 80s in SODA4.

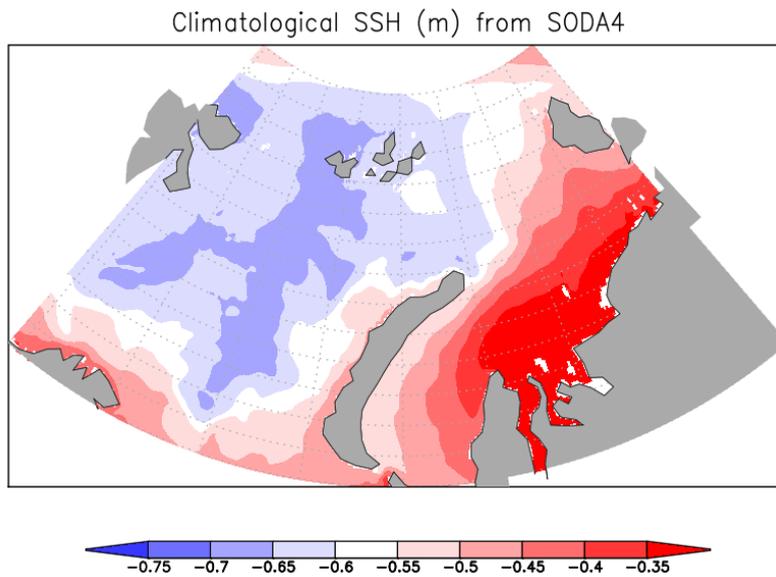


Figure S6. Time mean sea surface height (SSH) in the Barents and Kara Seas in SODA4. There is an SSH gradient from the Barents Sea to the Kara Sea associated with northward geostrophic flow from the Barents Sea into the St. Anna Trough.

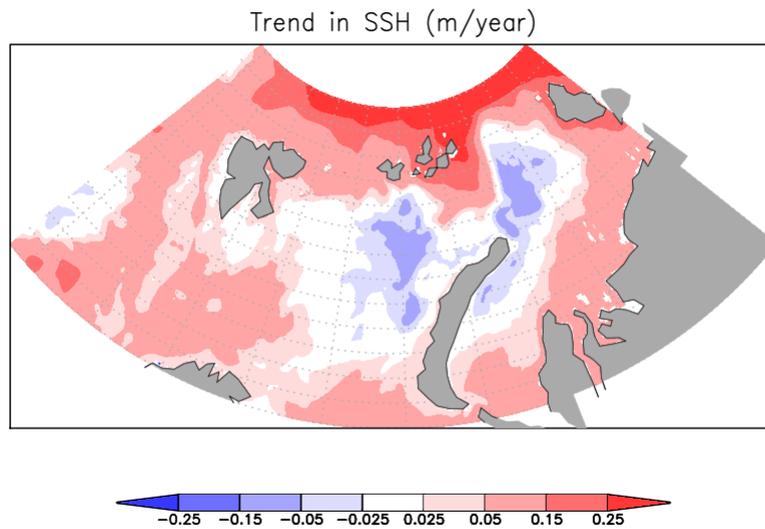


Figure S7. Linear trend in sea surface height over the Barents Sea, Kara Sea, and Fram Strait regions. An SSH depression in the northern Kara Sea results in a reversal of the prevailing time mean flow associated with the climatological SSH structure in Figure S6.