

Supplementary Material

Arctic marine heatwaves forced by greenhouse gases and triggered by early sea-ice melt

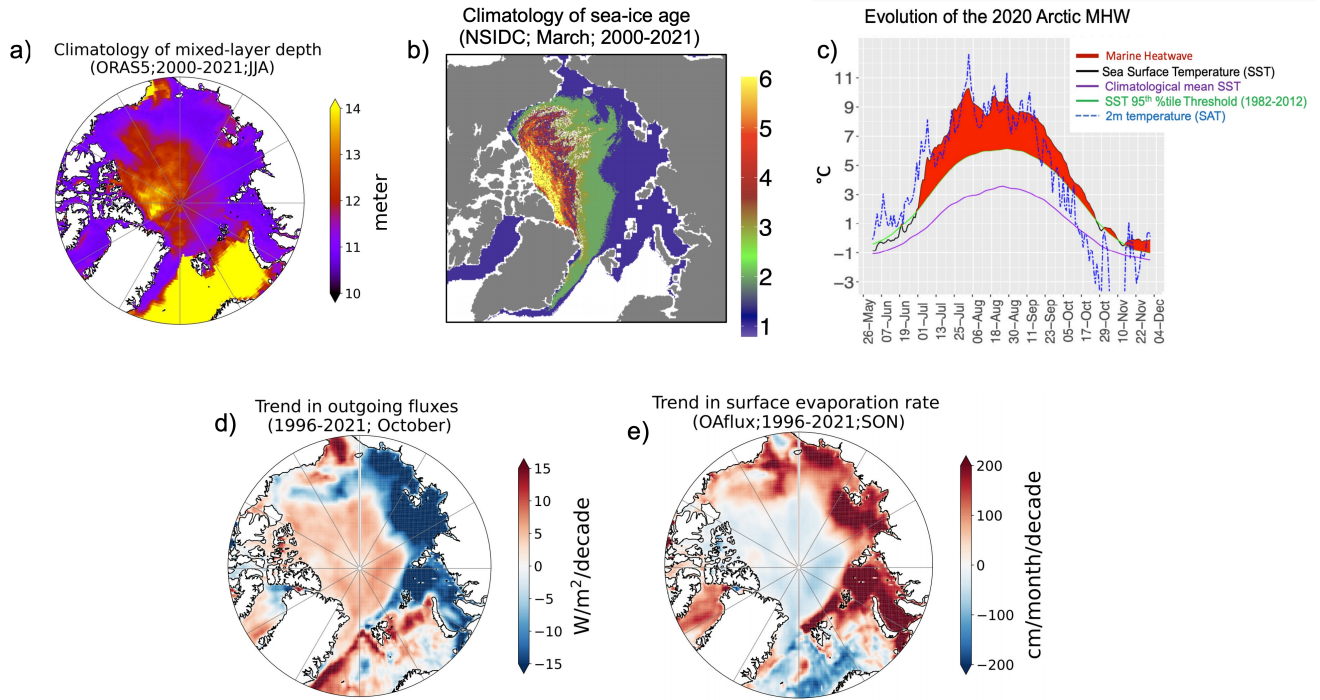
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Supplementary Figure 1: **a)** Climatology of mixed-layer depth in JJA (June-August) over 2000-2021 based on ORAS5 reanalysis. **b)** Climatology of sea-ice age in March over 2000-2021 based on NSIDC dataset. **c)** Evolution of the 2020 marine heatwave over the Kara Sea. **d)** Long-term trend over 1996-2021 in maximum outgoing fluxes in October (longwave radiation + sensible heat + latent heat fluxes; $\text{Wm}^{-2}\text{decade}^{-1}$) according to ERA5 reanalysis. **e)** Long-term trend over 1996-2021 in evaporation rate (SON; $\text{cm month}^{-1}\text{decade}^{-1}$) based on Oaflux dataset.