Supplement of

Seasonal variation in phytoplankton responses to marine heatwaves in the Nordic Seas: A modelling study

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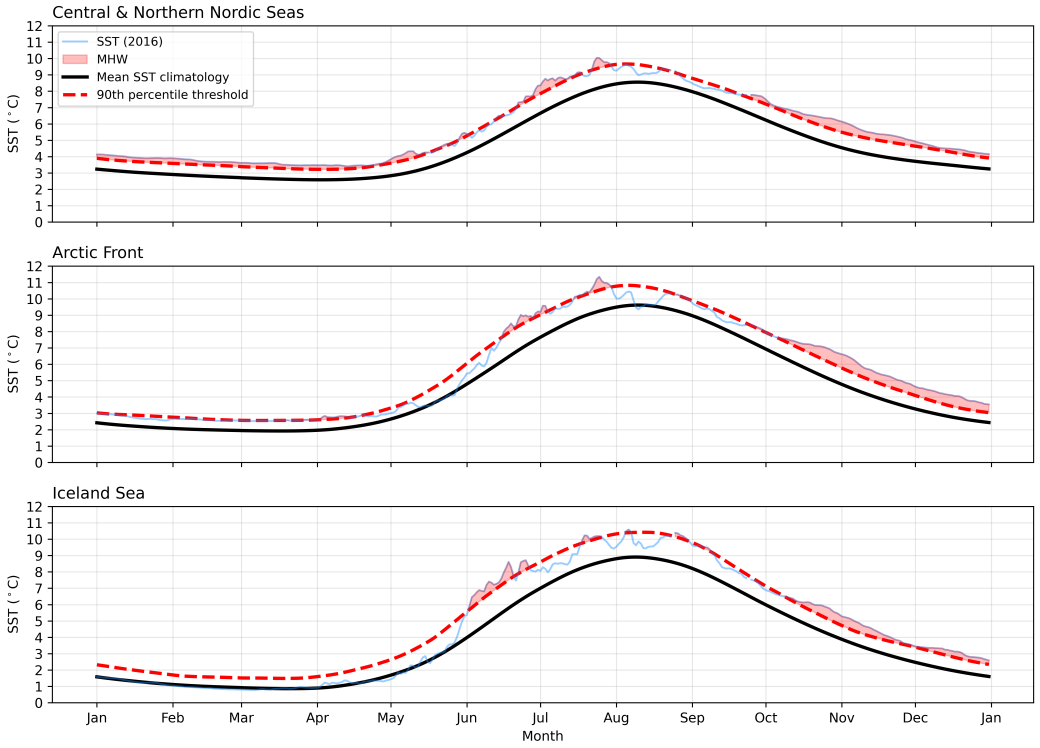


Figure S1: Climatological SST and 90th percentile used for detection of MHWs in each ecoregion. SST for 2016 is shown with MHW events shaded in red.

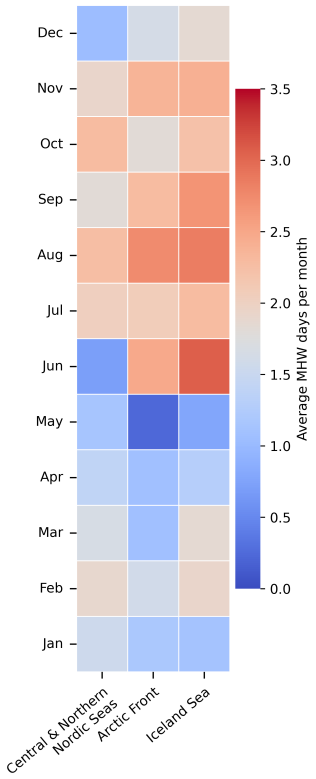


Figure S2: **OSTIA** average number of MHW days per month in the Central & Nordic Seas, Arctic Front and Iceland Sea ecoregions over the period 1998-2024. Only events lasting $\geq$ 10 days are included.

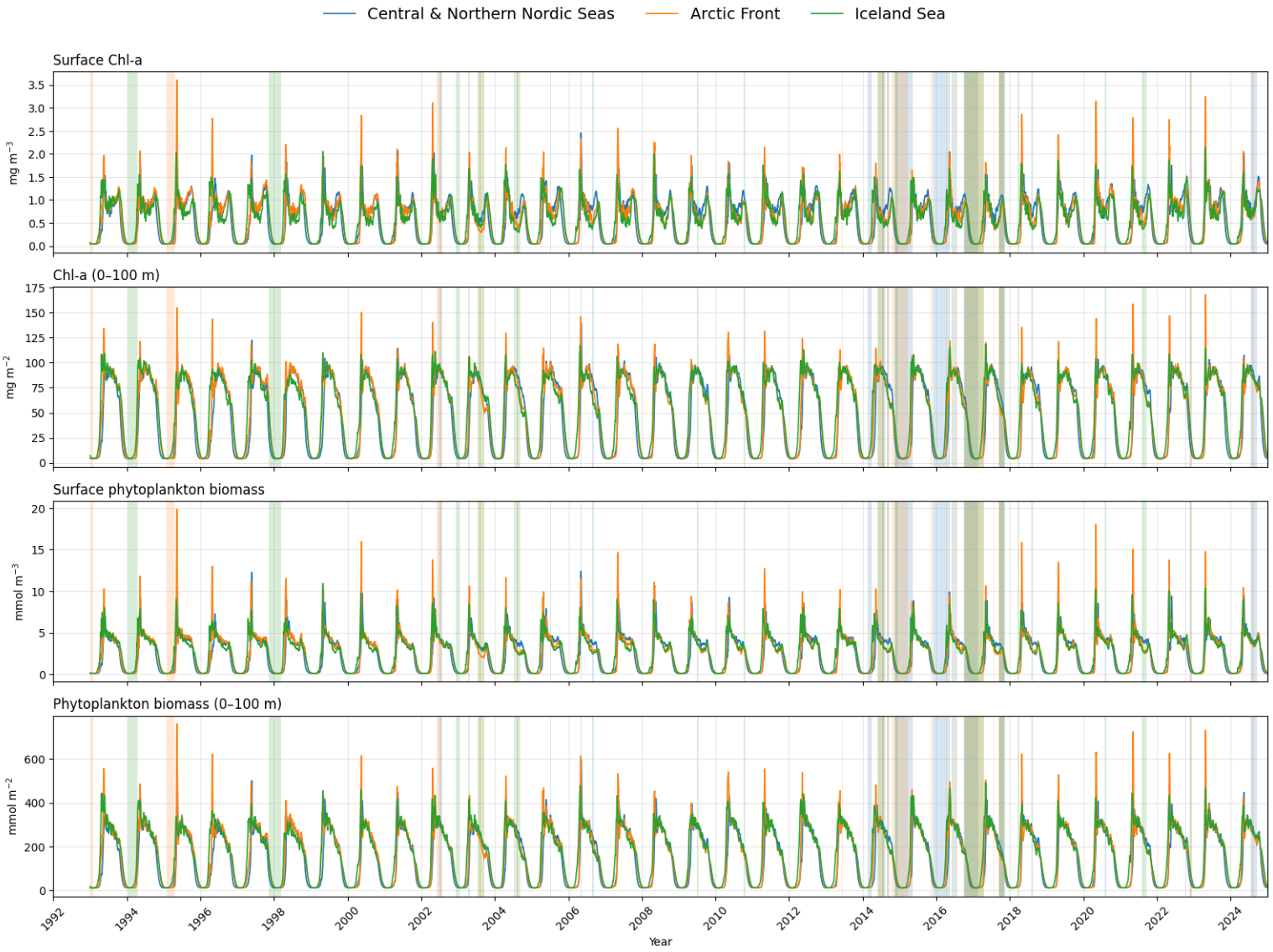


Figure S3: Surface and integrated over 100m chlorophyll-a and phytoplankton biomass in the Central & Northern Nordic Seas, Arctic Front, and Iceland Sea ecoregions. Vertical shading depicts the timing of MHW events in each ecoregion ($\geq$ 10 days).

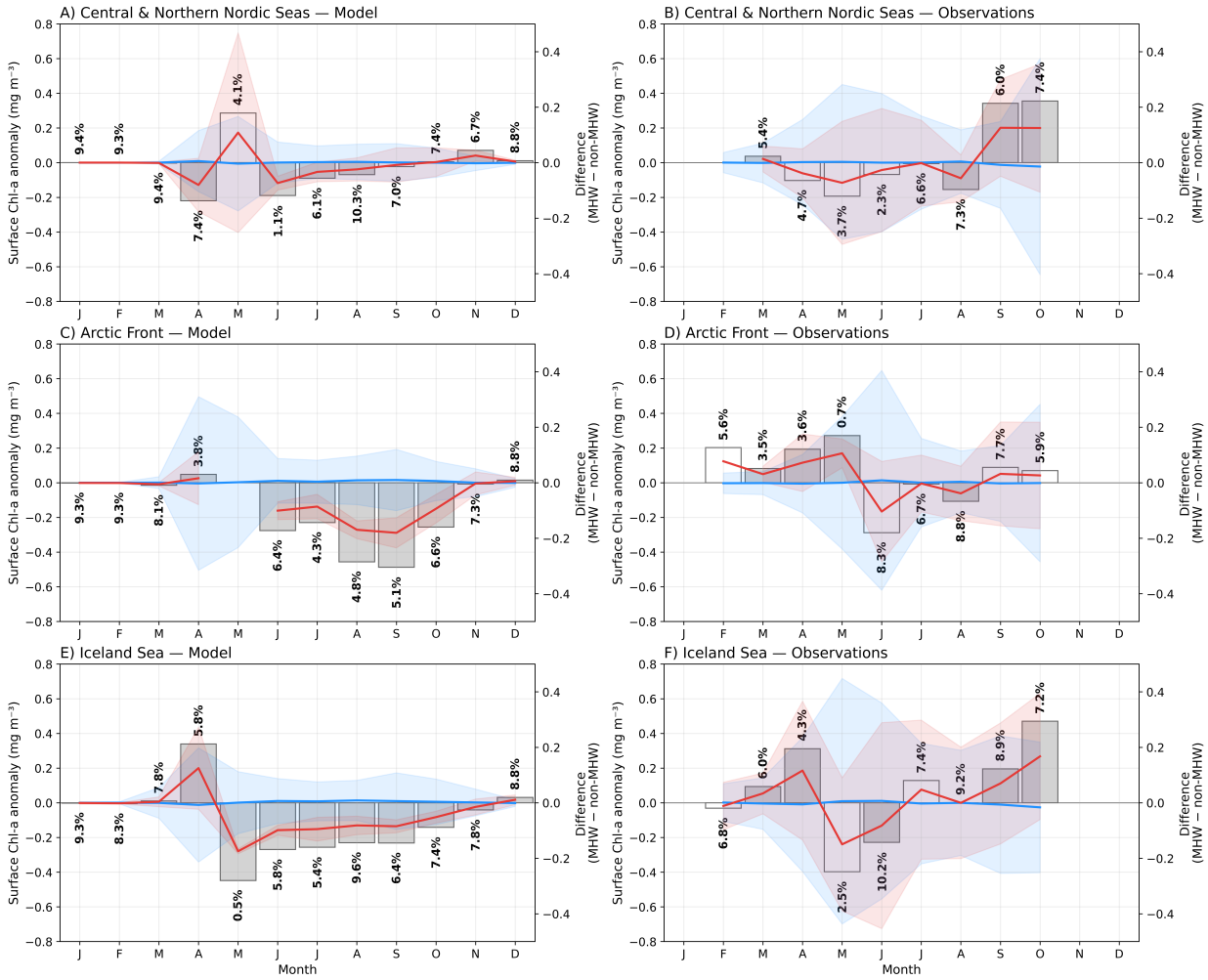


Figure S4: Ecoregion (Central & Northern Nordic Seas, Arctic Front, and Iceland Sea) average anomalies of surface chlorophyll-a (mg m^{-3}), with and without marine heatwave (MHW) events, computed by binning daily data from 1998 to 2024 in the TOPAZ-BGC model (left) and in observations (OSTIA and OC-CCI, right). In the right panel MHWs are detected using OSTIA and chlorophyll data is taken from OC-CCI. 1998-2024 is used to match the period of OC-CCI data availability. In panels (a–f), bars represent differences between MHW and non-MHW conditions. White bars represent $p > 0.05$ in the Wilcoxon test; grey bars represent $p < 0.05$. The solid blue lines represent mean values under non-MHW conditions, while the solid red lines represent mean values under MHW conditions. Shading represents ± 1 standard deviation. Percentages show the percent of MHW days for each month across 1998-2024.

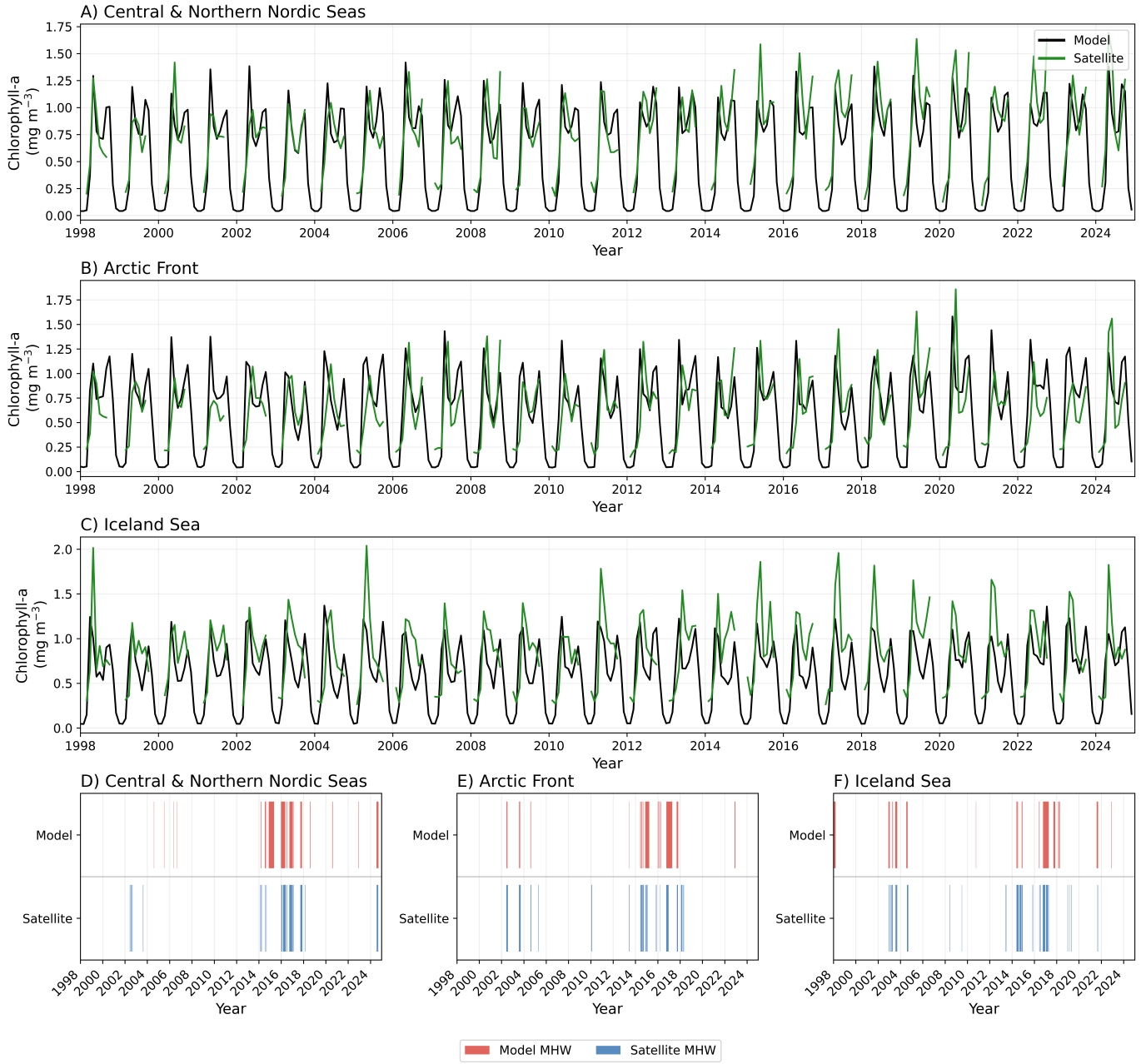


Figure S5: A, B, C: Time series of chlorophyll-a in the TOPAZ-BGC model (black line) and in OC-CCI satellite data (green line) and D, E, F: MHWs detected in the TOPAZ-BGC model (red bars) and OSTIA satellite data (blue bars) in the Central & Northern Nordic Seas, Arctic Front, and Iceland Sea ecoregions. MHWs are detected using a 1998–2024 climatology to match the period of OC-CCI data availability.