



Supplement of

Biomarker characterization of the North Water Polynya, Baffin Bay: implications for local sea ice and temperature proxies

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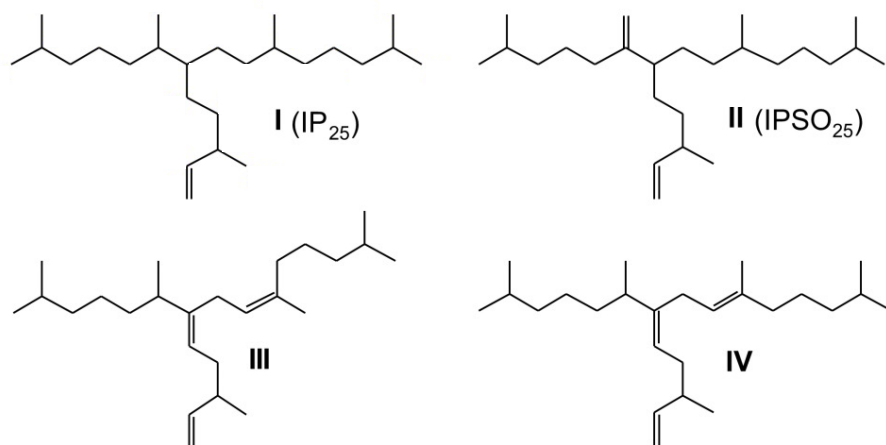


Figure S1: Molecular structure of various highly-branched isoprenoids (HBIs) used in this study.

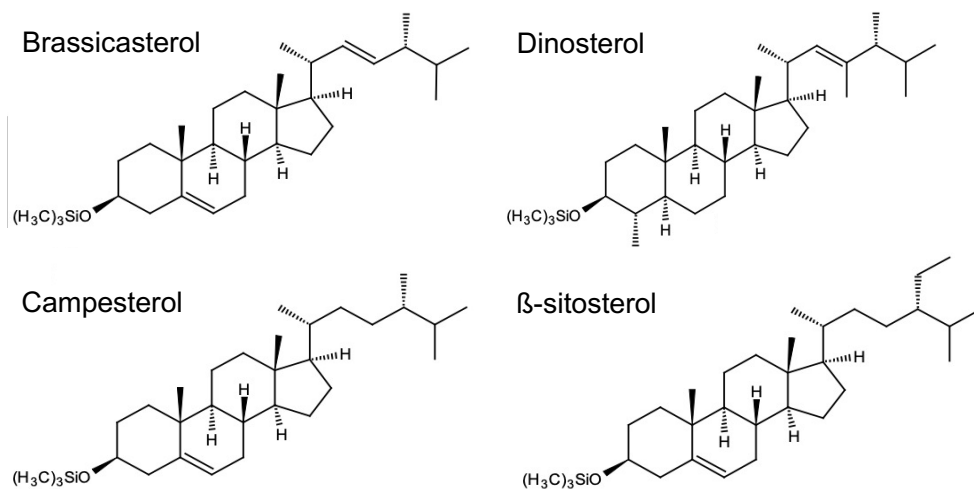


Figure S2: Molecular structure of various sterols used in this study.

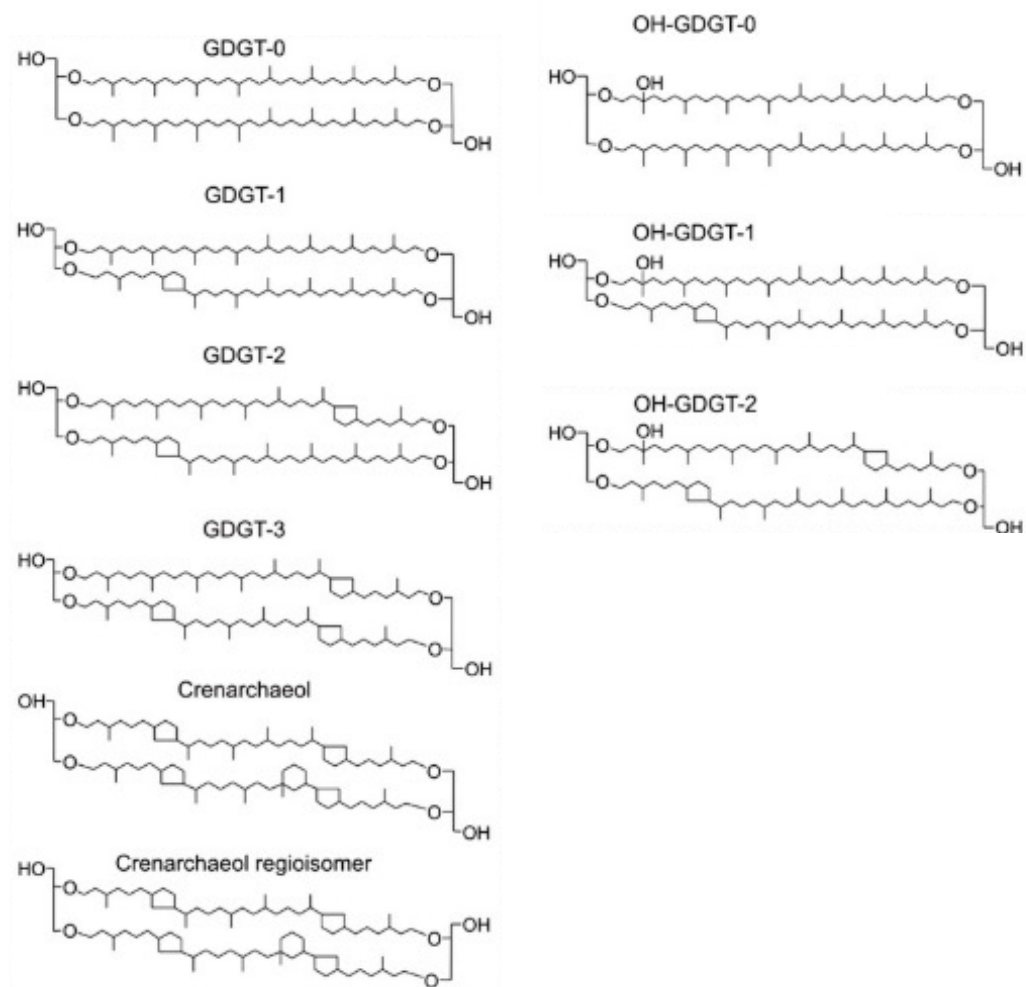


Figure S3: Molecular structure of various GDGT and OH-GDGTs used in this study.

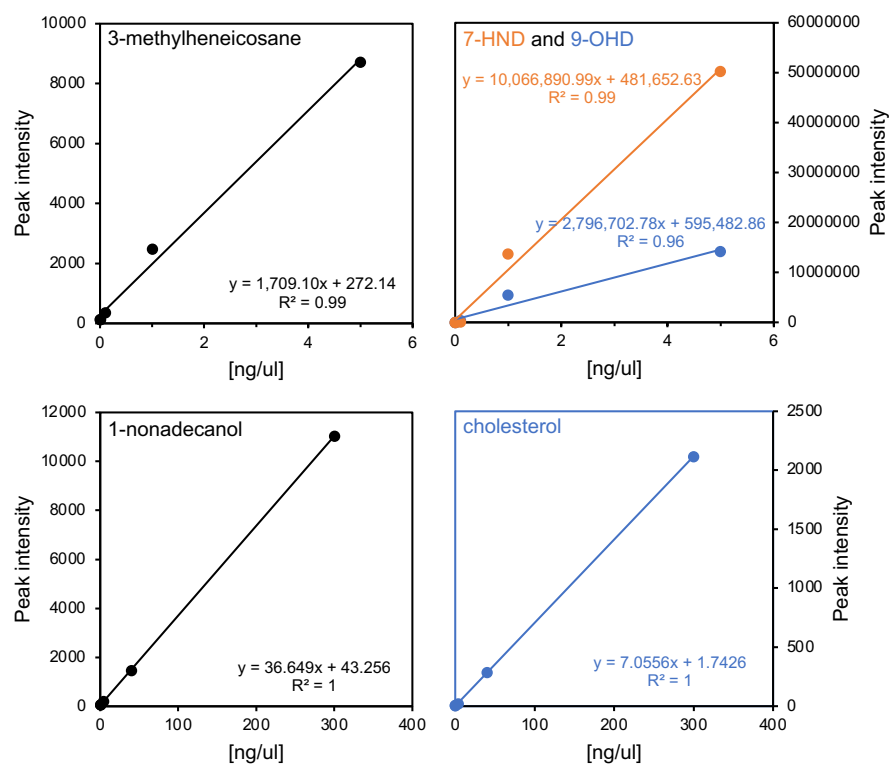


Figure S4: External standard dilution series used for HBI (top) and sterol (bottom) concentration calculations.

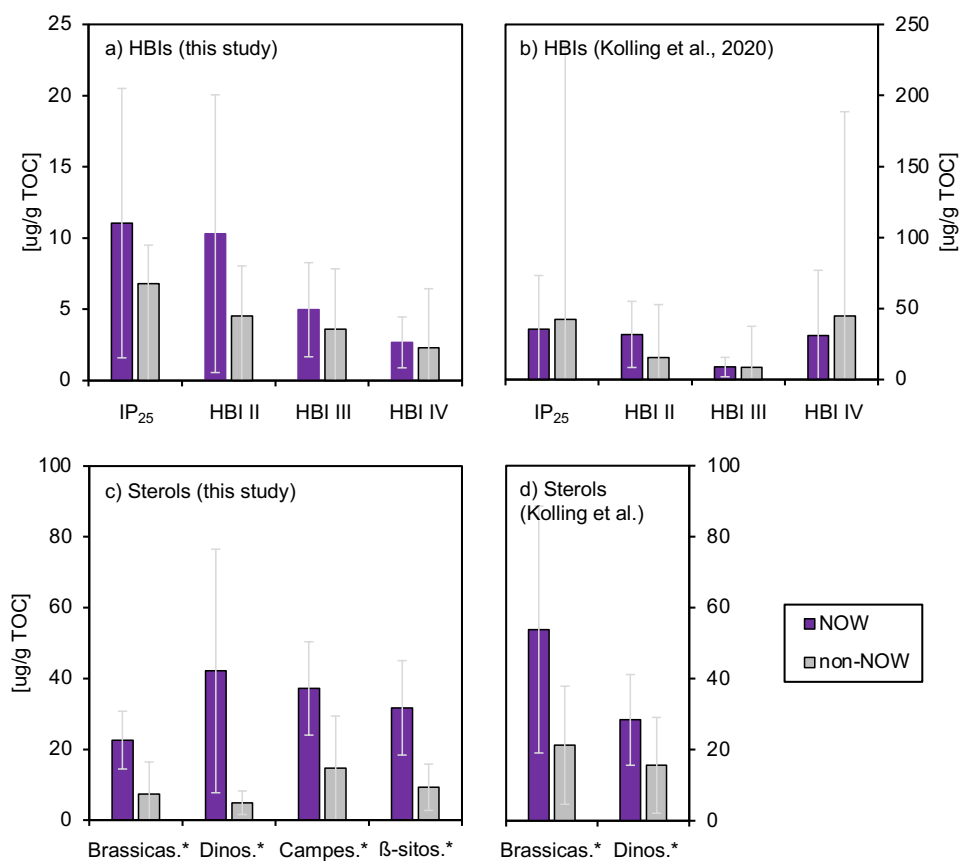


Figure S5: Average concentrations (ug/g TOC) of a-b) HBIs and c-d) sterols for sample sets from this study ($n=9$) and Kolling et al. (2020, $n=51$). Standard deviations for each shown in light gray. Sites within the NOW are colored purple whereas sites outside the NOW are gray. For all NOW and non-NOW comparisons, differences that are statistically different as defined by t-tests ($p\text{-value} < 0.05$) are denoted with an *.

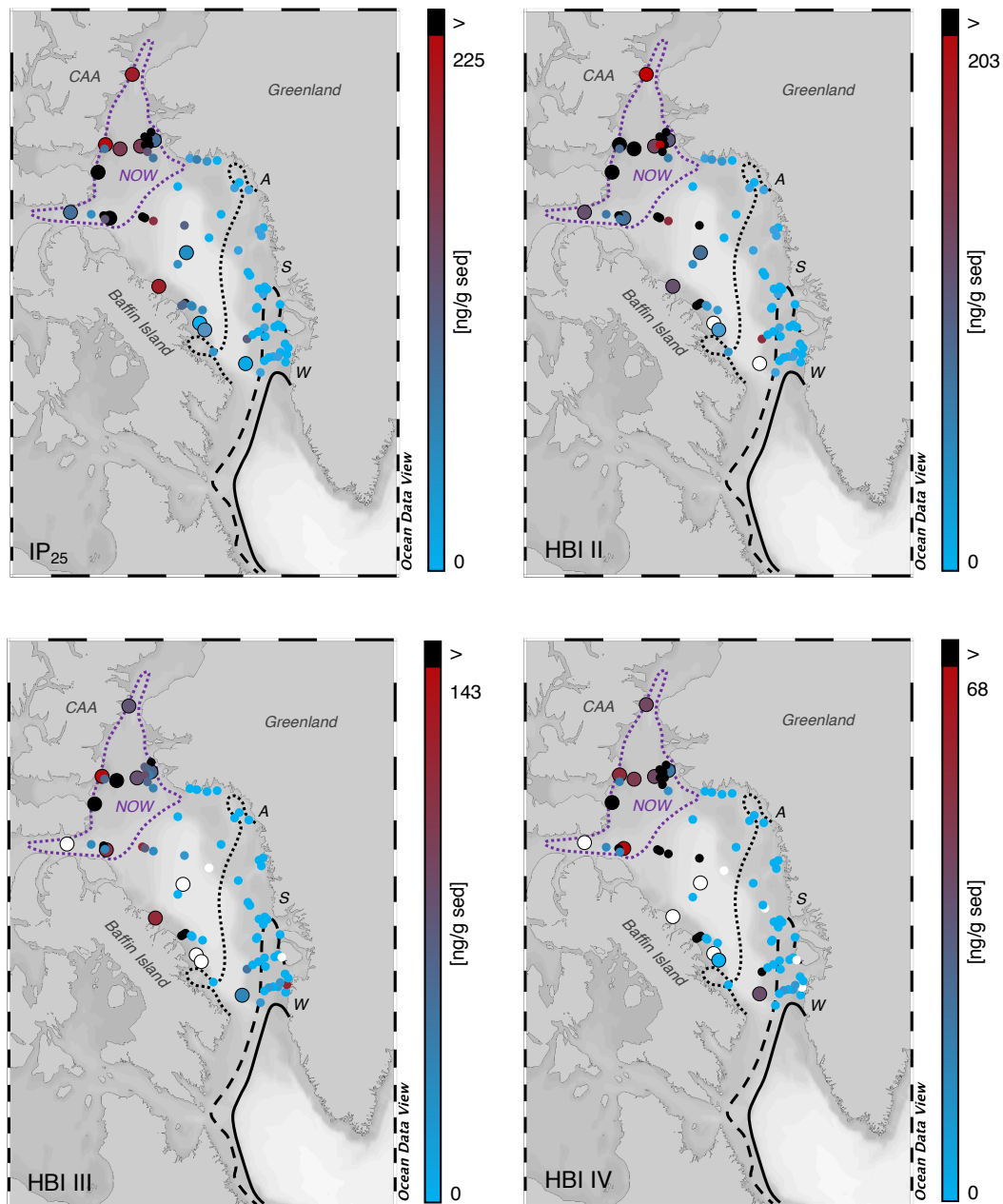


Figure S6: Distribution of HBI concentrations (ng/g sed) in surface sediment samples. Samples from this study ($n=13$) shown with large dots and those from Kolling et al. (2020, $n=70$) with small dots. White circles indicate samples where no analyte was detected. Modern June limits of the NOW demarcated with a dashed purple line and seasonal sea ice limits shown with black dotted (autumn, A), dashed (spring, S) and solid lines (winter, W) (Cavalieri et al., 1996). Ocean Data View base map after Schlitzer (2020).

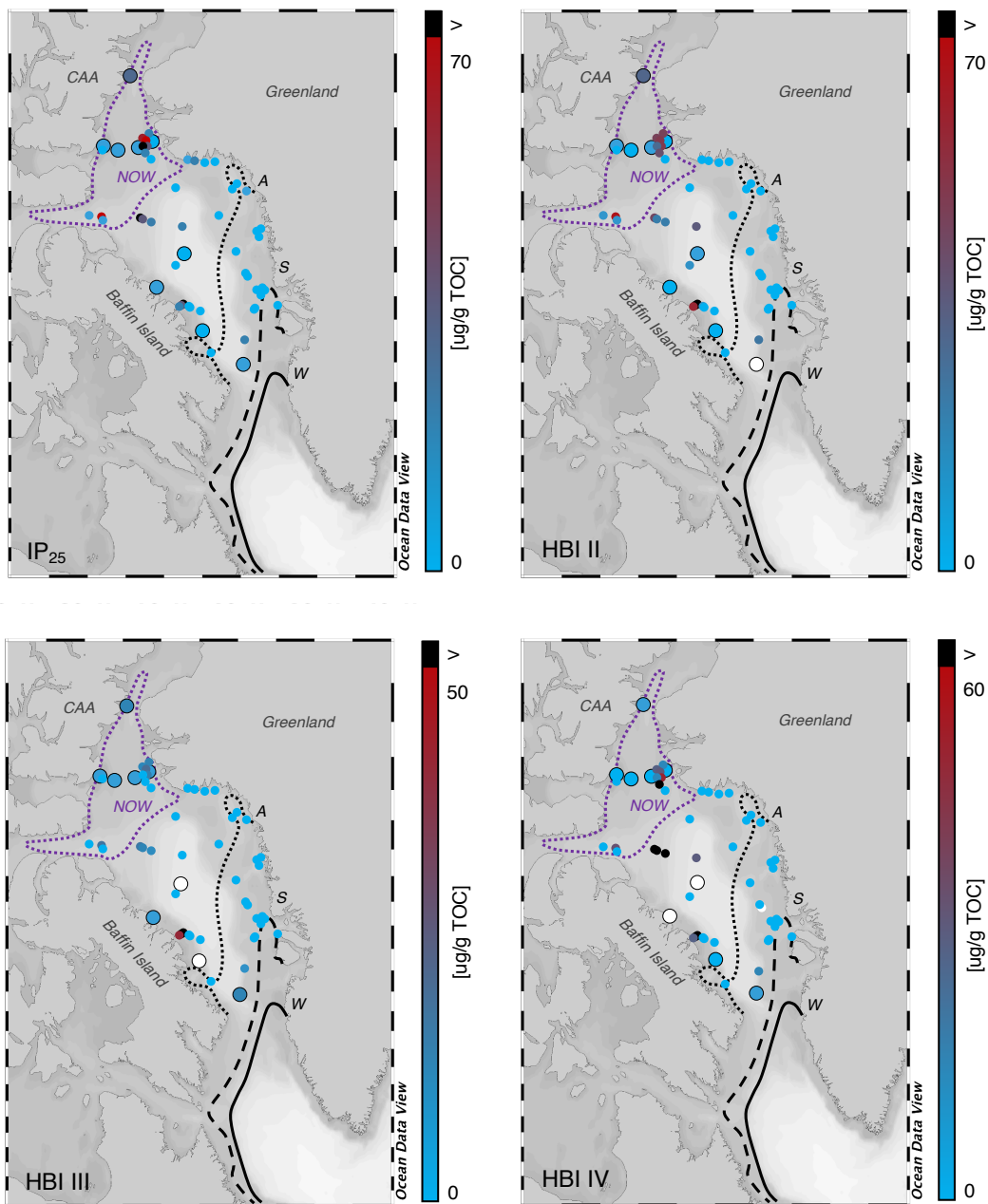


Figure S7: Distribution of HBI concentrations ($\mu\text{g/g TOC}$) in surface sediment samples. Samples from this study ($n=9$) shown with large dots and those from Kolling et al. (2020, $n=51$) with small dots. White circles indicate samples where no analyte was detected. Modern June limits of the NOW demarcated with a dashed purple line and seasonal sea ice limits shown with black dotted (autumn, A), dashed (spring, S) and solid lines (winter, W) (Cavalieri et al., 1996). Ocean Data View base map after Schlitzer (2020).

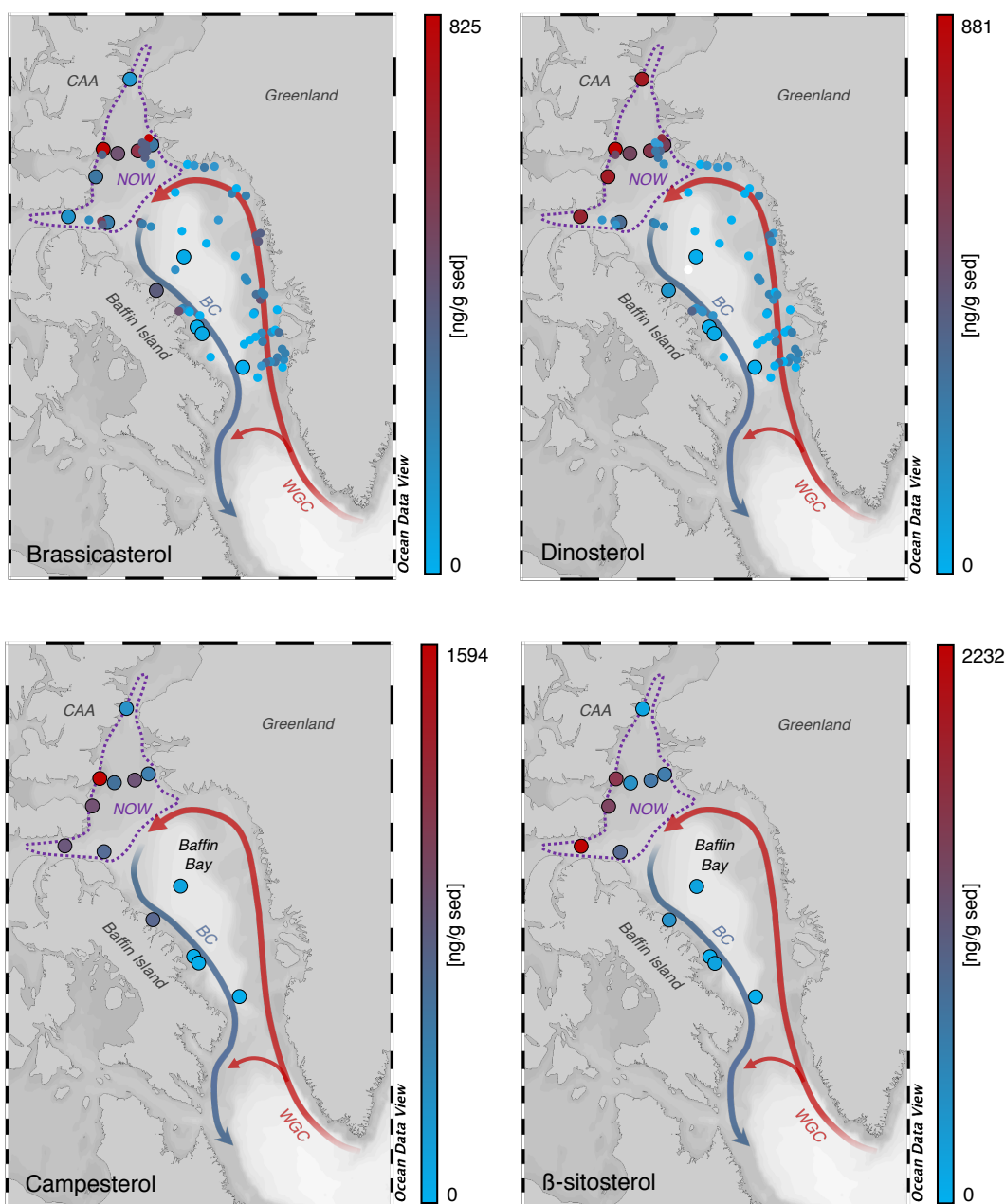


Figure S8: Distribution of sterol concentrations (ng/g sed) in surface sediment samples. Samples from this study ($n=13$) shown with large dots and those from Kolling et al. (2020, $n=70$) with small dots. Note that campesterol and β -sitosterol were not analyzed by Kolling et al. (2020). Modern June limits of the NOW demarcated with a dashed purple line and simplified ocean surface currents shown in bold red and blue lines. WGC = West Greenland Current, BC = Baffin Current. Ocean Data View base map after Schlitzer (2020).

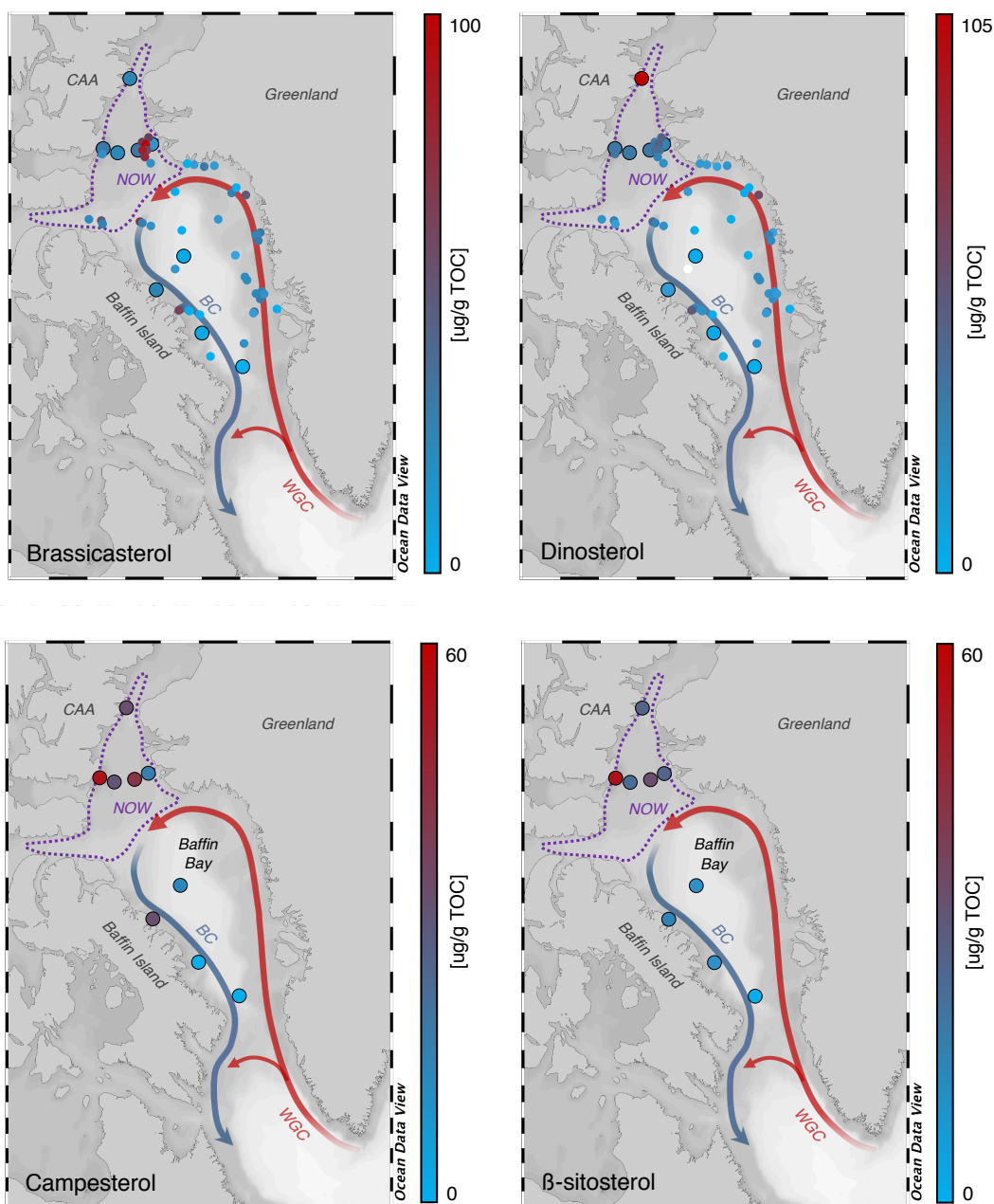


Figure S9: Distribution of sterol concentrations (ug/g TOC) in surface sediment samples. Samples from this study ($n=9$) shown with large dots and those from Kolling et al. (2020, $n=51$) with small dots. Note that campesterol and β -sitosterol were not analyzed by Kolling et al. (2020). Modern June limits of the NOW demarcated with a dashed purple line and simplified ocean surface currents shown in bold red and blue lines. WGC = West Greenland Current, BC = Baffin Current. Ocean Data View base map after Schlitzer (2020).

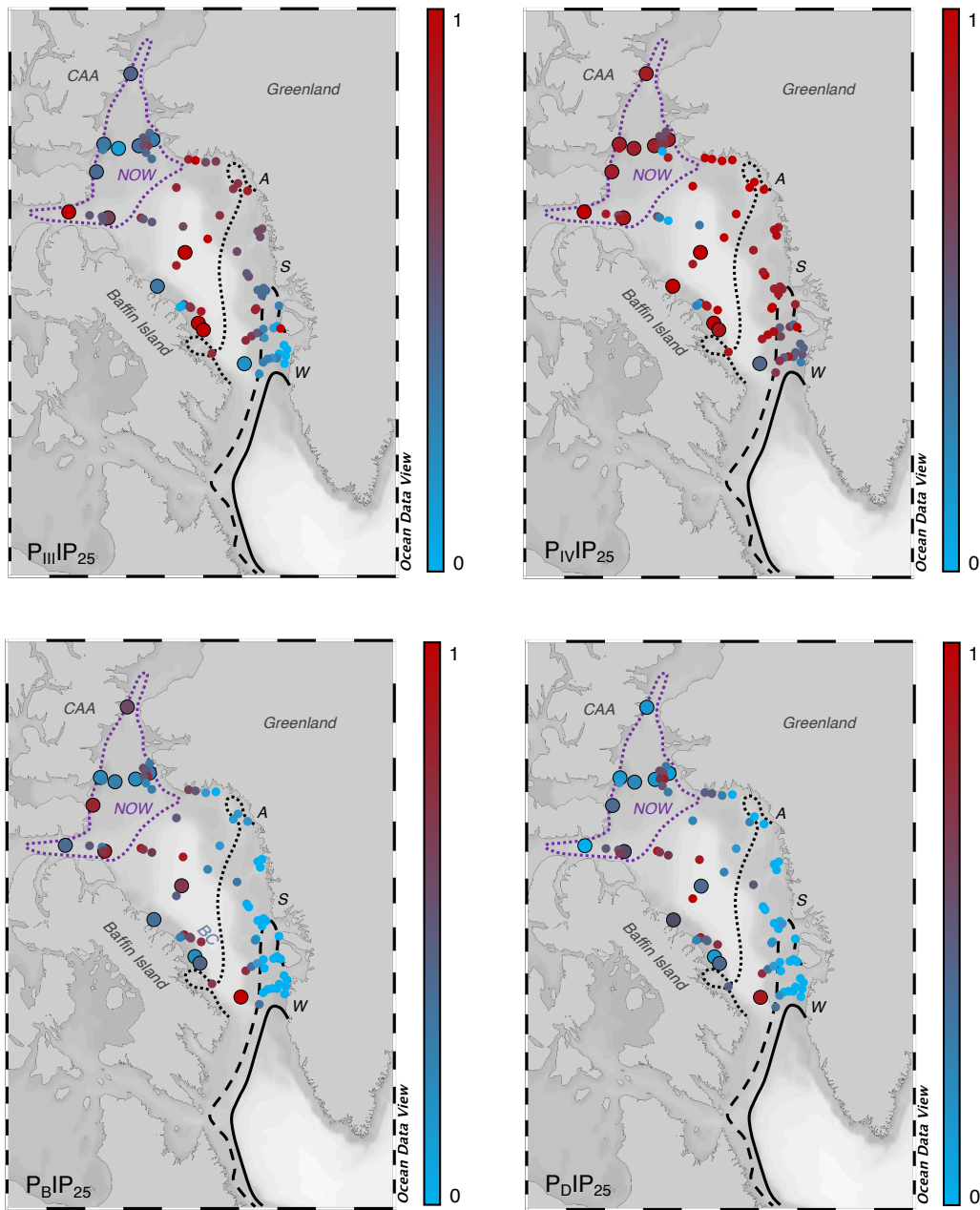


Figure S10: Distribution of PIP₂₅ index values in surface sediment samples. Samples from this study ($n=13$) shown with large dots and those from Kolling et al. (2020, $n=70$) with small dots. Modern June limits of the NOW demarcated with a dashed purple line and seasonal sea ice limits shown with black dotted (autumn, A), dashed (spring, S) and solid lines (winter, W) (Cavalieri et al., 1996). Ocean Data View base map after Schlitzer (2020).

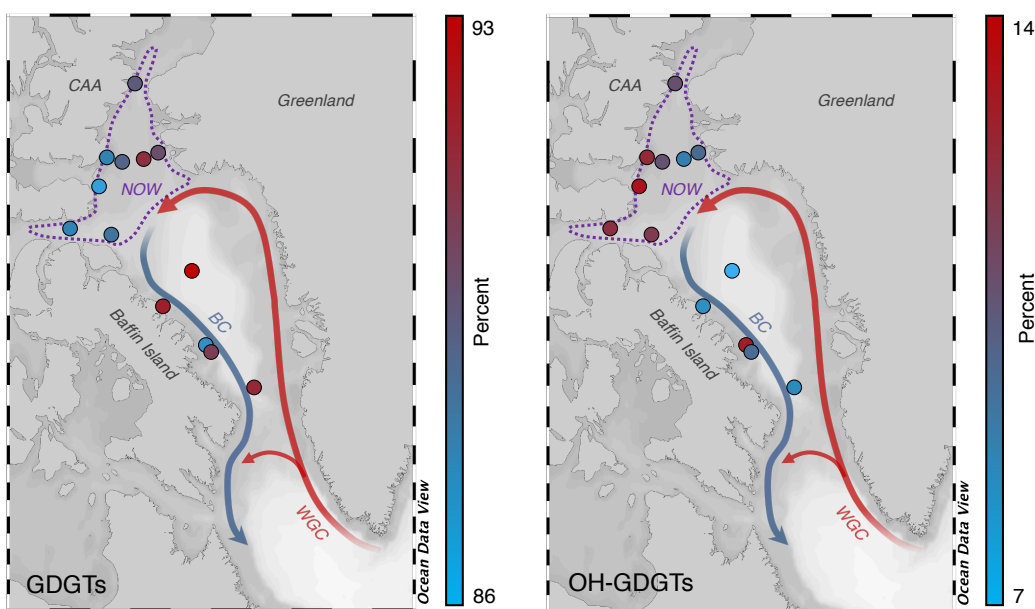


Figure S11: Distribution of GDGT and OH-GDGT distributions in surface sediment samples from this study's dataset ($n=13$). Modern June limits of the NOW demarcated with a dashed purple line and simplified ocean surface currents shown in bold red and blue lines. WGC = West Greenland Current, BC = Baffin Current. Ocean Data View base map after Schlitzer (2020).

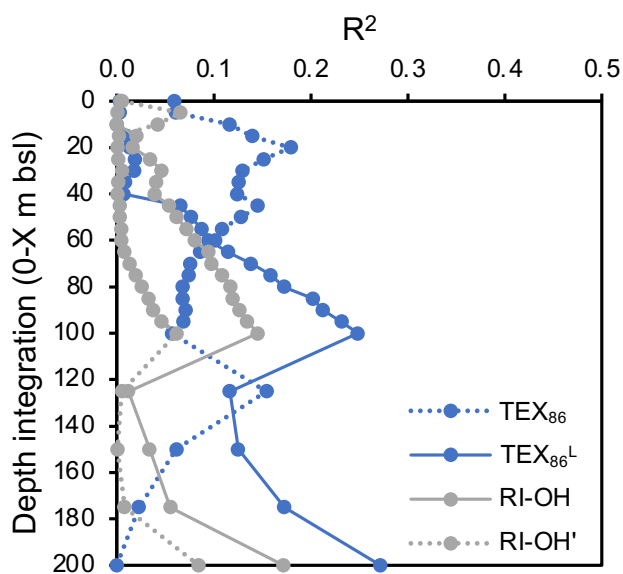


Figure S12: Regression coefficients of GDGT-based temperature indices against WOA18 salinity (annual) at various depth integrations based on this study's dataset ($n=13$). WOA18 data from Zweng et al. (2018).

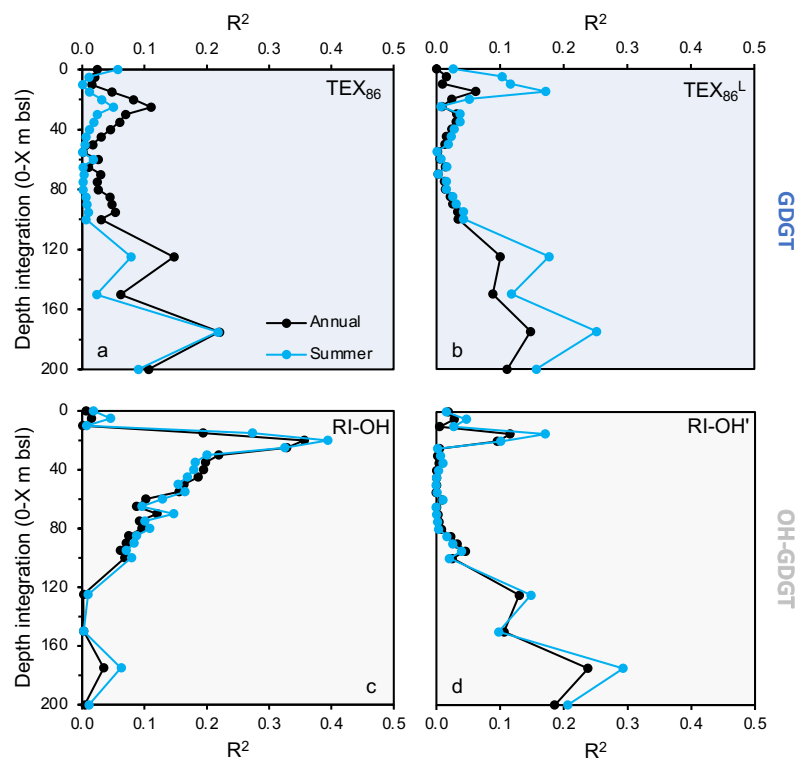


Figure S13: Regression coefficients of GDGT-based temperature indices against WOA18 dissolved oxygen at various depth integrations and seasons based on this study's dataset ($n=13$). a) TEX_{86} , b) TEX_{86}^L , c) RI-OH, and d) RI-OH'. WOA18 data from Garcia et al. (2018a).

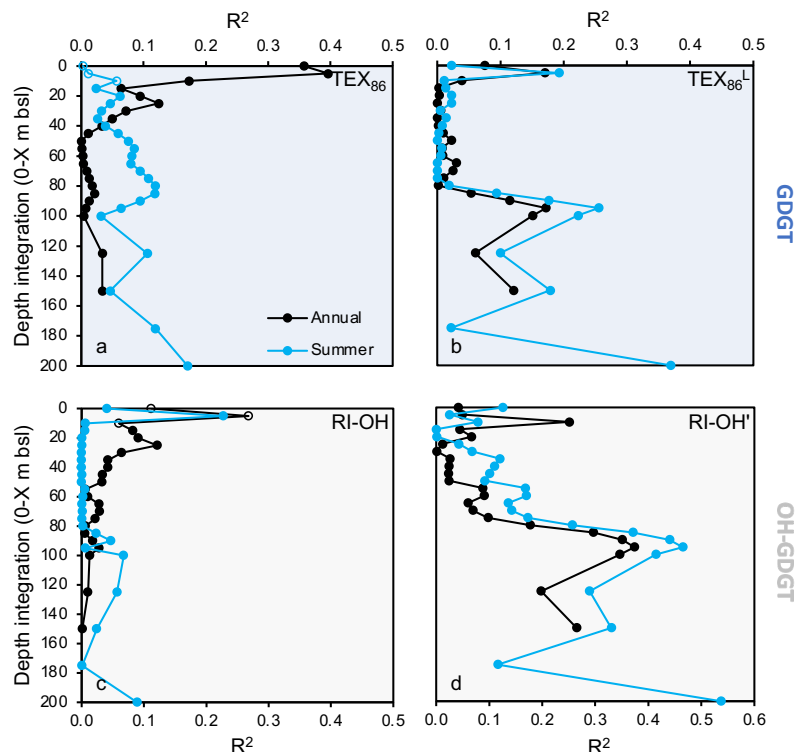


Figure S14: Regression coefficients of GDGT-based temperature indices against WOA18 nitrate at various depth integrations and seasons based on this study's dataset ($n=13$). a) TEX_{86} , b) TEX_{86}^L , c) RI-OH, and d) RI-OH'. WOA18 data from Garcia et al. (2018b).

References

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