Supplementary material

Dataset S1: Dataset containing matrices of the local calibration dataset (n=421) including coordinates, taxa abundances and tested environmental variables (Excel-file). The dataset will be available at PANGAEA with publication.
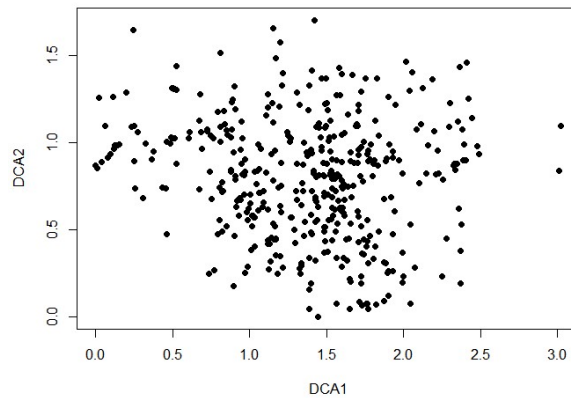
Figure S2: DCA analysis plot for the local dataset.

Script S3: R-Script explaining the variable selection procedure (manual forward selection) extricating independent variables in the local dataset (PDF-file). The script will be available on ZENODO with publication.
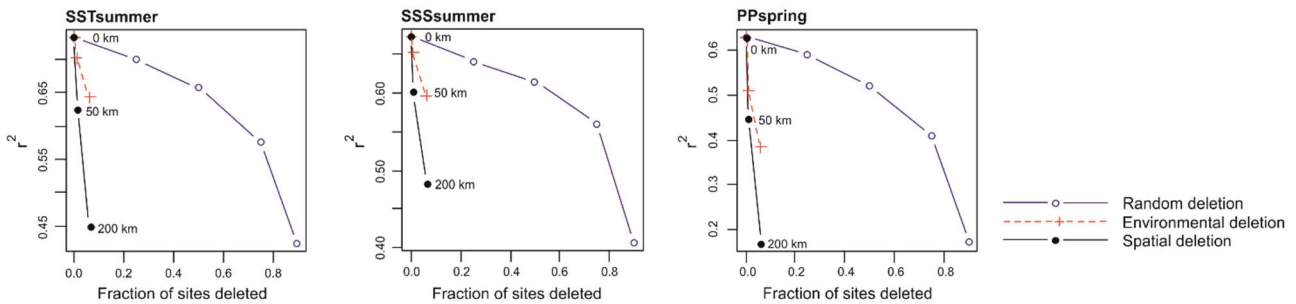
Figure S4: Spatial autocorrelation test. The effect of site deletion on the performance of a test transfer function (leaving-one-out r^2 between observed and predicted values), comparing random site deletion, neighbourhood deletion (testing three distances) and environmental deletion for non-redundant variables. Note that the scale for r^2 is different for each tested variable depending on its performance at the beginning.
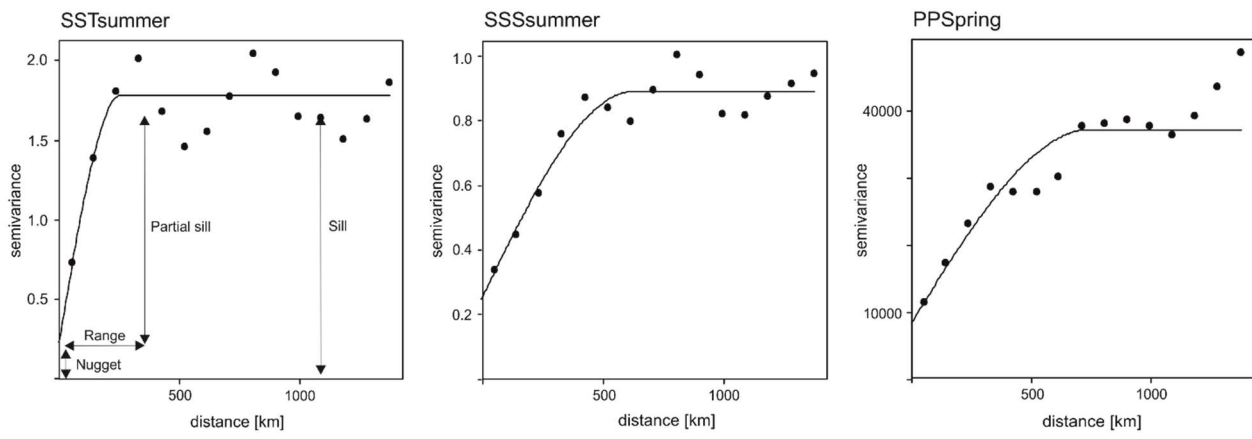
Figure S5: Variogram plots for the estimation of h in the h-block cross-validation.
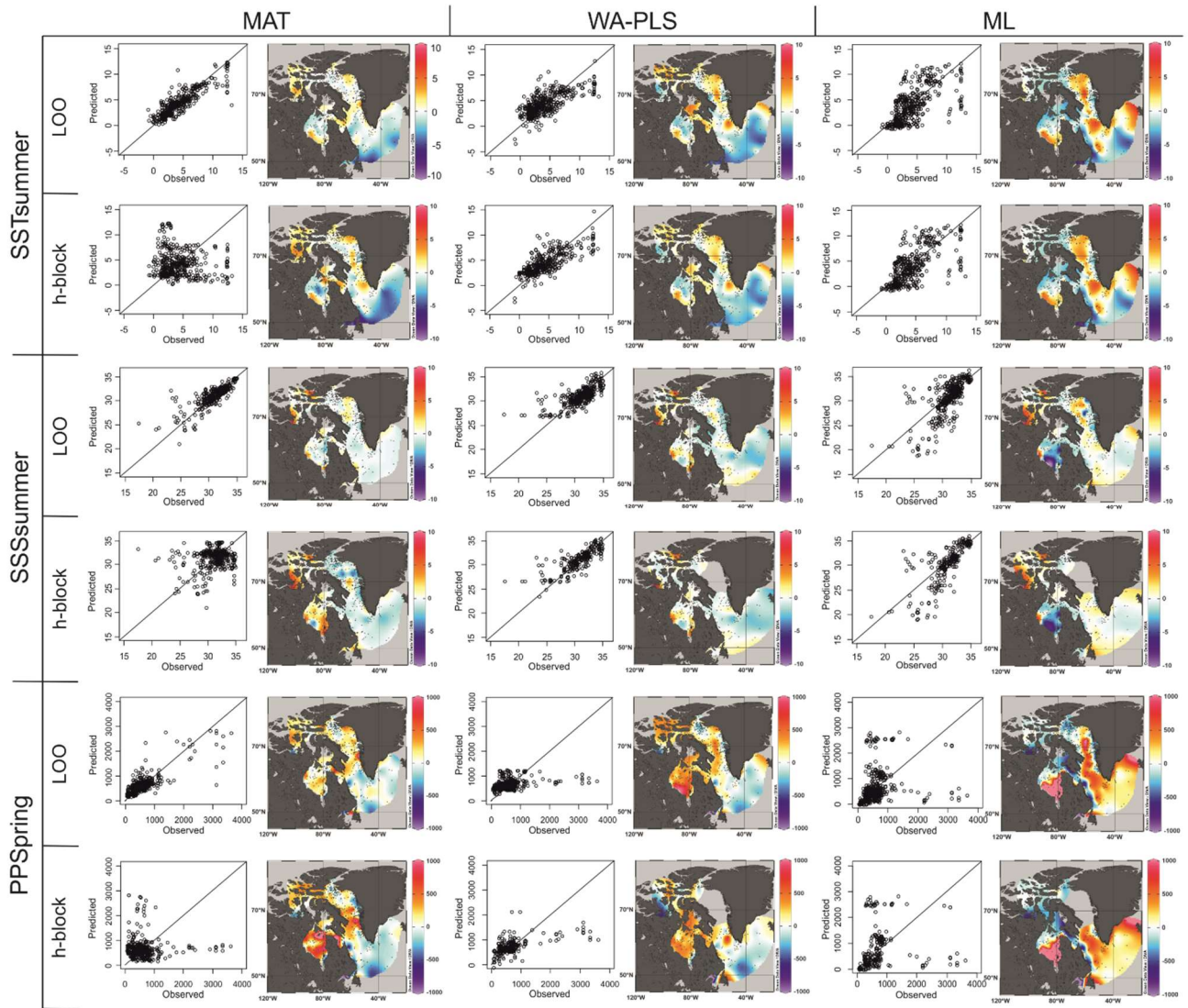
Figure S6: Residuals from leave-one-out and h-block cross-validation for all tested transfer functions shown in cross-plots of predicted vs. observed environmental variables and in maps, indicating overestimation through red colours and underestimation through blue colours. White colour indicates none or little residuals.
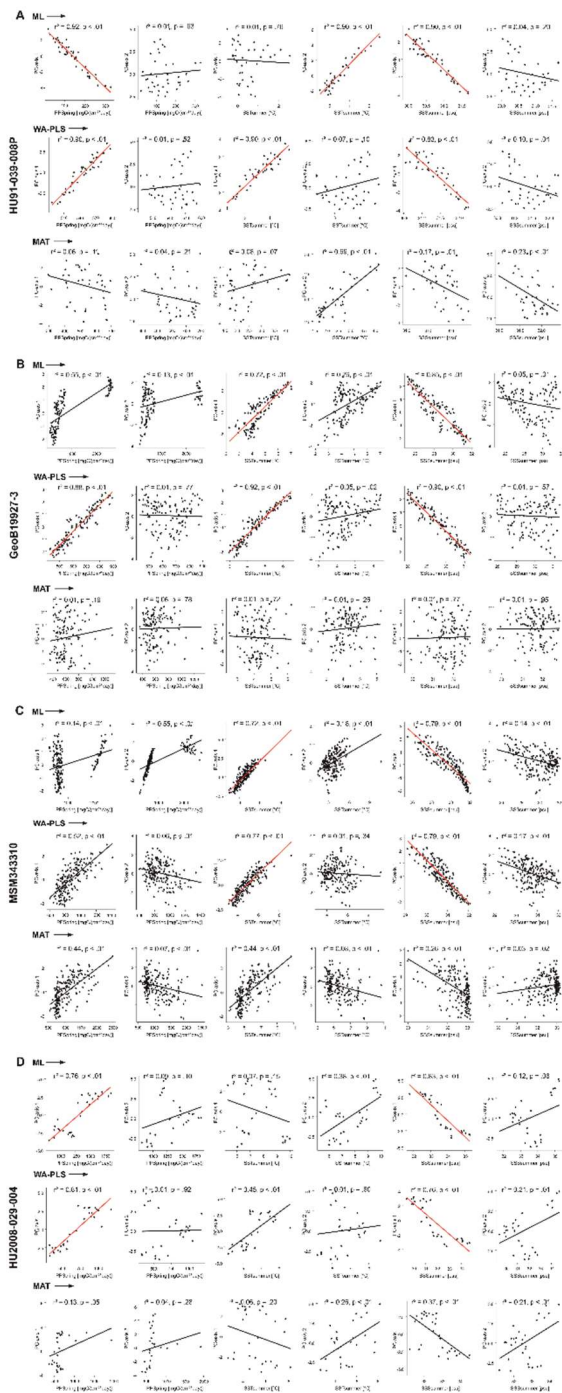
Figure S7: Cross-correlation plots of downcore reconstructions vs PC-axis 1 and PC-axis 2 for all four cores from north to further south. a) HU91-039-008P, b) GeoB19927-3, c) MSM343310 and d) HU2008-029-004. Significant correlations with p ≤ .01 and r^2 ≥ 0.70 with red correlation line.