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Ocean variability and biological changes off N. Iceland over the last millenium.

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Shelf sediments off north Iceland provide exceptional marine archives for investigating high frequency surface ocean variability and associated biological properties. In core MD99-2275 (IMAGES program), we reconstructed surface hydrological parametres using alkenones for SSTs and the IP25 proxy for sea-ice extent in the Polar Front area. We then investigated the links between surface ocean hydrology and phytoplankton communities using sterol and alkenone biomarkers, focusing on the last millenium and the instrumental period.

Phytoplankton sterols are generally more abundant during the LIA than the Medieval Optimum and show decadal- to centenial-scale oscillations which appear to be negatively correlated to SSTs. Biomarker ratios (e.g., brassicasterol vs. alkenones) point to siliceous vs calcareous phytoplankton alternations in relation with surface ocean hydrology. Examination of the proxy records over the instrumental period (last five decades) further supports the observed long-term modifications of phytoplankton community structure reflecting adjustments to dynamical and chemical surface ocean state.