



Analysis of sea ice and phytoplankton biomarkers in marine sediments from the Nordic Seas - a calibration study

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The work presented here is part of the Changing Arctic and SubArctic Environment program (EU CASE) which is an Initial Training Network (ITN) on climate change and marine environment and is an interdisciplinary project focussing on biological proxies. One of these proxies is the sea ice diatom biomarker IP25 which is a highly branched isoprenoid (HBI) alkene synthesised by some Arctic sea-ice diatoms and has been shown to be a specific, stable and sensitive proxy measure of Arctic sea ice when detected in underlying sediments (Belt et al., 2007).

The current study focuses on two key elements: (1) An analytical calibration of IP₂₅ isolated from marine sediments and purified using a range of chromatographic methods was conducted in order to improve the quantification of this biomarker in sediment extracts. (2) Analysis of >30 near-surface sediments from the Nordic Seas was carried out to quantify biomarkers previously suggested as indicators of open-water phytoplankton (brassicasterol) (Müller et al., 2011) and sea-ice (IP₂₅) conditions (Belt et al., 2010). The outcomes of the biomarker analyses were used to make comparisons between proxy data and known sea ice conditions in the study area derived from satellite record over the last 20 years. The results of this study should inform longer timescale reconstructions of sea ice conditions in the Nordic sea in the future.

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