



Sea ice reconstructions in the southwestern Labrador Sea based on a novel biomarker

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Two short sediment cores NE and SE of Newfoundland covering the last ca. 100 years were analysed for IP25, a novel chemical tracer for the presence of seasonal sea ice. Instrumental data (air and sea surface temperatures) and sea ice observations are available for the time period covered by these cores enabling the validation of the sediment proxy record. IP25 has previously been used to produce sea ice reconstructions both in the Canadian Arctic and east of Greenland in the Fram Strait and North Icelandic Shelf area over the last millenia. However, studies enabling the comparison with climate-related modern observations are still required to further establish this highly promising proxy. The results from our short cores show 1) significantly higher IP25 concentrations north of Newfoundland, which is consistent with modern sea-ice observations, 2) a good correlation between IP25 and alkenone-based sea surface temperatures (SSTs) from the NE site 3) an overall good agreement between our proxy data, measured air and SST data, and local and regional sea ice extent. Furthermore, the general trends in the IP25 records can also be correlated to the North Atlantic Oscillation (NAO), with a positive NAO indicating colder conditions and more sea ice in the area. These results support the validity of the late-Holocene IP25 record presented, showing increasing sea ice concentrations starting from ca. 1500 cal. yr BP, with clearly less sea ice during recent times.