



Calibration and application of the IP₂₅ biomarker for Arctic sea ice reconstructions

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The presence of the sea ice diatom biomarker IP₂₅ in Arctic marine sediments has been used in previous studies as a proxy for past spring sea ice occurrence and as an indicator of wider palaeoenvironmental conditions for different regions of the Arctic over various timescales [e.g. 1, 3]. In addition, measurement of IP₂₅ has also been applied as a sea ice origin tracer for studying the transfer of organic carbon through Arctic food-webs [2].

The current study focuses on three main areas: (1) In order to improve on the quantitative analytical aspects of IP₂₅ based research, we present here the results of a large scale extraction, purification and identification procedure for IP₂₅ from marine sediments. This has confirmed the structure of IP₂₅ in sediments and enabled more robust quantitative measurements by gas chromatography – mass spectrometry (GC-MS) to be established. (2) Quantitative measurements of IP₂₅ from a sediment core from Andfjord (continental shelf, Tromsø, Norway) have been determined for the period 6.3 to 14.3 ka BP. The results of this study add significant further information to that reported previously from other biomarker studies for this core (e.g. brassicasterol) [4]. (3) Analytical detection issues (GC-MS) regarding the occurrence of IP₂₅ in other sub-Arctic regions (e.g. East Greenland – North Iceland area) will be presented and discussed with relation to other proxy data (e.g. IRD).

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