



Pleistocene glacial/interglacial contrasts in the Labrador Sea prior and after the Mid-Brunhes transition

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Isotopic, microfaunal and palynological records from the northern (Eirik Ridge) and southern (Orphan Knoll) Labrador Sea -LS- (Eirik Ridge and Orphan Knoll) are used to document paleoceanographic conditions in the basin during a few interglacials from MIS 31, to MIS 5e, with some specific attention to MIS 13, 11 and 5e. Most features, particularly oxygen isotope records in planktics highlight a major difference between the pre Mid-Brunhes (MB) and post-MB intervals (i.e, before MIS 11 and from MIS 11 to MIS 1), with the exception of MIS 7 showing features resembling those of the pre-MB interglacials. In a similar fashion, glacials from MIS 12 and later differ significantly from earlier ones by their more pronounced ^{18}O -enrichments in planktic foraminifers, thus possibly larger continental ice volume. Another feature of interest concerning glacials is found in the relative abundance of reworked palynomorphs, in the Northern Labrador Sea record, during pre-MB glacials (MIS 12 and earlier) and during a short mid-MIS 7 glacial excursion. These reworked microfossils suggest significant ice streaming over Paleozoic outcrops either along the western Scandinavian Ice Sheet margin and/or in the Fram Strait area. Within interglacials, MIS 13 records large amplitude coolings, the presence of continental ice over NE Canada indicated by sporadic detrital carbonate-rich IRD-pulses. Evidence for the persistence of a relatively large interglacial Greenland Ice Sheet is found for post MIS 11 interglacials only. Finally, density conditions in surface water (calculated using paleo-SSTs and paleo-SSs from dinocysts), suggest that if convection with production of Labrador Sea Water (LSW), as observed since ca 7 ka BP, was unlikely during most interglacials (and notably MIS 5e), but very likely during MIS 11, due to relatively high salinity conditions at surface. A conclusion from this overview of the mid- to late Pleistocene glacial vs interglacial stages is that glacials were pre-conditioning factors of subsequent interglacials. This is true for ice/ocean volume (and sea-level) of course, but more critical for the LS in relation to its closely surrounding ice masses and its role with respect to LSW production and contribution to Atlantic Meridional Circulation as a whole.