



## Sea ice extent and subsurface temperatures in the Labrador Sea across Heinrich events during MIS 3

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Heinrich events associated with millennial-scale climate oscillations during the last glacial period are prominent events of ice-sheet collapse, characterized by the dispersal of ice(berg) rafted debris and freshwater across the North Atlantic. Hudson Strait has been suggested as one of the predominant iceberg source regions. One potential mechanism triggering iceberg release invokes cryosphere-ocean interactions, where subsurface warming destabilizes the Laurentide ice sheet. Subsurface warming is facilitated by the expansion of sea ice in the Labrador Sea in combination with a slow down of the Atlantic Meridional Overturning Circulation, which prevents the release and downward mixing of heat in the water column.

Here we present high-resolution reconstructions of sea ice dynamics in the outer Labrador Sea at IODP Site U1302/03 between 30 ka and 60 ka. Sea ice reconstructions are based on a suite of sympagic and pelagic biomarkers, including highly branched isoprenoids and sterols. The results suggest a transition from reduced/seasonal to extended/perennial sea ice conditions preceding the onset of iceberg rafting associated with Heinrich event 3, 4, 5, and 5a by  $\sim 0.9 \pm 0.5$  ka. Ongoing work on the same core and sample material will have to confirm the timing and extent of subsurface warming compared to sea ice advances.