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Response of the Atlantic Meridional Overturning Circulation (AMOC) to a Glacial Inception

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It has long been hypothesized that enhanced high latitude warming may lead to an abrupt slowdown of the Atlantic Meridional Overturning Circulation (AMOC), which in turn would severely impact climate in the Northern hemisphere and beyond. During glacial inceptions the AMOC changes its mode from warm interglacial to glacial conditions. Glacial inceptions therefore provide important case studies that can shed light on the behaviour of the AMOC during abrupt climate transitions that are relevant to future climate scenarios. Here we present a high resolution analysis of surface and deep AMOC behaviour spanning the transition from Marine Isotope Stages 11c to 11a. Sediment core DSDP 610B (53°13.297N, 18°53.213W), located approximately 700 km west of Ireland was specifically chosen for its excellent core recovery and absence of hiatuses during the Quaternary. The preliminary age model for this core suggests that accumulation rates during MIS11 were high, allowing us to assess climate dynamics on multidecadal to centennial timescales. Above the core site, the dominant oceanographic feature is the North Atlantic Current and at 2417 m water depth 610B is influenced by NADW flowing southwards. A combination of sortable silt, planktonic foraminiferal assemblage counts, and stable oxygen isotopes on benthic foraminifera, allows us to shed light on the timing and magnitude of this glacial inception in both surface and deep water components of the AMOC.