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Are Cryosphere-Driven Feedbacks a Requisite for Abrupt Climate Events? (Site U610, DSDP Leg. 94)

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Abrupt climate events are important features of glacial climate scales on centennial and millennial timescales. These events' mechanistic trigger is often ascribed to either ice sheet-related feedback mechanisms or large freshwater pulses. In both cases, amplification occurs when these triggers bear upon the Atlantic Meridional Overturning Circulation (AMOC). However, the focus on glacial climate states in abrupt climate change research has led to an underrepresentation of research into interglacial periods. It thus remains unclear whether high-magnitude climate variability requires large cryosphere-driven feedbacks or whether it can also occur under low ice conditions. Using sediment core DSDP U610B (53°13.297N, 18°53.213W) located in the Rockall Trough, we present a high-resolution analysis of surface and deep water components of the AMOC spanning the transition from Marine Isotope Stage (MIS) 19.3 to 19.1 to test if orbital boundary conditions similar to our current Holocene can accommodate abrupt climate events. Above the core site, the dominant oceanographic feature is the North Atlantic Current and at 2417-m water depth, U610 is influenced by Wyville Thomson Overflow Water flowing southwards. We utilise a multiproxy approach including paired grain size analysis, planktic foraminifera assemblage counts, and ice-rafted debris counts within the same samples allowing us to resolve the timing between both surface and bottom components of the AMOC and their response to abrupt climate events during MIS-19 in the eastern subpolar gyre. We also present for the first time a new splice and composite depth scale for Site U610. Based on preliminary results, rapid shifts in both deep overflow and surface climate characterise this period.