

K'/Ar Provenance Analysis of Bermuda Rise Sediment during Termination I

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The formation of North Atlantic Deep Water (NADW) is an important component of the Atlantic Meridional Overturning Circulation's redistribution of solar heat to the northern latitudes, and is sensitive to salinity perturbations in its source locations. Fresh glacial meltwater lowers the density of seawater, potentially influencing affect the strength and position of the density-driven overturning circulation. During Heinrich Stadial 1, the Laurentide Ice Sheet retreated rapidly from its maximum southeastern extent during the Last Glacial Maximum, sending icebergs and meltwater into the western North Atlantic. The Bermuda Rise is located in the deep western subtropical North Atlantic, where Antarctic Bottom Water mixes with newly formed NADW. Sediment proxy records from the Bermuda Rise have demonstrated that the strength of the NADW varied with abrupt deglacial climate changes (e.g., McManus et al., 2004, Nature). This study seeks to explore the influence of meltwater pulses from the Laurentide and Greenland ice sheets on NADW during the last deglaciation through the lens of the transport and deposition of silt and clay by deep ocean currents. We present a detailed record of fine-grained sediment provenance across the deglaciation using K'/Ar ages from Bermuda Rise Core KNR191-CDH13 (33 41.2 N, 57 36.9 W, 4583 m). The K'/Ar ages are based on measured $^{40}\text{Ar}^*$ (radiogenic product of ^{40}K) and an assumed K concentration of 2% (The $^{40}\text{Ar}^*$ measurements are rapid and simple, allowing the development of high resolution records. Initial results from deglacial sediments on Bermuda Rise display values within the range of K'/Ar ages documented by previous studies of iceberg deposition from the North Atlantic, from ~400 to 1,200 Ma (e.g., Jantschik and Huon, 1992, *Eclogae geol. Helv.*; Hemming et al., 2002, *Chem. Geol.*).