

Did Icebergs Cause the Most Dramatic Climate Changes of the Last Ice Age?

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The Last Ice Age (~ 70 - 19 ka) and deglaciation (~ 18 - 11 ka) were characterized by persistent intervals of abrupt climate changes. These changes occurred episodically, and were associated with fluctuations in patterns of Atlantic meridional overturning current (AMOC), sea surface temperature (SST), and global climate. Prior research postulated that the likely cause of dramatic reductions in AMOC was the repeated onset of mass freshwater influx, most notably by Heinrich Events. These catastrophic discharges of icebergs into the North Atlantic region, approximately every 7,000 – 10,000 years could provide a possible cause of the disruptions in circulation and climate patterns. This study looked in detail at sediment core, KNR 191 – CDH 19 from the Bermuda Rise, in the subtropical region affected by two prominent deep water masses, North Atlantic Deep Water (NADW) and Antarctic Bottom Water (AABW). Drawing parallels between the migration route of icebergs, through the finding of ice-rafted debris (IRD) within the core, and the timing of changes in AMOC, allows for connections to be made regarding the influence of meltwater on the ocean system. The finding of high values of IRD/g before the indication of weak ocean circulation, during a period of cold climate, indicates the important potential role of icebergs in abrupt climate changes and confirms the sensitivity of AMOC to freshwater sources.