



## Arctic Ocean freshwater export events and possible linkages with AMOC weakenings in the last 200 ka

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Deep-sea sediment cores from the Arctic Ocean are excellent archives suitable for the reconstruction of deglacial events on circum-Arctic continents and the associated enhanced export of freshwater to the North Atlantic. Here we present new records from a long large-volume sediment core obtained on the NE Greenland continental margin at 81.2°N where the shelf is particularly narrow. The site is perfectly located to monitor the export of freshwater and ice from the Arctic Ocean to the Greenland Sea using data on ice-rafted debris (IRD) and the stable isotope composition of planktic and benthic foraminifers in the sediments. The records from our new core hold evidence of a number of strong freshwater export events in the last 200 ka. Several events correlate in time with extreme discharges from large lakes which had developed south of the ice sheets on northern Eurasian shelves in MIS 6, 5b and 4. Using published data from the Greenland Sea and the North Atlantic, we can show that freshening events in the Arctic and the Nordic Seas correlate with weakenings of the Atlantic meridional overturning circulation (AMOC). We propose that enhanced Arctic Ocean freshwater export triggered (or contributed to) decreased deepwater renewal in the Greenland Sea and had severe consequences for the strength of the global ocean circulation.

In addition to the Arctic Ocean freshwater events our new records reveal a number of probably minor events of iceberg melting and intermediate water freshening which we associate with the history of continental ice on North Greenland and in particular in the Wandel Sea. We propose that the repeated ice expansion and retreat in this area released dense plumes of fine-grained sediment and low d18O-water which spread along the continental slope. This may have happened in MIS 6, 5d, and 4. For the last 50 ka, our records suggest an ice retreat on North Greenland at 50-40 ka and a stepwise readvance of the ice front at 35-25 ka.