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Atlantic Water advection to the Fram Strait during the last interglacial-glacial period (29,000-16,000 years BP) elucidated from planktic foraminifera and geochemical and stable isotope evidences

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The Fram Strait is one of the main oceanographic connections between the Arctic and the rest of the World Ocean and is hence a key area for palaeoceanographic research. In eastern Fram Strait warm and saline Atlantic Water is transported by the West Spitsbergen Current into the Arctic Ocean. In western Fram Strait the southwards flowing East Greenland Current carries cold and fresher Polar Water and sea-ice to the North Atlantic. The two different water masses and their interaction heavily influence the climatic development of this area. Previous studies from the polar North Atlantic show that during the last glaciation the Atlantic Water frequently reached into the region resulting in short lasting warm intervals characterized by high polar and increased subpolar planktic foraminiferal production. A high resolution, AMS ^{14}C dated, sediment core MSM5/5-712-2 has been investigated with regard to planktic foraminiferal fauna, oxygen and carbon isotopes, ice-rafted debris ($>$1mm) and carbon content (TOC, TC, $CaCO_3$). The investigated core section covers the time period from 29,000 to 16,000 cal. years BP including the coldest period of the last glaciation and part of the deglaciation. The sedimentation rates are 14-40 cm/kyr giving a high average temporal resolution of 26 years per sample. Preliminary results show three marked intervals with high planktic foraminiferal productivity (number of forams/g dry sediment) due to advection of Atlantic Water to the Fram Strait. The oldest (27,900-26,200 cal. years BP) and the youngest (19,500-17,900 cal. years BP) intervals of high productivity correlate well to previously identified high productivity zones from West Svalbard area. In addition, the youngest period compares well to the Heinrich-event 1 in the North Atlantic. The interval of high foraminiferal productivity from 23,900 to 22,600 cal. years BP, between the oldest and the youngest intervals of Atlantic Water advection, has not been previously identified in the Fram Strait. It lasted more than 1200 years and corresponds well to the Heinrich-event 2.