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Late Holocene changes in ocean circulation and climate: multi-proxy evidence from Kongsfjorden, western Svalbard.

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A 260 cm long sediment core spanning the last 5870 years was collected from Kongsfjorden, western Svalbard, in 342 m water depth. Detailed analyses of stable isotopes, benthic foraminifera, geochemical and lithology was performed on the core, and a geochronology based on four AMS radiocarbon dates combined with core top ^{210}Pb chronology. The benthic fauna is dominated by species typical of the Arctic continental margin. Calcareous species of foraminifera, such as *Cassidulina reniforme*, *Elphidium excavatum* and *Nonion labradoricum* dominate the core. High latitude glacial conditions are characterised by low abundances and low diversity of benthic foraminifera, common characteristics displayed by the fauna in the core. Down core variations in the oxygen isotope ratios in the benthic species *Cibicides lobatulus* in Kongsfjordrenna are interpreted to reflect temperature variations with a maximum amplitude of ~ 3 ˚C. A rising sedimentation rate and proxy data indicate increased glaciation from ~ 2500 yrs BP, probably in response to the late Holocene cooling; culminating in two glacial maxima within the late Holocene at $\sim$1800 yrs BP and the most recent corresponding to the 'Little Ice Age' ($\sim$315 yrs BP). These periods are characterised by 1.5-2 ˚C reduction in the bottom water temperatures in Kongsfjordrenna. The fluctuations in the record of glacial conditions are contemporaneous with the Holocene ice-rafting events in the North Atlantic and glacier fluctuations of Northwestern Europe. This implies that late Holocene climate variation in western Svalbard are triggered by circulation changes in the North Atlantic region.