



Salinity and water temperature observations from the inaccessible waters beneath the dense ice mélange and tidewater glacier margins in Greenland obtained using instrumented ringed seals

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Observations obtained by ringed seals (*Pusa hispida*) near tidewater glacier margins in Ilulissat Icefjord and Sermilik Fjord provide a novel platform to examine the otherwise inaccessible waters beneath the dense ice mélange within the first 0–10 km of the calving front – to advance our understanding of the hydrographic conditions of the waters near the outlet glaciers. CTD (Conductivity, Temperature, and Depth) Oceanography SRDL (Satellite Relay Data Logger) instruments were mounted on ringed seals with the aim of continuously measuring water salinity, depth, and the location (coordinates) of the seals. Instruments were mounted in August and September to illustrate the non-summer month's variability. A clear link, for example, in the north and south arms of Ilulissat Icefjord is shown after spikes in ice sheet melt water runoff on salinity changes in the upper water column. Small-amplitude runoff variability during the recession of runoff in late-summer did not create a clear signal in fjord salinity variability. The effect of runoff spikes on fjord salinity is less pronounced near the ice-margin of Jakobshavn Glacier than in the north and south arms. The vertically uneven change in salinity in days after a runoff peak indicate uneven vertical distribution of runoff draining through the glacier margin, where most runoff entered the fjord in the upper 50 m (the amount of englacial runoff decreased from the water surface and downwards). The seal-dive salinity profiles did not capture any signal of englacial freshwater entering the fjord across the grounding line. Even though, the seal observations seems to advance our understanding of hydrographic changes in the inaccessible waters beneath the dense ice mélange at the tide water margins.