features) suggesting that this species might be more tolerant to methane and provide a good proxy for past methane emissions when observed down core. In the smaller size fraction (45–63 μm) there were a set of species in some places (the Amundsen Gulf) that provided evidence of deep Arctic water penetrating to depths as shallow as 150m. The smaller size fraction often had more specimens per 10cc than the 63μm and above fraction but less diversity. There was a fairly even division between the calcareous and agglutinated species which is the fundamental difference between the Arctic and Antarctic where the former has mostly agglutinated forms. Also, because the Mckenzie Shelf has a large surface freshwater component the sedimentation rates are much higher there than the Antarctic which will provide us with higher time resolution records of the Holocene. Our main purpose was to be able to reconstruct the history of sea ice cover in the Holocene. The key to this was obtaining cores and samples where there were sufficient planktonic foraminifers which are sensitive to ice cover changes. In samples deeper than 500m there was a significant percentage of planktonics and where there was large freshwater input, there were tintinnids so that we now have two proxies for ice cover and freshwater (if there is a lot of freshwater, there isn't much ice cover). Hence we will be able to achieve our main goal of reconstructing Holocene ice cover history.

Foraminifers and associated organisms on the present Mackenzie Shelf/Amundsen Basin, Canadian Arctic and comparison to the Antarctic faunas

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As part of the Canadian Arctic Shelf Exchange Study (CASES) over 50 surface locations were sampled for foraminifers for the first time in 40 years. These samples were collected in water depths ranging from 50 to 1100m. The ultimate purpose of the surface samples is to calibrate the faunas to determine paleo-ice cover. Unlike previous studies smaller size fractions (>45>63μm; and above) instead of the usual 63 or 150μm, above fractions were examined. Some species not previously observed here were recorded such as *Elphidiella hannai*, a species commonly found along the British Columbia coast and a series of large agglutinated forms including two Komokiacea species, a group not recorded before anywhere in the Arctic Ocean. One species, *Ammotium cassis*, only occurred near methane seeps (a mud volcano and pingo-like