Paleoenvironmental reconstruction from sediments of Bowdoin fjord, northwestern Greenland

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Evaluating impact of Arctic amplification on sea ice extent and the Greenland ice sheet is seriously important for predicting future environmental change. Calving glaciers that flow directly into the ocean are widely distributed in the north Greenland. In the ocean nearby calving glaciers, obvious seasonal variation results sea ice cover in winter and upwelling of deep water associated with the glacial meltwater in summer. Especially, freshwater plumes in summer season enhance primary production due to entrainment of nutrient-rich deep water and distribute glacial sediments in front of the glacier terminus. The present conditions of marine environment near the glacier terminus has been investigated in recent studies. However, it is necessary to reconstruct the variations in marine and depositional environments near the glacial terminus in the past for more accurate prediction of future environmental changes. In the Arctic regions, only a few researches have been performed on paleoclimate reconstruction from fjord sediments, while ice cores and lake sediment cores have often been used for the same purpose. We collected surface sediments and sediment cores from Bowdoin fjord in northwestern Greenland, which is in front of the carving glacier, in July 2018. In this presentation, we show preliminary results about sedimentation process and marine ecosystem in Bowdoin fjord, which are reconstructed from the sediments.

Keywords: Greenland, glacial sediment, biomarker, palynomorph, primary producer, sediment core

