

Anthropocene Diatom Assemblages and Paleoceanographic Variability along the Alaskan Margin of the Arctic Ocean

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Recent Arctic environmental changes may influence the Northern Hemisphere and global climate, but high-resolution records from the western Arctic remain limited. We analyzed diatom assemblages in two sediment cores collected from the Alaskan Arctic coast: MT2 (152m-water depth; 39cm-length, 0-130yrBP) near the Mackenzie River and BC2 (224m-water depth; 27cm-length, 0-40yrBP) from Barrow Canyon. Samples were taken at every 1cm intervals, processed, and examined using Nomarski DIC microscopy, and diatom concentrations were calculated.

MT2 showed 1.0×10^4 – 1.0×10^5 valves/g-dry sediment and 12 taxa, while BC2 shows 1.0×10^5 – 1.0×10^6 valves/g-dry sediment and 33 taxa. MT2 had higher concentration from AD2020-2000 dominated by cold-water and coastal species, but diatoms were near detection limit below 27cm (before AD1950). BC2 showed one order higher value concentration from AD2020-2000 with similar taxa. Before AD2000, both cores were dominated by cold-water and coastal species. These results suggest persistent sea-ice at MT2 before AD1950 and reduced sea-ice after AD2000.

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