

## **Ocean circulation and land-ocean exchanges off the north eastern Canadian coasts as told by dissolved geochemical tracers**

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Off the northeastern Canadian coasts meet very distinct water masses. Pacific waters enter the Arctic through Bering Strait and meet denser Atlantic waters. The pathways these waters follow within and to exit the Canadian Arctic are still poorly identified. In addition, significant land-ocean chemical exchanges likely occur along the transit of the waters through the shallow Canadian Arctic Archipelago (CAA), but remain to be quantified too. In order to trace the water mass pathways and land-ocean exchanges in these areas, several geochemical parameters have been measured in seawater collected in the Labrador Sea, Baffin Bay, CAA and Canada Basin.

These 4 areas exhibit very contrasted geochemical profiles, especially in neodymium isotopic composition ( $\epsilon_{Nd}$ ), allowing us to clearly observe the distribution of the Pacific and Atlantic waters in the Canadian Arctic and their influence in the western CAA. The Baffin Bay Atlantic water clearly contrasts from the Labrador Sea one, reflecting the lithogenic composition of the surrounding land-masses ( $\epsilon_{Nd} \leq -20$  over the whole water-column in the center of Baffin Bay, down to -27.4 at 200 m depth). Such contrasted signatures clearly indicate element release from the sediments along the slope of Baffin Bay. Same processes are suspected above the ocean floor in the CAA.  $^{230}Th$  and  $^{231}Pa$  concentration profiles suggest increased particle fluxes in the Canada Basin due to enhanced sea-ice retreat. They also highlight active scavenging along the Canada Basin and Baffin Bay margins.

This rich set of geochemical data allow us to discriminate water mass transport and land-ocean fluxes in this very complex area.