

**Canada's Ice Island: a platform for the characterization of the Arctic Ocean through stable isotope studies**

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Canada's Ice Island, presently located off Ellef Rignes Island in the Arctic Ocean, offers earth scientists a unique opportunity for research in several fields. The research group that I am associated with is attempting to characterize the Arctic

Ocean through organic geochemical and isotopic studies from the Ice Island.

Studies of the organic content of sedimentary cores from the Arctic Ocean show increases in both the C and N concentrations

with depth from 0.07‰ N and 0.6‰ C near the surface, to a maximum of 0.13‰ N and 2.5‰ C at the bottom of the cores (80 cm). An isotopic depletion downcore is seen, with  $\delta^{15}\text{N}$  decreasing from +6‰ to +4‰, and  $\delta^{13}\text{C}$  decreasing from -23‰ to -24.5‰. These data indicate that a terrestrially sourced material has been overlain by a marine-looking deposit. These sequences are related to the most recent glacial retreat in the area.

Physical water mass studies have delineated two primary water masses, an upper photosynthetic-related layer (high dis-

solved oxygen content of 10-12 mg/l and a depleted isotopic oxygen value ranging from -1.5‰ to -3.5‰, and a lower respiration-related layer (high DIC concentration of 1.8-2 mM/kg and a depleted isotopic carbon value decreasing from 1‰ to 0‰ with depth).

These studies help to establish the relationship of the water masses to the cycling of organic material within the water column, and also help interpret the paleohistory of the area.