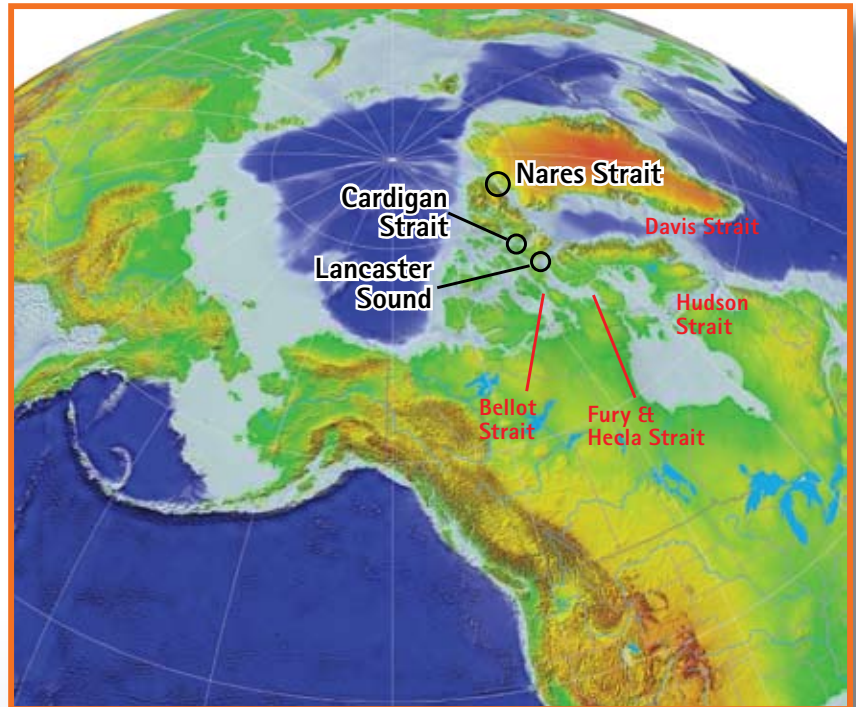




Canadian Archipelago Through-flow Study

The Canadian Archipelago Through-flow (CAT) study is focused on seawater and pack ice flowing through the Canadian Archipelago. Ocean currents transport a mixture of salty ocean water and fresh water. The fresh water comes from rivers and snowfall. The low salinity mixture is stored at the surface of the Arctic Ocean as it

waits to 'leave' – and circulate throughout the World Ocean . It forms a 'cap' of lower density that does not mix well with the saltier deeper water. Many of the impacts of stored fresh water on Arctic climate, sea ice and the ecosystem are consequences of this reduced mixing of the upper ocean.



Fresh water in the Arctic Ocean:

- Protects sea ice from melting.
- Influences the supply of nutrients feeding plankton in the thin sunlit layer near the sea surface.

Archipelago through-flow draws fresh water from the Arctic Ocean. As this flow changes, the Arctic store of fresh water increases or decreases, with consequences for ecosystems and sea ice.

Arctic currents deliver freshened seawater to the western Atlantic Ocean, where its impact on global ocean circulation can be large.

In the CAT Study we will install instruments on sub-sea moorings across three key gateways. These instruments will measure ocean currents, temperature, salinity, and ice-drift. When they are recovered after two years, the recorded data will be used to study the changing movements of water and ice.

A warmer global climate may deliver much more fresh water to the Arctic and create larger out-flows. This research will determine impacts on the Arctic climate and marine ecosystems. Changes in the Arctic have far-reaching global consequences that need to be understood.

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