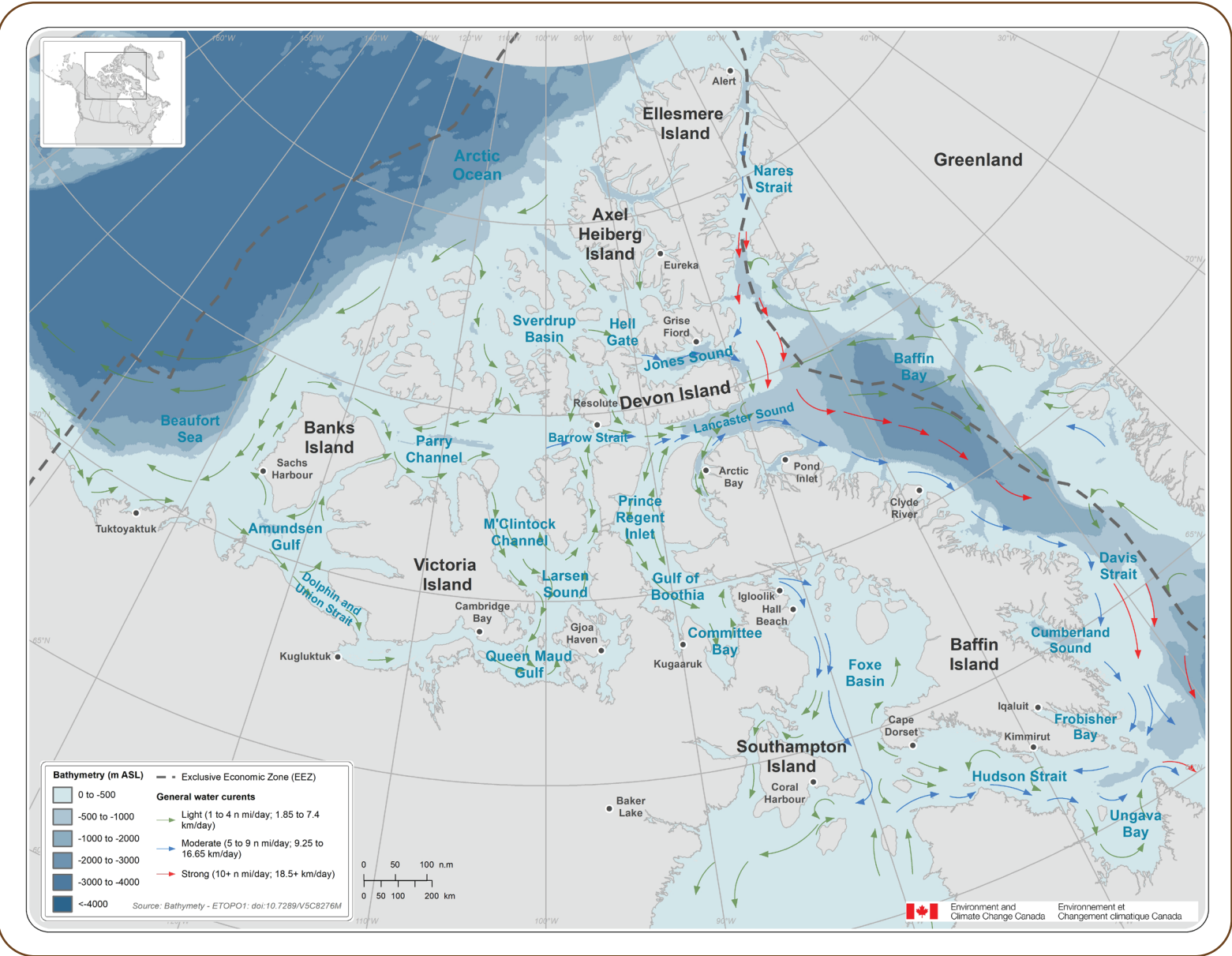


Factors influencing sea ice in Canadian northern waters

There are various factors influencing ice in Canadian northern waters. These factors are as follows:

- Solar energy and albedo
  - Air temperature
  - Water depth, water temperature, and upwelling
- Water salinity
  - Currents
  - Winds
  - Waves and tides (vertical displacement)

To learn more about these factors visit: [www.canada.ca/en/environment-climate-change/services/ice-forecasts-observations/latest-conditions/climatology/ice-climate-normals/northern-canadian-waters.html](http://www.canada.ca/en/environment-climate-change/services/ice-forecasts-observations/latest-conditions/climatology/ice-climate-normals/northern-canadian-waters.html)



Beaufort Sea and Amundsen Gulf

**Median shipping season:** South of the main Arctic pack: end July to mid-October; Amundsen Gulf: mid-July to late October; Elsewhere: not applicable.

**Old ice:** Present year round, primarily within the main ice pack in the Beaufort Sea, up to 4.5 m thick, continuously circulates with currents and winds.

**Special ice Features:** The main Arctic ice pack (a mix of old ice and first year ice) generally reaches to within 200 km north of mainland coast. South of this pack is a zone of predominantly first year ice in winter (fast along the coast and mobile offshore) and predominantly open water in late summer. Breakup or melt in this zone is aided in early summer by southerly winds, which create an initial flaw lead between the coastal fast ice and the mobile pack ice by mid-July. In Amundsen Gulf, in winter, the position of the leading western edge of the consolidated ice can vary considerably from year to year. In extreme years, it can be located as far west as the southern tip of Banks Island or as far east as the entrance to Dolphin and Union Strait. During easterly wind events, a polynya typically develops between this fast ice edge and the mobile Beaufort pack.

Baffin Bay and Davis Strait  
north of 60°N

**Median shipping season:** Davis Strait and Baffin Bay (east of 60°W): end June to start December; Western Davis: late July to late November; Western Baffin Bay: late July to late October.

**Old ice:** Old ice from the Arctic Ocean drifts into Baffin Bay and Davis Strait via Nares Strait, mainly during the early winter and early summer months (the influx is blocked in winter when ice in Nares Strait is consolidated). Old ice may become the predominant ice type in the early summer as the thinner first year ice melts first.

**Special ice Features:** Icebergs circulate the region with the currents, drifting northwards along the Greenland coast and southwards along the Baffin coast; in winter, in northern Baffin Bay, north winds and currents create a large polynya south of the Nares Strait fast ice edge. Large ocean salinity anomalies periodically propagating into Davis Strait and the Labrador Sea have been correlated with significantly increased winter ice extents.

Canadian Arctic Archipelago  
south of Parry Channel

**Median shipping season:** Amundsen to Queen Maud Gulfs: end July to mid-October; Larsen Sound, Peel Sound, and Gulf of Boothia: late August to end September; Elsewhere: not applicable.

**Old ice:** Present year round, mainly in straits and sounds leading directly southwards from Parry Channel and locally in the Gulf of Boothia. Traces elsewhere.

**Special ice Features:** Shallow water depths, narrow channels and extreme cold mean that ice becomes consolidated everywhere in winter (shore to shore fast ice), except in central Gulf of Boothia where the ice remains mobile most years. In summer, old ice drifting into Larsen Sound and straits south of it (mainly from M'Clintock Channel) can create a choke point, hindering navigation through the main southern Northwest Passage routes.

Canadian Arctic Archipelago  
Parry Channel and northwards

**Median shipping season:** Lancaster Sound: late June to start October; Barrow Strait and Jones Sound: early to mid-August to late September; Eastern Norwegian Bay and Eureka Sound: early September only; Elsewhere: not applicable.

**Old ice:** Present year round, drifting into Sverdrup Basin, western Parry Channel and Nares Strait with the currents from the Arctic Ocean; also forming locally in Sverdrup Basin and northwards.

**Special ice Features:** Shallow water depths, narrow channels and extreme cold mean that winter ice becomes consolidated (shore-to-shore fast ice) everywhere. Exceptions are Lancaster and Jones Sounds where water is deeper and where the fast ice extent can be highly variable from year to year. Strong currents leading through Hell Gate from Sverdrup Basin to Jones Sound result in a large persistent polynya in this strait. Iceberg and ice island intrusions from Nares Strait and northern Baffin Bay into Lancaster Sound are common. Ice Islands and icebergs from northern Ellesmere Island occasionally drift into Sverdrup Basin.

\* "Median Shipping Season" as defined here corresponds with median ice concentrations <4/10 (i.e. very open drift, open water or ice free conditions)