Environment and Climate Change Canada | Environnement et Changement climatique Canada

# Seasonal Summary

## North American Arctic Waters
Spring 2017

By

Canadian Ice Service
Le service canadien des glaces

Canada

# Foxe Basin, Hudson Bay, Davis Strait and Labrador Coast

## End of Winter and Spring Ice Conditions

At the end of January, medium first-year ice covered Foxe Basin (figure 3) and northern Davis Strait while thin first-year ice covered Hudson Bay, Hudson Strait, southern Davis Strait and the Labrador coast (figure 1). A trace of old ice was embedded in the ice pack in northern Davis Strait. Thinner ice was present in Cumberland Sound, Frobisher Bay, and northwestern Hudson Bay and in James Bay, and elsewhere along parts of the coast. Ice thickened to medium first-year in Hudson Bay, Hudson Strait, southern Davis Strait and the Labrador coast during February. Thick first-year ice became predominant in Foxe Basin and Davis Strait during March and over central Hudson Bay and Hudson Strait and northern Labrador coast during April.

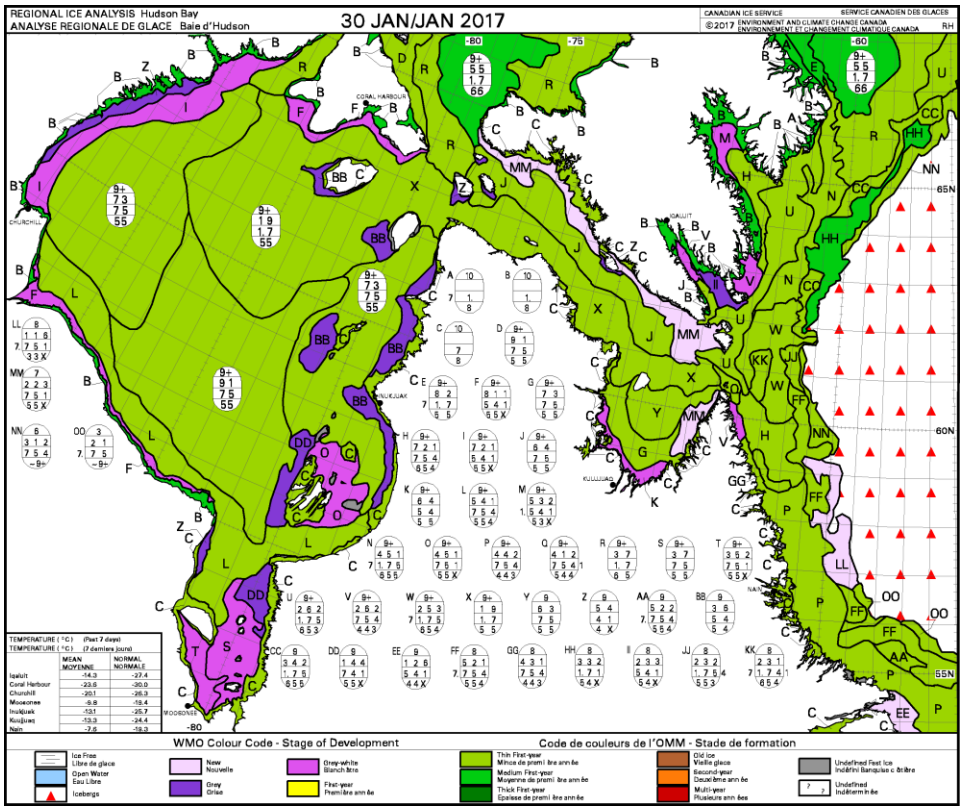


**Figure 1:** Ice stage of development analysis for the Hudson Bay area in late January 2017.

Throughout the winter, ice extent along the Labrador coast and Davis Strait was less than normal however by spring the ice extent was greater than normal, especially in Davis Strait and northern Labrador coast.

Several coastal leads began to form in the Hudson Bay area at the beginning of May. By the end of the month, an area of open water was located over northwestern Hudson Bay as well as part of eastern Hudson Bay. Large areas of open water were present in James Bay. Notable areas of bergy water were observed in northern Hudson Strait and Cumberland Sound.

Ice break-up was generally 2-3 weeks earlier than climatology (1981-2010) over the Hudson Bay area. However the ice extent along the Davis Strait and Labrador coast was 2-3 weeks later than normal (figure 2).

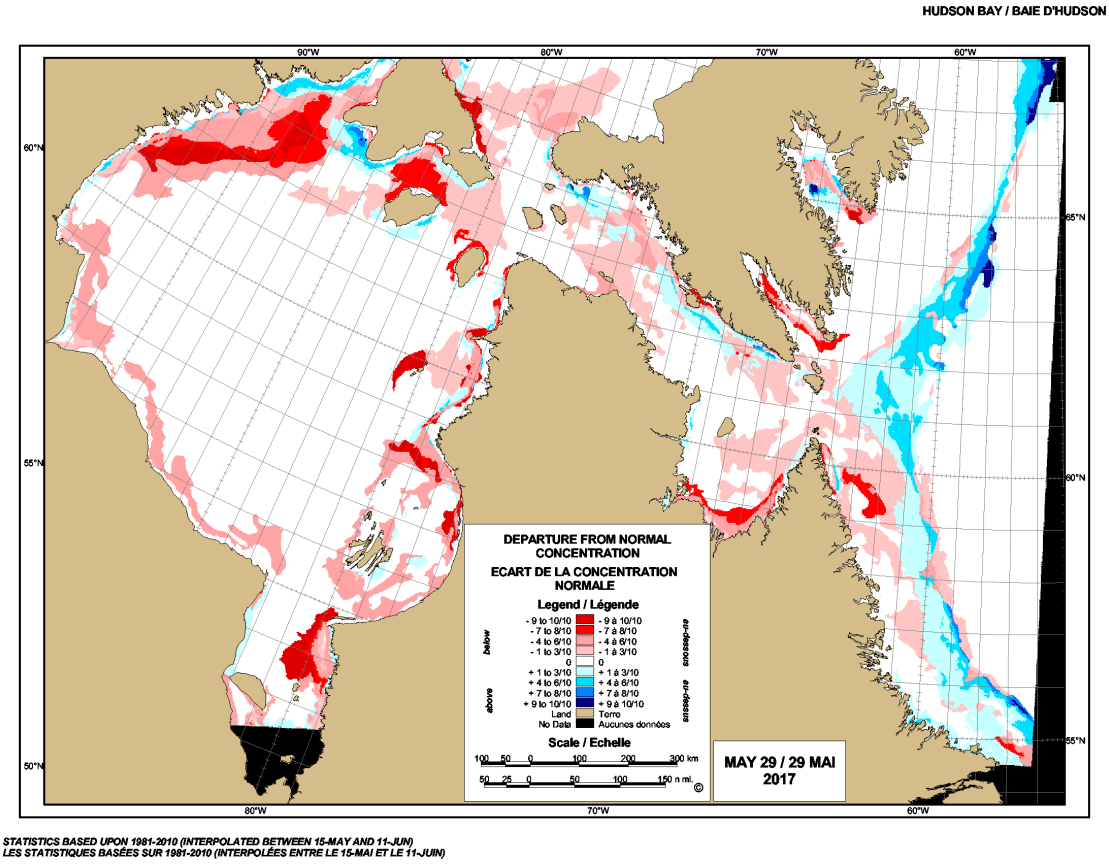


**Figure 2:** Departure from normal ice concentration for the Hudson Bay area at the end of May 2017.

**Table 1:** End of April freezing degree days (FDD) and May temperatures for the Hudson Bay area.

| Station | Actual end of April FDD | Median end of April FDD (1981-2010) | Percent of normal FDD | May average temperatures (°C) | May departure from normal (°C) |
|---|---|---|---|---|---|
| Nain | 2103 | 2254 | 93 | 0.9 | -0.1 |
| Iqaluit | 3681 | 4019 | 92 | -2.4 | -4.4 |
| Kuujjuaq | 2937 | 3187 | 92 | 2.1 | 1.9 |
| Inukjuak | 2855 | 3316 | 86 | -0.4 | 1.4 |
| Cape Dorset | 3060 | 3424 | 89 | -3.5 | 1.5 |
| Churchill | 3079 | 3638 | 85 | -0.7 | 0.0 |
| Hall Beach | 4571 | 5229 | 87 | -6.5 | 2.6 |

# Eastern and Northern Arctic

## End of Winter and Spring Ice Conditions

At the end of January, predominantly medium first-year ice including up to one tenth of old ice covered most of Baffin Bay except for thinner ice near Disko Island and in the extreme northwestern section of Baffin Bay (figure 3). Medium first-year ice with a trace of old ice in Prince Regent Inlet to Committee Bay at the end of February. Medium first-year ice with a trace of old ice present in Western Baffin Bay, Lancaster Sound thickened to thick first-year during the first half of March. Consolidated ice was present along the Baffin Island coast, Eclipse Sound, Admiralty Inlet, and the rest of the High Arctic. High concentrations of old ice were observed in Lancaster Sound, Queen Basin, and in Norwegian Bay. Several bands of up to 3 tenths of old ice were present near the central section of Baffin Bay. Concentrations of old ice were slightly greater than normal in Baffin Bay, Prince Regent Inlet and Committee Bay with greater than normal norther of Cornwallis Island and parts of the southern portion of the Queen Elizabeth Islands. Concentrations were less than normal old ice in Nares Strait, in the northwestern portion of the Queen Elizabeth Islands and Committee Bay.

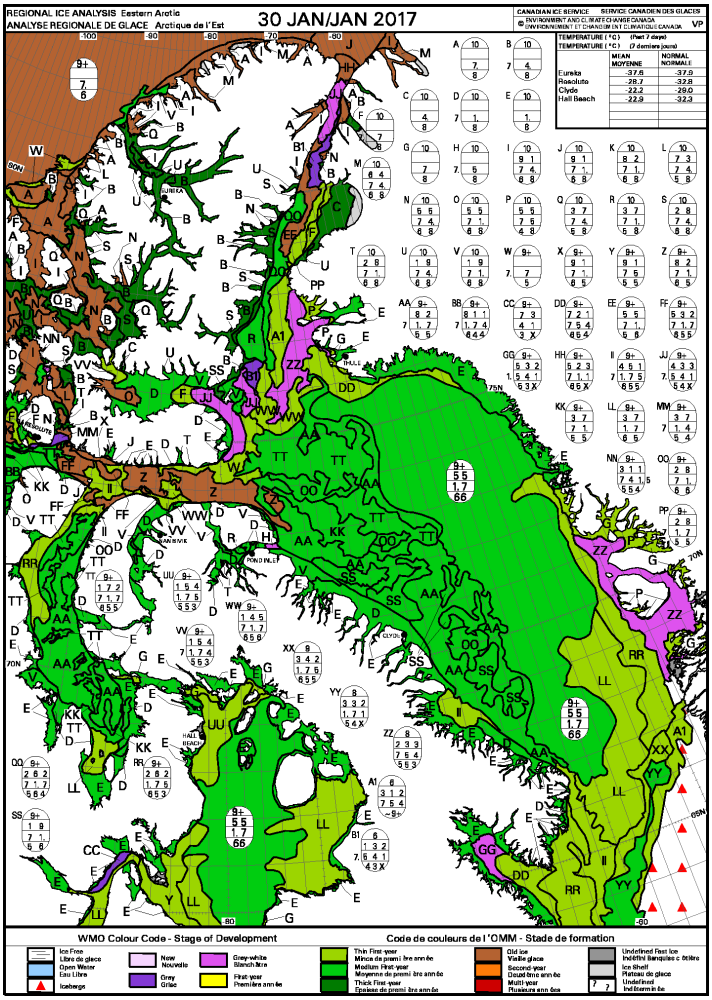


**Figure 3**: Ice stage of development analysis for the Eastern Arctic area in late January 2017.

By the middle of March, medium first-year ice consolidated over eastern Barrow Strait and the extreme western part of Lancaster Sound. Throughout the month, areas of relatively thinner ice persisted over western Lancaster Sound due to the continuous outflow of ice from this area.

By mid-April, medium first-year ice present over eastern and northern Baffin Bay gradually thickened to thick first-year ice.
Near the end of the month, periods of strong northwesterly winds initiated the break-up of the pack ice in the extreme northern section of Baffin Bay as well as western Lancaster Sound.

The break-up gradually continued throughout the month of May. The reduced ice extent over eastern Baffin Bay extended northward from Disko Island along the

Greenland coast. However the ice edge in Davis Strait was melting at a slower pace during the same period. During the second half of the month, periods of strong northwesterly winds accelerated the destruction of the ice. Near the end of the month, large sections of bergy water dominated over northern Baffin Bay.

Ice melt was generally 2-3 weeks earlier than climatology (1981-2010) over the region, but locally 4-5 weeks earlier than normal over northern Baffin Bay (figure 4). The exception was along the ice edge in northern Davis and southern Baffin Bay where conditions were 1-2 weeks later that normal due to colder than usual temperatures in the area

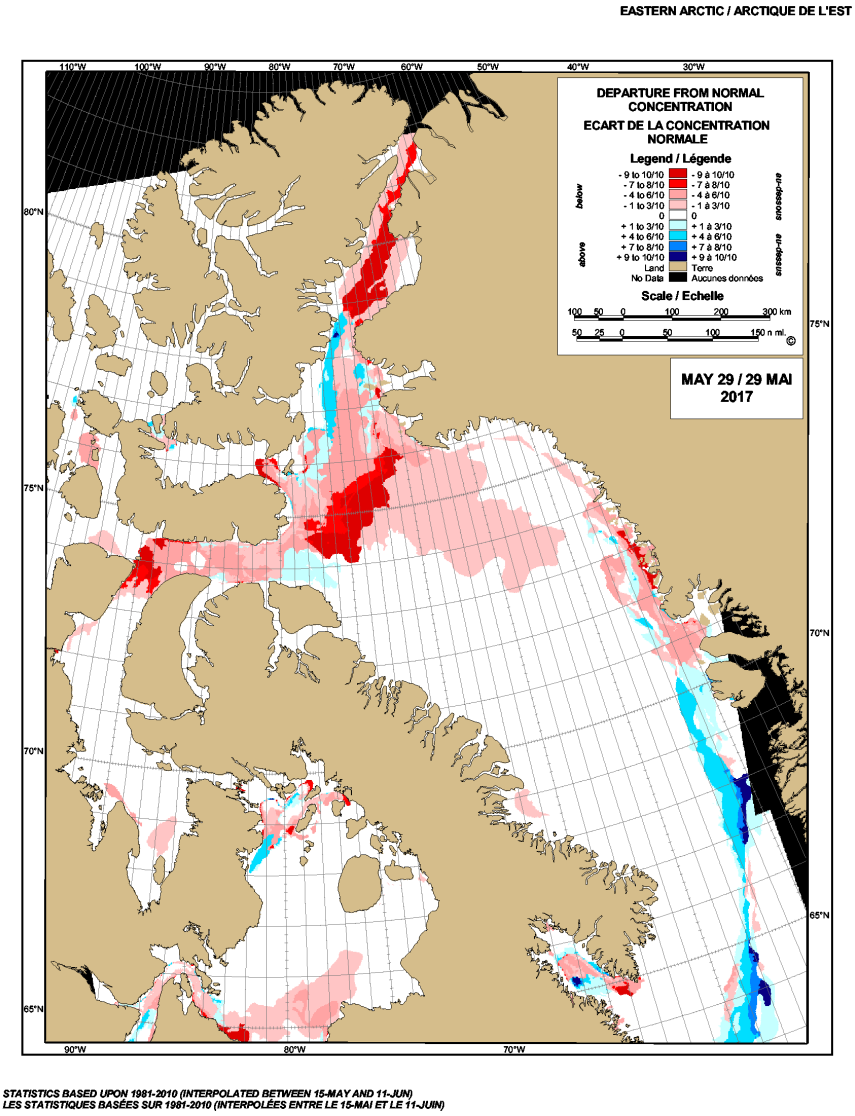


**Figure 4**: Departure from normal ice concentration for the Eastern Arctic area at the end of May 2017**.**

**Table 1**: End of April freezing degree days (FDD) and May temperatures for the Eastern Arctic area**.**

| Station | Actual end of April FDD | Median end of April FDD (1981-2010) | Percent of normal FDD | May average temperatures (°C) | May departure from normal (°C) |
|---|---|---|---|---|---|
| Clyde | 4055 | 4678 | 87 | -7.4 | 0.8 |
| Pond Inlet | 4803 | 5433 | 88 | -6.2 | 3.0 |
| Resolute | 5026 | 5796 | 87 | -8.4 | 2.4 |
| Eureka | 6215 | 7131 | 87 | -10.3 | 0.7 |

# Western and Central Arctic

## End of Winter and Spring Ice Conditions

At the end of January medium first-year ice was present over the southern Beaufort Sea. Over the northern Beaufort Sea, mostly medium first-year ice with some thick lake ice, which is very unusual. Normally the area should be covered with mostly old ice. The areas with predominantly old ice was located along the Queen Elizabath Islands north of 74ºN ice dominated up to 75°N then became predominantly old ice in the Arctic Ocean (figure 6). Consolidated medium first-year ice was present in shallow waters along the mainland coast in the Beaufort Sea, along the shipping route from Dolphin and Union Strait to Taloyoak, and also in the central Arctic south of 75 °N. Consolidated old and thick-first year ice prevailed over Queen Elizabeth Islands. Areas of high concentrations of old ice were present in eastern Queen Maud Gulf, southern Larsen Sound, northern M'Clintock Channel, southern and eastern Viscount Melville Sound, and M'Clure Strait.

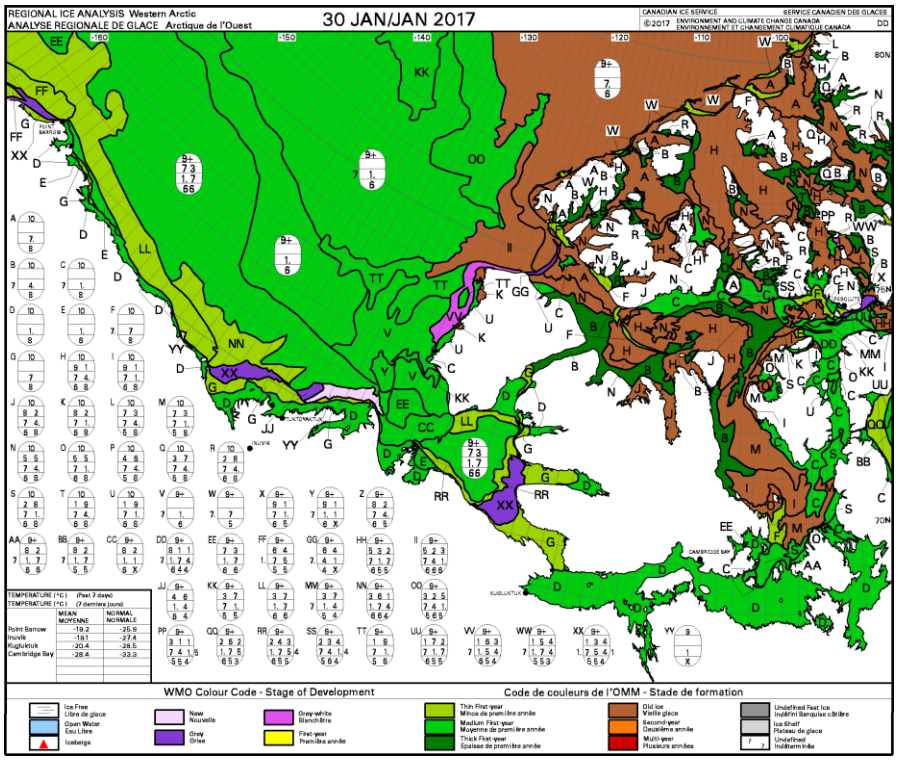


**Figure 5:** Ice stage of development analysis for the Western Arctic area in late January 2017.

Ice thickened to thick-first year ice in the archipelago during the first half of February. During this time, medium fist-year ice consolidated in Amundsen Gulf. Over the southern Beaufort Sea, ice thickened to thick first-year during the first half of March and over Amundsen Gulf at the beginning of April.

During the last week of April, a combination of persistent easterly winds and warmer than normal temperature caused an early break-up of the ice in the southern Beaufort Sea. The break-up continued throughout May, and by the end of the month open water dominated the southern Beaufort Sea (figure 7), conditions not normally seen until August.

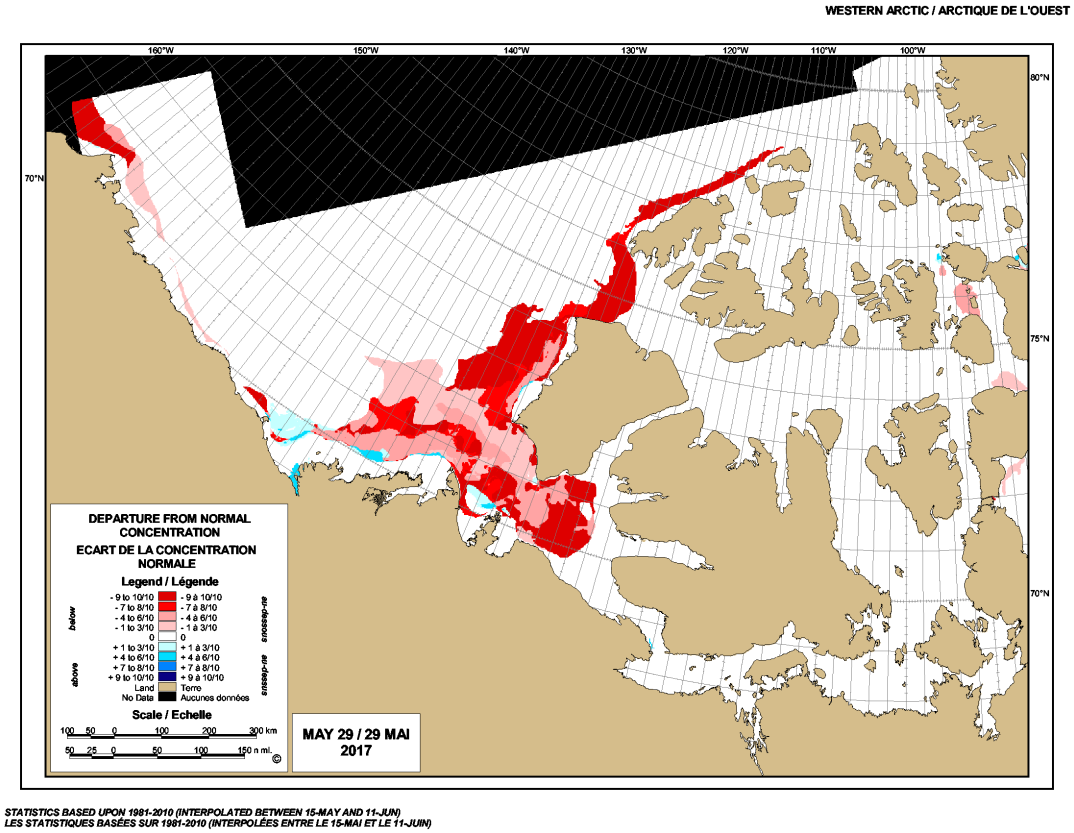


**Figure 6:** Departure from normal ice concentration for the Western Arctic area at the end of May 2017.

Ice melt over the Western Arctic at the end of May was 7-8 weeks earlier than climatology (1981-2010), setting a new record of low ice extent over the area for the period (figure 8).

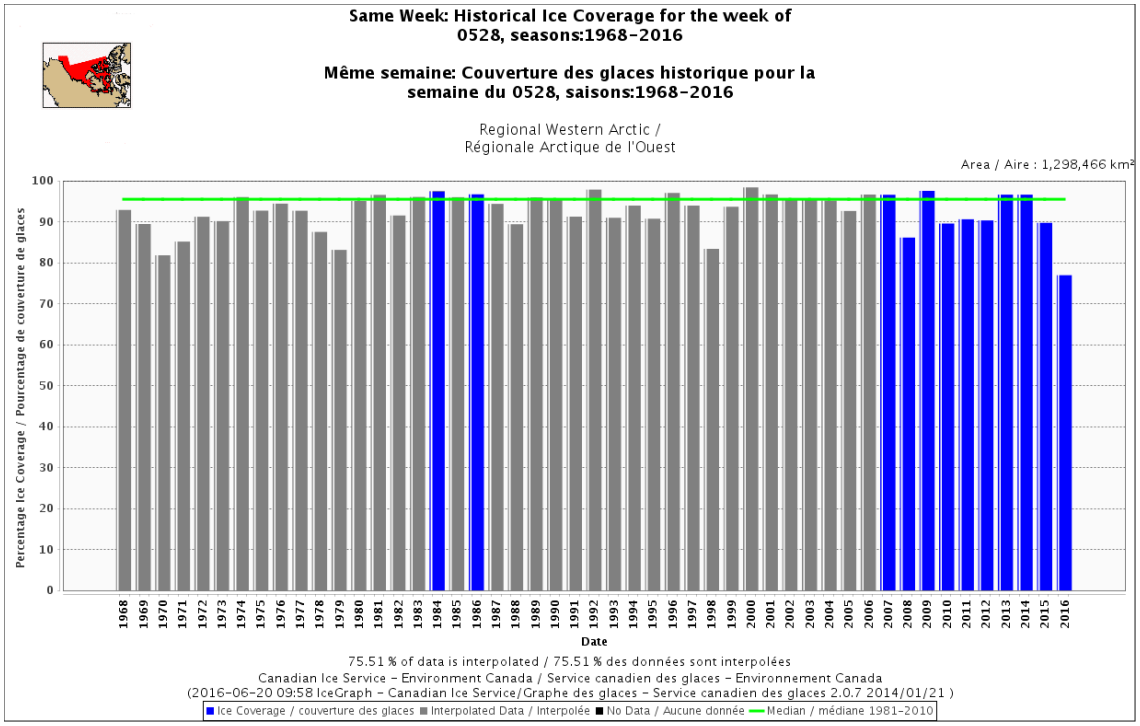


**Figure 7**: Comparison of historical ice coverage in the Western Arctic area at the end of May.

**Table 2**: End of April freezing degree days and May temperatures (FDD= Freezing Degree Days).

| Station | Actual end of April FDD | Median end of April FDD (1981-2010) | Percent of normal FDD | May average temperatures (°C) | May departure from normal (°C) |
|---|---|---|---|---|---|
| Mould Bay | 5476 | 6148 | 89 | -8.4 | 2.5 |
| Cambridge Bay | 4907 | 5513 | 89 | -6.6 | 2.5 |
| Kugluktuk | 4050 | 4598 | 88 | -2.8 | 2.2 |
| Tuktoyaktuk | 3992 | 4271 | 93 | -0.1 | 4.1 |