Environment and Climate Change Canada
Environnement et Changement climatique Canada

Seasonal Summary

North American Arctic Waters

Spring 2020

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, mostly medium first-year ice covered Foxe Basin and northern Davis Strait (figure 1). As for Hudson Bay, mostly thin and medium first-year ice covered a large portion of the bay except for mostly grey-white ice in the northwestern section. Mainly thin first-year ice covered a large part of Hudson Strait. Meanwhile, the northern portion of the Labrador coast area had a mix of thin first-year and grey-white ice except grey and grey-white ice near the coast. At the same time, the central and southern part of the Labrador coast area had mostly grey-white ice except grey and grey-white ice with a trace of thin first-year ice near the shore. Embedded in the pack ice in northern Davis Strait, just east of the Cumberland Peninsula, was a trace of old ice. Mostly grey-white ice with some thin first-year ice was present in Cumberland Sound and Frobisher Bay.

By mid-February, the ice in most of Hudson Bay, Hudson Strait and Davis Strait thickened to medium first-year ice except along the northwestern part of Hudson Bay, part of the southern coast of Baffin Island and most of the Labrador coast where mostly grey-white ice and thin first-year ice prevailed.

Ice became predominantly thick first-year in most of Foxe Basin and parts of Davis Strait during the latter part of March and spread over central Hudson Bay, Hudson Strait and the northern Labrador coast area by the first week of May. The leading edge of old ice reached the southern Labrador Coast by the beginning of May.

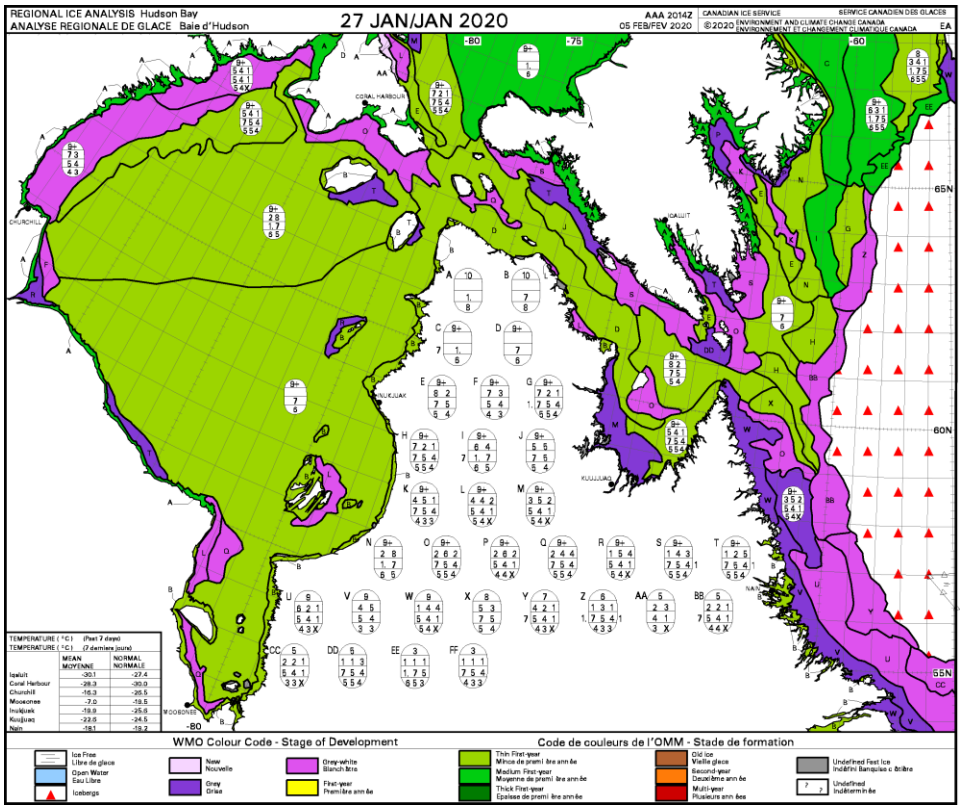

Figure 1: Ice stage of development analysis for the Hudson Bay area in late January 2020.

For almost the entire winter, the ice concentration and extent along the ice edge from Davis Strait to Labrador Sea were less than normal.

Areas of bergy water began to emerge in Hudson Strait during the last week of April and continued to spread during the month of May. Several coastal leads began to form in the Hudson Bay area after mid-May. On June 1st, an area of open water was located over northwestern Hudson Bay. Some small areas of open water were also present in James Bay as well as parts of the east coast Hudson Bay. The ice extent along the ice edge in Davis Strait and the Labrador Coast continued to be less than normal on June 1st.

Ice break-up was generally 1-2 weeks earlier than climatology (1981-2010) over northwestern Hudson Bay and Davis Strait, and about 3-4 weeks earlier than normal in Hudson Strait, parts of Ungava Bay and most of the Labrador coast (figure 2).

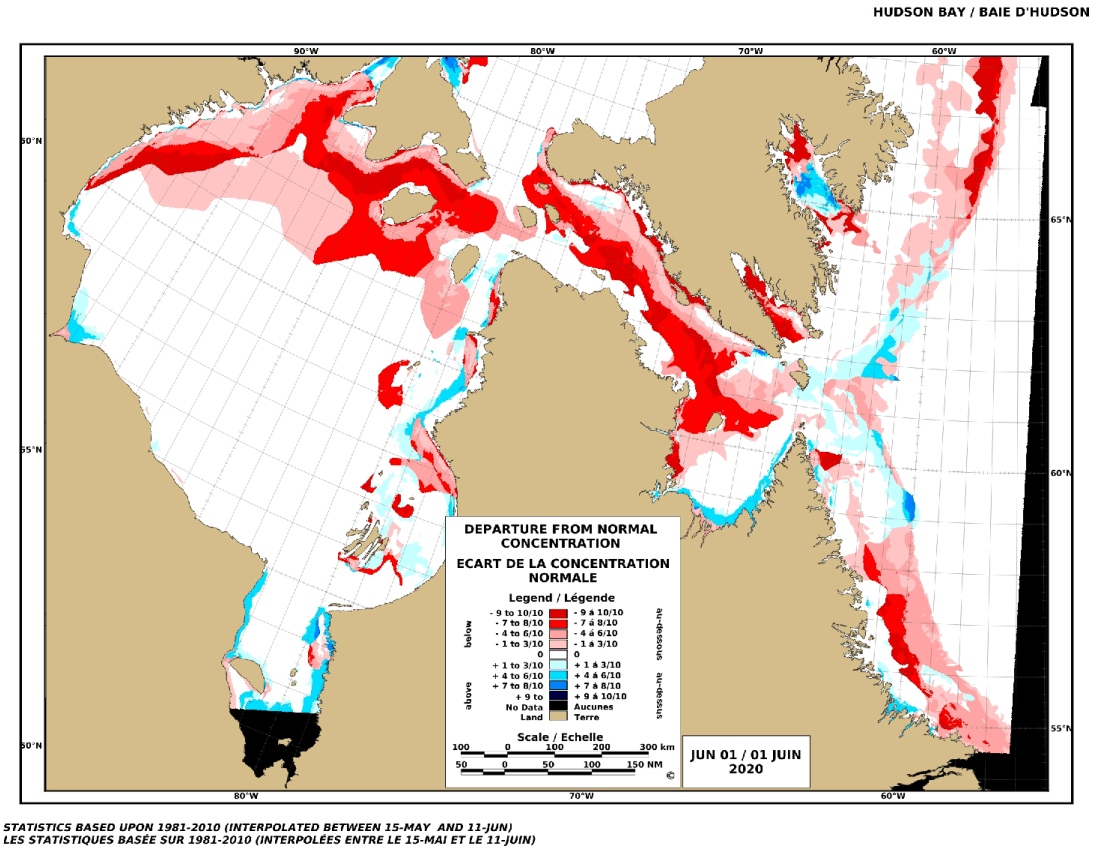

Figure 2: Departure from normal ice concentration for the Hudson Bay area on June 1st, 2020.

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	1937	2254	86	1.8	0.8
Iqaluit	3382	4019	84	-3.3	1.1
Kuujjuaq	2760	3188	87	-0.8	-1.0
Inukjuak	2981	3316	90	-2.1	-0.3
Cape Dorset	2941	3424	86	-4.9	0.1
Churchill	3299	3638	91	-2.2	-1.5
Hall Beach	4769	5229	92	-8.4	0.7

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

Eastern and Northern Arctic

End of Winter and Spring Ice Conditions

At the end of January, predominantly medium first-year ice with up to 1 tenth old ice covered the western part of Baffin Bay and northwestern Davis Strait. Most of the rest of Baffin Bay, Prince Regent Inlet as well as the Gulf of Boothia contained mostly medium first-year ice (figure 3). Lancaster Sound had a mix of thin and medium first-year ice while the eastern part of Barrow Strait had mostly grey-white ice. The western part of Barrow Strait had consolidated medium first-year ice with up to 1 tenth old ice. The ice bridge of mostly consolidated old ice in southern Kane Basin has kept the old ice from the Lincoln Sea from drifting into the Baffin Bay area while also creating an area of mostly grey to thin first-year ice in the extreme northwestern part of Baffin Bay. Consolidated thick first-year and old ice was present in the High Arctic while consolidated medium first-year ice with a trace of old ice was observed in Jones Sound, Admiralty Inlet, Pond and Navy Board Inlets as well as Peel Sound.

By mid-February, the consolidated ice in Jones Sound, Admiralty Inlet, Pond and Navy Board Inlets as well as Peel Sound had thickened to thick first-year ice with a trace of old ice. In early March, the central part of Prince Regent Inlet became consolidated with thick first-year ice. After mid-March, the ice in Baffin Bay thickened to thick first-year ice with areas of 1 tenth old ice mostly in the western half. A mix of medium and thick first-year ice covered the northwestern part of Baffin Bay as well as Lancaster Sound and eastern Barrow Strait.

At mid-March, concentrations of old ice were above normal north of Cornwallis Island and Kennedy Channel. At the same time, the northwestern part of the Queen Elizabeth Islands into most of Norwegian Bay, Committee Bay as well as most of Kane Basin had less than normal old ice concentration. Some areas of slightly less than and slightly greater than normal old ice was present in the central part of Baffin Bay into northern Davis Strait.

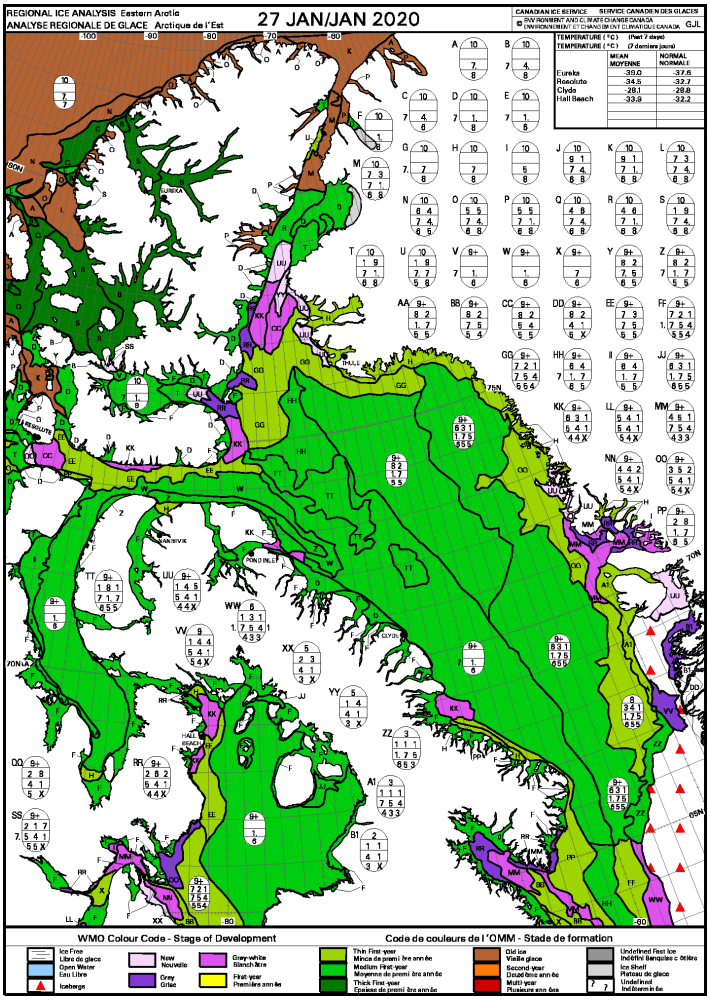

Figure 3: Ice stage of development analysis for the Eastern Arctic area in late January 2020.

By the end of March, most of the drifting ice had thickened to thick first-year ice. The exceptions were in Lancaster Sound, extreme northwestern part of Baffin Bay as well as the ice edge in the eastern part of Baffin Bay where mostly medium first-year ice with some thick first-year ice prevailed. Cumberland Sound had grey-white ice with some thin first-year ice due to export of ice into Davis Strait.

By mid-April, the consolidated thick first-year ice continued to cover the western part of Lancaster Sound and most of Prince Regent Inlet. Thin and medium first-year ice with some old ice was still present over extreme northwestern Baffin Bay. Elsewhere in Baffin Bay and most of northern Davis Strait, ice thickened to thick first-year ice.

Mild temperatures covered most of the region in May. This triggered earlier than normal onset of ice melt in northwestern Baffin Bay as well as the ice edge along most of eastern Baffin Bay and northern Davis Strait. Lancaster Sound was also impacted as the ice pack was exported eastwards during the month. The bergy water lead over the southeastern part of Baffin Bay propagated northwards along the Greenland coast to reach just south of Melville Bay by the end of the month. In the meantime, concentrations of ice in the northwestern Baffin Bay area began to decrease after mid-May. Bergy water areas were beginning to emerge during the latter part of the month from south of Smith Sound into northern Baffin Bay. Despite these mild temperatures, most of the consolidated ice remained intact except for some small patches of ice peeling off in some areas.

Even with the slow onset of ice melt during the first half of May, ice melt was generally 2-3 weeks earlier than climatology (1981-2010) over the northwestern part of Baffin Bay (figure 4) by the end of the month. Meanwhile, the eastern parts of Baffin Bay and northern Davis Strait saw ice melt that was 3-4 week earlier than normal.

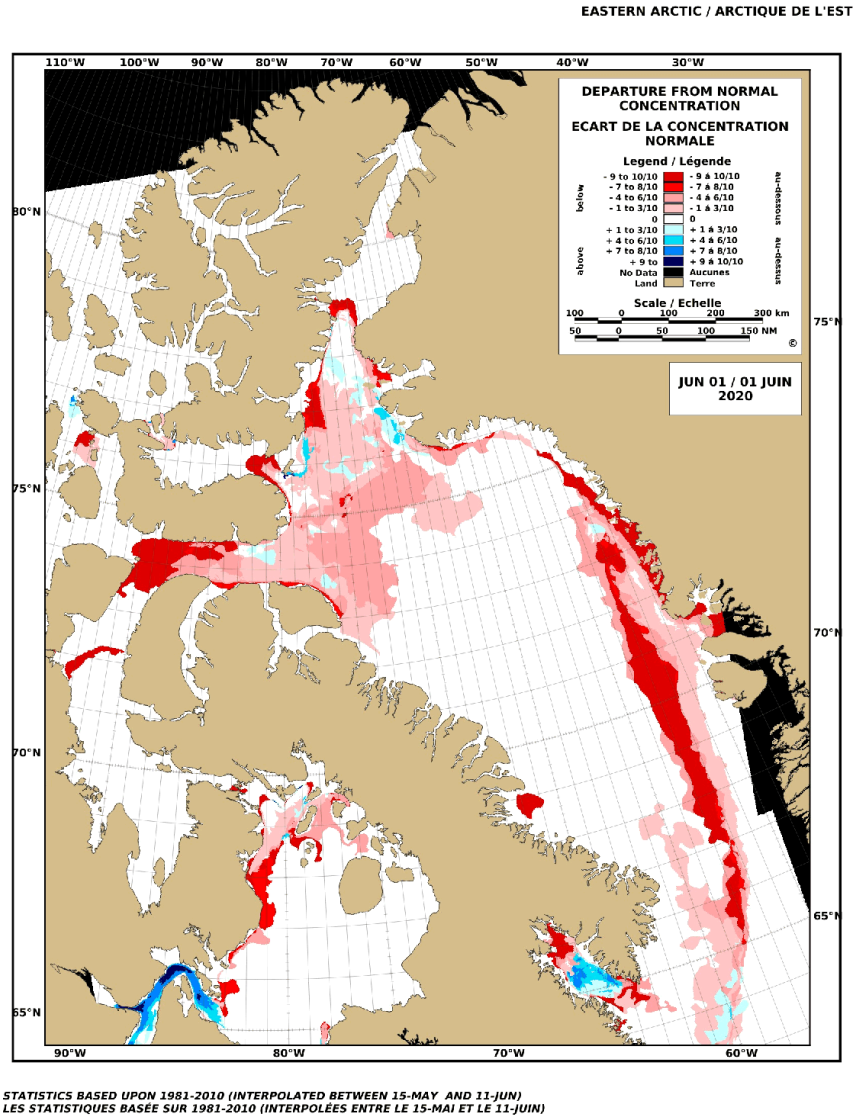

Figure 4: Departure from normal ice concentration for the Eastern Arctic area on June 1st, 2020**.**

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	3980	4678	85	-7.9	0.3
Pond Inlet	4937	5433	91	-7.4	1.8
Resolute	5235	5797	90	-9.3	1.5
Eureka	6166	7131	86	-8.4	2.6

Table 2: End of April freezing degree-days (FDD) and May temperatures for the Eastern Arctic area.

Western and Central Arctic

End of Winter and Spring Ice Conditions

At the end of January, medium first-year ice with some old ice was present over the southwestern part of the Beaufort Sea. Over the eastern Beaufort Sea, the Arctic Ocean as well as M'Clure Strait, mostly old ice with some medium first-year ice was present. The leading edge of the old ice was located within 45-60 nautical miles of the coast from Prudhoe Bay to Baillie Island. Consolidated medium first-year ice was present in the shallow waters along most of the southern mainland coast of the Beaufort Sea as well as along the shipping route from Dolphin and Union Strait to Taloyoak. Consolidated medium first-year ice including a trace of old ice was present in Peel Sound. Consolidated old and thick first-year ice prevailed in M'Clure Strait, Viscount Melville Sound, M'Clintock Channel, Larsen Sound as well as around the Queen Elizabeth Islands. Areas of lower than normal concentrations of old ice were present in parts of M'Clintock Channel, most of M'Clure Strait as well as northwestern Queen Elizabeth Islands.

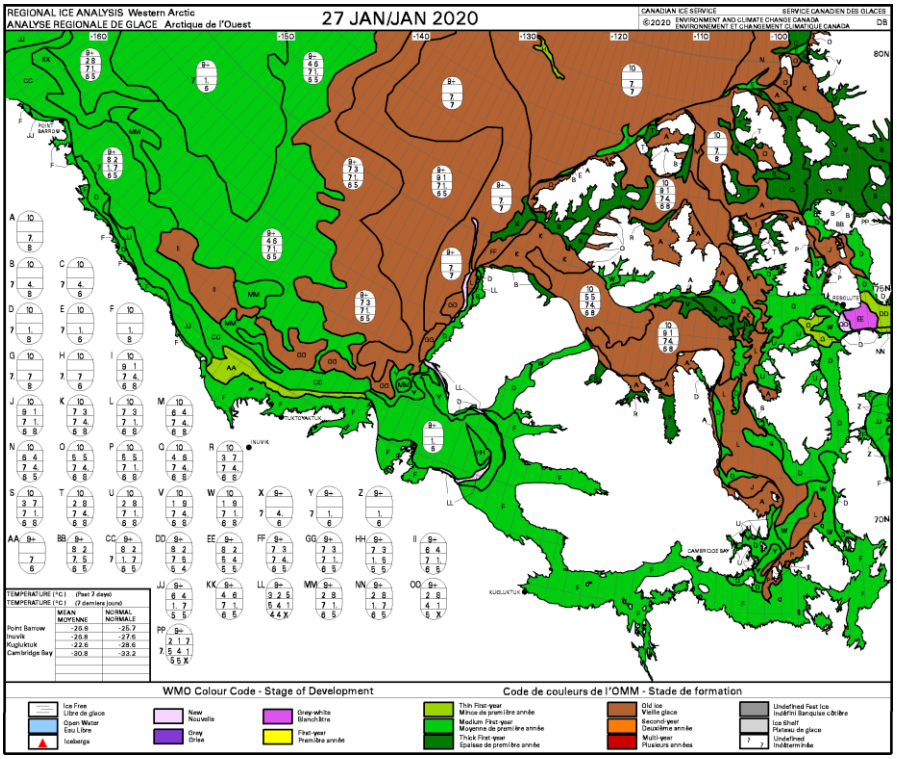

Figure 5: Ice stage of development analysis for the Western Arctic area in late January 2020.

During the first week of February, consolidated ice from Peel Sound, Larsen Sound and M'Clintock Channel thickened to thick first-year ice. Over the southern Beaufort Sea, the leading edge of old ice remained mostly unchanged at about 45 to 60 nautical miles north of the southern Beaufort Sea coast. The old ice edge was 45 to 60 nautical miles further south than normal for that time of year. Ice thickened to thick first-year ice near mid-February in eastern Coronation Gulf and Queen Maud Gulf. Amundsen Gulf and western Coronation Gulf reached thick first-year ice at the beginning of March.

Starting in the second week of May, open water leads or areas of lower ice concentration emerged along the consolidated ice edge from Point Barrow to Amundsen Gulf as well as along western Banks Island. By the end of the month, the melting or offshore drift of the ice was somewhat muted compared to last year however some areas were showing mostly less than normal ice concentration, mainly along the consolidated ice edge (See figure 6).

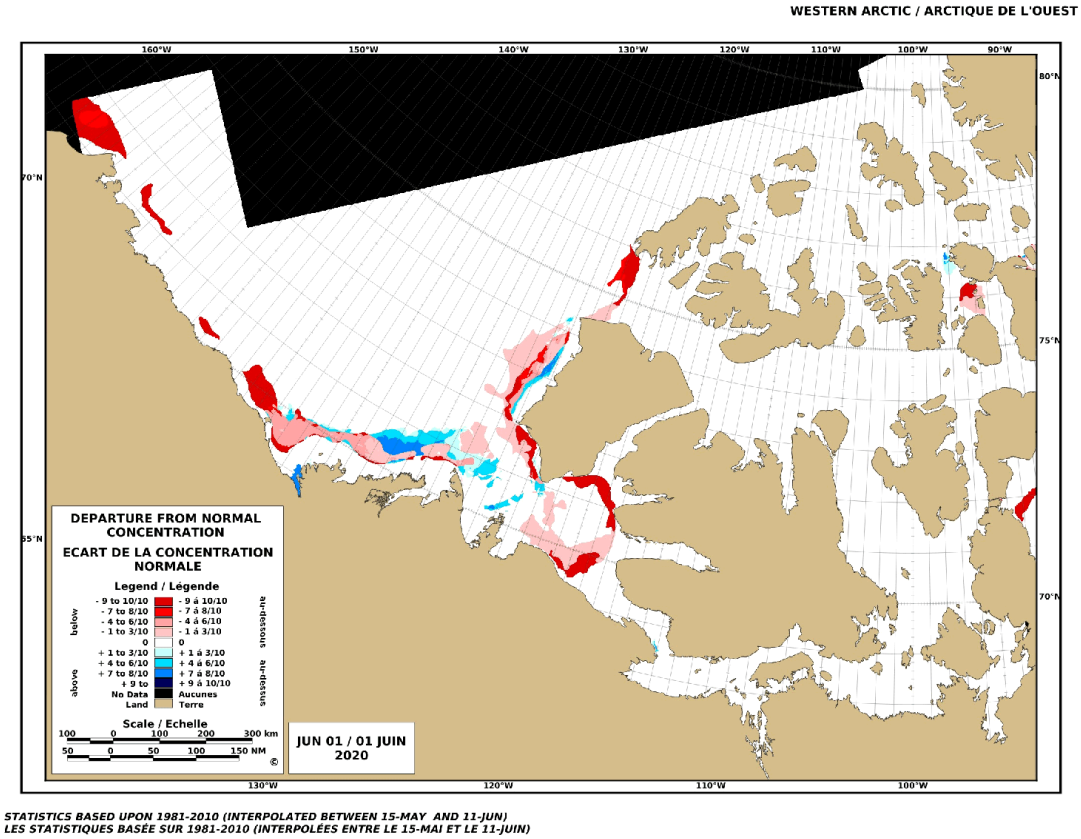

Figure 6: Departure from normal ice concentration for the Western Arctic area on June 1st, 2020.

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	5747	6148	93	-8.6	2.3
Cambridge Bay	5193	5513	94	-9.0	0.1
Kugluktuk	4307	4598	94	-5.5	-0.5
Tuktoyaktuk	4121	4271	97	-3.2	1.0

Table 3: End of April freezing degree-days and May temperatures (FDD= Freezing Degree Days).