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Seasonal Summary

North American Arctic Waters
Spring 2012

By



Canadian Ice Service
Le service canadien des glaces

Hudson Bay and Approaches

End of Winter and Spring Ice Conditions

End of Winter: February to March

During February, near to below normal air temperatures were observed over Hudson Strait, in southern Davis Strait and along the Labrador Coast. Above normal temperatures dominated over Hudson Bay and Foxe Basin with temperatures ranging from 2 to 6°C above normal values and with the mildest values being observed over western Hudson Bay. Throughout February, medium first-year ice was present over most regions and some thick first-year ice had developed in Hudson Strait and Davis Strait. However, thinner ice still persisted over northwestern Hudson Bay, James Bay, east of the Belcher Islands, northwestern Hudson Strait and along the Labrador Coast. A near normal ice extent persisted over Davis Strait and along the Labrador Coast. At the same time, areas of 2 tenths of old ice had drifted into the western section of Davis Strait. By the end of February, a trace of old ice had reached the northern Labrador Sea and the ice in Foxe Basin had thickened to thick first-year ice.

During March, average air temperatures over the eastern part of the region were 2 to 4°C below normal values with the coldest temperatures (7°C below normal) occurring over Davis Strait. Elsewhere, temperatures were near to slightly above normal values. The pack ice over Hudson Bay, Hudson Strait and along the Labrador Coast slowly thickened during this period to become a mixture of thick and medium first-year ice. Thinner than normal ice still persisted over northwestern Hudson Bay, James Bay, east of the Belcher Islands and northwestern Hudson Strait. Meanwhile, the eastern edge of the pack ice expanded rapidly southeastward over Davis Strait and in the northern Labrador Sea during the period. Due to the colder than normal temperatures experienced over the area, the ice over Foxe Basin and Davis Strait thickened rapidly and was mostly composed of thick first-year ice. During March, the ice extent in the Labrador Sea / Davis Strait area became much greater than normal. A trace of old ice embedded in the pack ice persisted along the Labrador Coast, while narrow areas of 2 tenths of old ice prevailed over western Davis Strait.

Spring: April to May

During April, average air temperatures rose to near normal values over the entire region. Although the ice continued to thicken, the pack ice still remained thinner than normal south and east of the Belcher Islands and in northwestern Hudson Strait. A mixture of thick and medium first-year ice covered most of Hudson Bay, Hudson Strait and the Labrador Coast, while thick first-year ice dominated over Foxe Basin and Davis Strait. Areas of 2 tenths of old ice were embedded in the pack ice over western Davis Strait and drifted southward

towards the extreme northern portion of the Labrador Coast. Farther south along the Labrador Coast, a trace of old ice was present in the pack ice. During April, the eastern edge of the pack ice retreated to its near normal ice extent. However, areas of higher concentrations of old ice existed east of Cumberland Sound to south of Cape Dyer at the end of April. The ice started to melt south of Groswater Bay, where open drift to close pack thick and medium first-year ice prevailed along the coast. At the end of April, calculated freezing degree days were near normal except below normal over eastern Hudson Strait and southern Hudson Bay as indicated in Table 1.

During May, average air temperatures were 1.2 to 3.9°C above normal except near normal along the western shore of Hudson Bay as indicated in Table 1. At the beginning of May, the ice started to decay over southeastern Foxe Basin, south of Southampton Island, in Hudson Strait and along the Labrador Coast. Open drift to close pack thick first-year ice dominated over these areas, although higher concentrations of first-year ice were still observed in the eastern entrance to Hudson Strait and close to the shore along the Labrador Coast. The ice in Lake Melville fractured completely during the fourth week of May, and ice concentrations then decreased rapidly to become very open drift at the end of May. At that time, the ice south of Cartwright melted completely. Large areas of open water formed along the shores of James Bay. Elsewhere, very close pack thick first-year ice persisted. A trace of old ice was embedded in the pack ice along the Labrador Coast, while areas of 1 to 2 tenths of old ice were present over Davis Strait.

Table 1: End of April freezing degree days and May temperatures

Station	Actual end of April FDD	Median end of April FDD (1981-2010)	Percent of normal FDD	May 1 to 28 average temperature (°C)	May 1 to 28 departure from normal (°C)
Nain	2069	2127	97	2.8	2.0
Iqaluit	3602	3811	95	-0.9	3.9
Kuujuak	2783	3073	91	1.4	1.5
Inukjuak	2654	3180	80	-0.9	1.2
Cape Dorset	3185	3462	92	-2.7	2.7
Churchill	2915	3539	82	-0.6	0.5
Hall Beach	4653	5025	93	-6.3	3.3

FDD= Freezing Degree Days

Eastern Arctic

End of Winter and Spring Ice Conditions

End of Winter: February to March

During February, average air temperatures over the area were greater than normal over the Central Arctic south of Lancaster Sound with temperatures ranging from 1 to 4°C above normal. Over the rest of the Eastern Arctic, near normal temperatures were observed. In early February, medium with some thick first-year ice covered most of Baffin Bay except for thinner ice over and immediately south of Smith Sound. At that time, areas of young ice had also developed east of the consolidated ice in the eastern entrances to Lancaster and Jones Sounds. Areas of 2 to 4 tenths of old ice embedded in the pack ice could be found drifting over the western section of Baffin Bay. The consolidated thick first-year ice which formed over the eastern section of Lancaster Sound in January expanded westward to encompass eastern Barrow Strait by the end of February. However, the ice remained mobile in Prince Regent Inlet and in the Gulf of Boothia. The rest of the Eastern Arctic was covered with consolidated thick first-year ice. Old ice concentrations were lower than normal north of Cornwallis Island and in Norwegian Bay, while they were greater than normal in Nares Strait.

During March, a significant drop in air temperatures was observed over the whole area with temperatures ranging from 2 to 4°C below normal values. Very close pack thick first-year ice covered most of Baffin Bay and the area from Prince Regent Inlet to Committee Bay. However, thinner ice was still present just south of Smith Sound. Areas of 2 to 4 tenths of old ice continued to drift southward along the southwestern section of Baffin Bay. Consolidated ice was present over the rest of the Eastern Arctic.

Spring: April to May

During April, average air temperatures became milder over the whole area with temperatures ranging from near to 2°C above normal. Little change was observed in the ice cover over most of the Eastern Arctic, with the only exception being that the ice consolidated over the northern section of Prince Regent Inlet in early April. Mobile thick first-year ice persisted over most of Baffin Bay and from southern Prince Regent Inlet to Committee Bay. A narrow area of thinner ice persisted south of Kane Basin. Areas of 2 to 4 tenths of old ice were mostly located over southwestern Baffin Bay. At the end of April, a bergy water lead developed along the western shore of Greenland south of Disko Island. The ice over the rest of the Eastern Arctic remained consolidated. At the end of April,

calculated freezing degree days were near normal over the whole Eastern Arctic as indicated in Table 2.

During May, average air temperatures were 1.3 to 1.8°C above normal over the whole Eastern Arctic as indicated in Table 2. A large bergy water area developed south of the consolidated ice in Kane Basin and expanded southward to reach 75°N during the fourth week of May. By the end of May, a bergy water lead along the western shore of Greenland extended northward to lie just south of 72°30'N. Very close pack thick first-year ice dominated over most of Baffin Bay and from southern Prince Regent Island to Committee Bay. Isolated areas of 1 to 3 tenths of old ice were drifting southward over the western section of Baffin Bay. Little change was observed in the consolidated ice over the rest of the Eastern Arctic.

Table 2: End of April freezing degree days and May temperatures

Station	Actual end of April FDD	Median end of April FDD (1981-2010)	Percent of normal FDD	May 1 to 28 average temperature (°C)	May 1 to 28 departure from normal (°C)
Clyde	4541	4638	98	-7.2	1.5
Pond Inlet	5074	5407	94	-8.0	1.7
Resolute	5317	5607	95	-10.1	1.3
Eureka	6795	6886	99	-9.9	1.8

FDD= Freezing Degree Days

Western Arctic

End of Winter and Spring Ice Conditions

End of Winter: February to March

During February, average air temperatures were above normal values along the southern route of the Northwest Passage with temperatures ranging from 1 to 4°C above normal, while near normal temperatures were observed elsewhere in the Western Arctic. Some localized cold spots were reported over the Queen Elizabeth Islands and in the Bering Strait. Westward ice drift in the southern Beaufort Sea helped advect a 165 km wide area of mostly old ice along the 72°N parallel. The ice cover between the mainland coast and the area of old ice along the 72°N parallel, as well as in Amundsen Gulf, slowly thickened in February to become medium with some thick first-year ice. A trace of old ice was embedded in the pack ice over the southern Beaufort Sea. Farther north, very close pack old and thick first-year ice prevailed over the northern Beaufort Sea and in the Arctic Ocean. However an area of medium first-year ice with a trace of old ice was located between 73°N and 75°N and west of 140°W. Consolidated thick first-year ice dominated over the rest of the Western Arctic. South of the Queen Elizabeth Islands, areas of 2 to 6 tenths of old ice were mostly restricted to the northern route of the Northwest Passage west of Barrow Strait and in the extreme southwestern section of M'Clintock Channel. Off the Alaskan Coast, the area of old ice then slowly moved southward to touch Point Barrow at the end of February.

During March, a significant drop in air temperatures was observed across the Western Arctic with temperatures ranging from 2 to 4°C below normal values. There were localized colder spots especially along the Alaskan Coast and in the Bering Sea where temperatures were 5 to 7°C below normal. Because of the cold temperatures experienced in March, the ice thickened rapidly so that thick first-year ice prevailed over the entire Western Arctic. Ice movement slowed within the mobile pack and very little drift was observed during the last two weeks of March. At the end of March, only a narrow area of thick first-year ice with a trace of old ice remained between the mainland coast and the old ice pack, which now reached 71°30'N in the southern Beaufort Sea. Farther north, mostly old ice prevailed over Beaufort Sea and in the Arctic Ocean. However, an area of thick first-year ice with a trace of old ice was still present between 73°N and 75°N and west of 142°W. The ice in Amundsen Gulf remained mobile throughout March and was composed of thick first-year ice. The ice among the rest of the Western Arctic islands remained consolidated.

Spring: April to May

During April, average temperatures rose quickly to near or slightly above normal values over the whole area. During the first two weeks of April, large fractures formed in the old and first-year ice over the Beaufort Sea indicating that the pack ice had started to drift westward once again. During that time, little change was observed in the composition of the ice cover over the Beaufort Sea and in the Arctic Ocean, except for the formation of young ice in the new fractures and leads. Old ice dominated north of 71°30'N and 20 miles north of Point Barrow, although an area of thick first-year ice with a trace of old ice could still be found between 73°N and 75°N and west of 143°W. South of 71°30'N, in the southern Beaufort Sea, the pack ice was composed of thick first-year ice with a trace old ice. Similar ice conditions also covered most of Amundsen Gulf, which then consolidated after mid-April. During the last two weeks of April, flaw leads stretching from west of Amundsen Gulf to west of M'Clure Strait repeatedly formed and refroze. At the end of April, calculated freezing degree days were near normal values over the whole Western Arctic as indicated in Table 3.

During May, average air temperatures were 1.8 to 2.2°C above normal over the whole Western Arctic as indicated in Table 3. Early in May, a 55 km wide area of young ice was present from west of Amundsen Gulf to west of M'Clure Strait. Farther west and south of 71°30'N, thick first-year ice with a trace old ice dominated over the southern Beaufort Sea. North of 71°30'N, old and thick first-year ice continued to persist over the area except for an area of predominantly thick first-year ice which was still present between 73°30'N and 75°N and west of 150°W. During the month, little change was observed in the ice distribution over the Beaufort Sea and in the Arctic Ocean. The only exception to this was that a 110 km wide area of open water started to develop west of Amundsen Gulf and west of Banks Island during the last two weeks of May. The ice remained consolidated over the rest of the Western Arctic. At the end of May, the consolidated ice in Amundsen Gulf started to show signs of fracture west of Cape Parry.

Table 3: End of April freezing degree days and May temperatures

Station	Actual end of April FDD	Median end of April FDD (1981-2010)	Percent FDD	May 1 to 28 average temperature (°C)	May 1 to 28 departure from normal (°C)
Mould Bay	5762	5977	94	-9.2	2.2
Cambridge Bay	5001	5381	91	-7.9	1.8
Kugluktuk	4344	4515	94	-3.5	2.0
Tuktoyaktuk	4309	4333	99	-2.6	2.2

FDD= Freezing Degree Days