Environment Canada Environnement Canada

Seasonal Summary

Eastern Canada
Winter 2013-2014

By

Canadian Ice Service
Le service canadien des glaces

Canada

Summary for the East Coast

Air temperatures on the East Coast over the 2013-2014 winter season were overall colder than normal, with December and March being much colder than the 1980-81 to 2009-2010 climate normal. This contributed to an above normal amount of ice for each of the Gulf, Newfoundland and Southern Labrador Coast regions. There was more than twice as much ice during the 2013-2014 season than the median of the previous 10 years.

The severity of the 2013-2014 ice season was felt particularly around Newfoundland as the pack ice reached most of the west coast of Newfoundland in the first week of February and started clearing only in mid-April. On the east side of the island, the ice coverage reached its maximum extent around mid-March, when the pack ice followed the Labrador Current and drifted all the way down to about 45N, before starting to retreat later in the month. Some ice lingered in Notre Dame Bay and White Bay until the last week of June before melting. These areas usually clear before the end of May. The last season that had more ice in East Newfoundland Waters was 1993-1994.

In the Gulf of St Lawrence, the maximum ice coverage was also reached around mid-March. Clearing occurred in the estuary in early April, which is near normal. The pack ice disappeared from the southern portions of the Gulf at the end of April, about two weeks later than normal. Some ice lingered in the northeast sections of the Gulf until the third week of June before melting, more than three weeks later than normal. The last season that had more ice in the Gulf was 2002-2003.

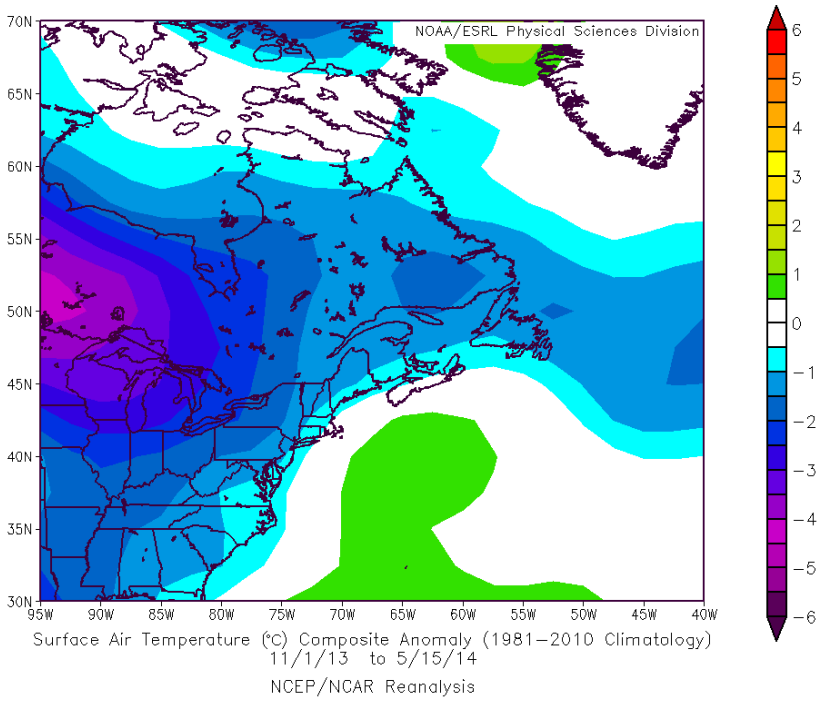

Figure 1: Surface Air Temperature Anomaly November to mid-May

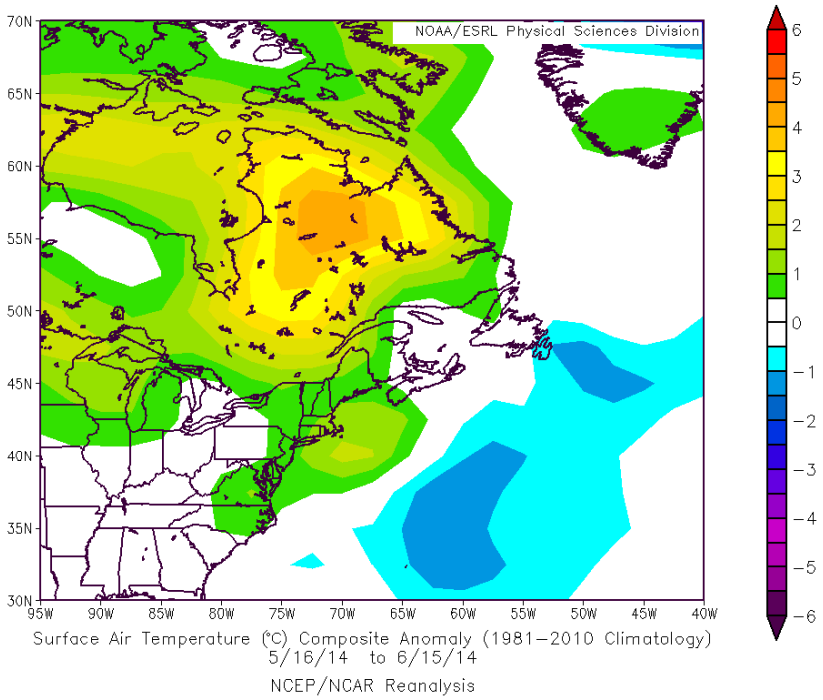

Figure 2: Surface Air Temperature Anomaly mid-May to mid-June

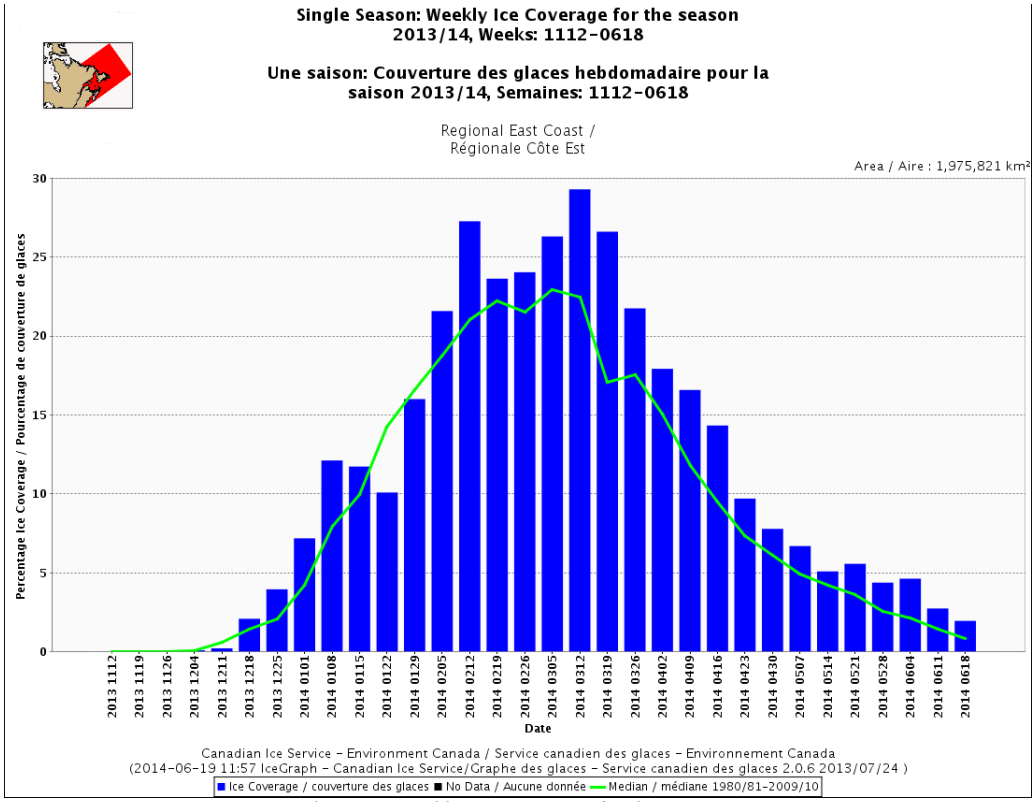

Figure 3: Weekly Ice Coverage for the season

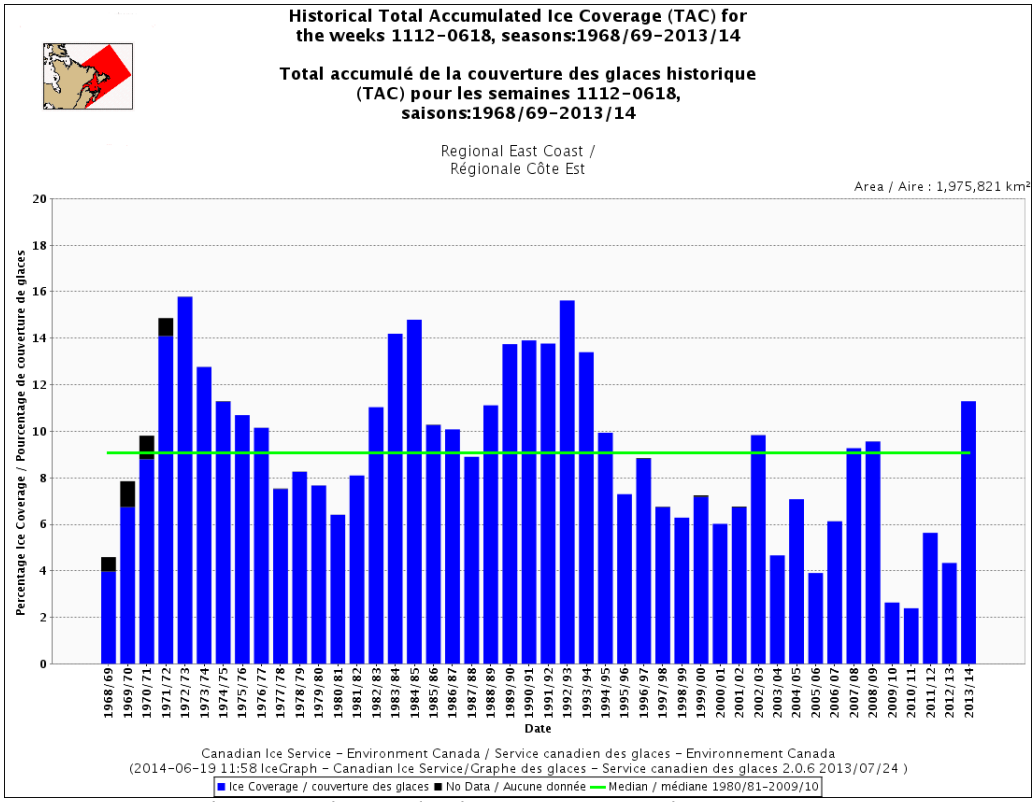

Figure 4: Total Accumulated Ice Coverage November 12 to June 18

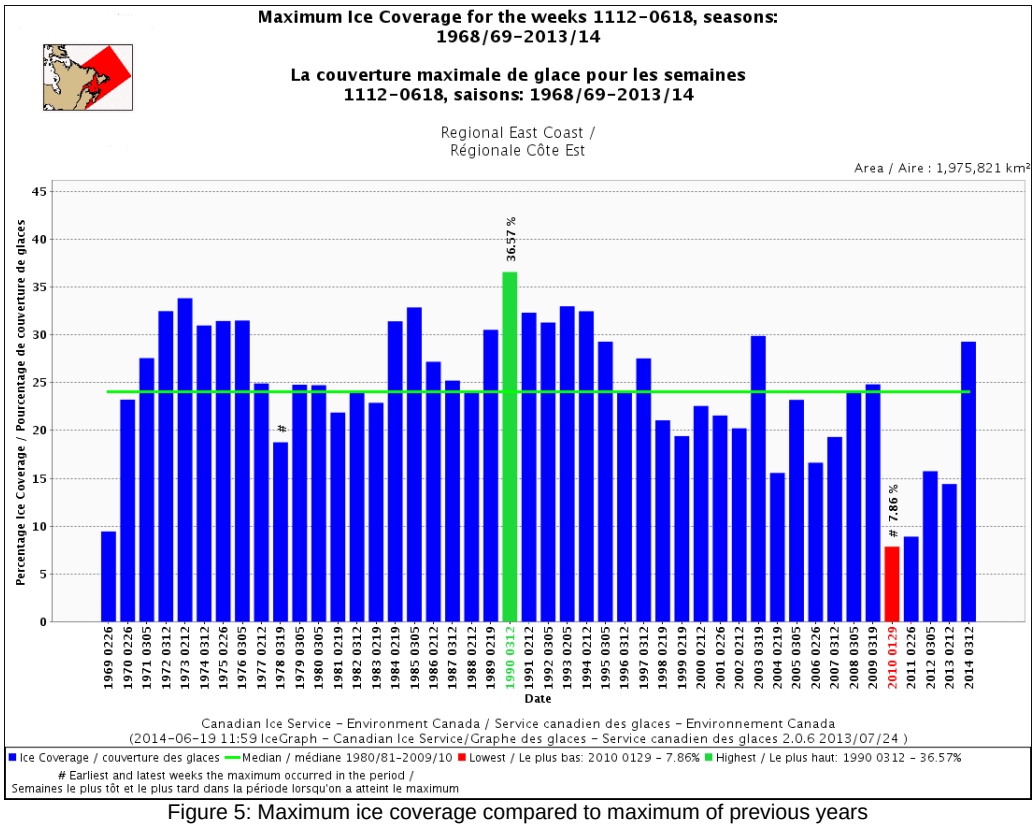

Figure 5: Maximum ice coverage compared to maximum of previous years

Gulf of St Lawrence

2013-2014 Season temperatures and Weather: November to the third week of June.

Air temperatures over the 2013-2014 winter season were overall colder than normal, with December and March being much colder than normal. This contributed to an above normal ice year in the Gulf of St. Lawrence.

There were more southwesterly winds than normal in the eastern Gulf around mid-April, helping ice melt in the south-eastern Gulf albeit later than normal. It also contributed to ice compaction thus thicker ice in the north-eastern Gulf.

December ice conditions:

Ice development started near normal. In the first few days of December, some new ice formed near Sept-Îles but did not stay. In the second week, new and grey ice developed in the estuary, along the north shore from Blanc-Sablon to Sept-Îles, along the coast of Anticosti Island, along the New Brunswick coast,

around Prince Edward Island and Îles de la Madeleine. At the end of the third week, most of Miramichi Bay was condolidated with grey ice. Consolidated grey ice was also present along portions of the New Brunswick coast and around Prince Edward Island.

By the end of the month, most of the estuary was covered with new and grey ice, with some first-year and grey-white ice also present. New and grey ice covered Chaleur Bay and the Northumberland Strait west of Pictou. Areas of new ice were present along the north shore of Prince Edward Island, around Anticosti Island and around Îles de la Madeleine. New and grey ice covered the northeast Gulf east of Cape Whittle. Some new and grey ice was found in shallower waters of the west coast of Newfoundland. Ice development was a week faster than normal.

January ice conditions:

Rapid ice growth continued in the first week but ice destruction occurred in the second and third week of January.

At the end of the third week of January, the estuary was mostly open water with patches of grey, grey-white and first-year ice. A large area of very open to open drift grey-white with some first-year ice was present south of Anticosti Island and the ice edge was 140 nautical miles east of Gaspé. Open water was found off the New Brunswick coast south of Chaleur Bay and a large area of open water was seen in Northumberland Strait, as the ice was packed along the south coast of Prince Edward Island. Ice coverage in the northeast Gulf had diminished. Ice coverage in the Gulf was below normal.

Rapid ice growth resumed and about a week later, at the end of the month, most of the Gulf was ice covered. New ice had developed from Cape North to Sydney. Open water areas were found only in the estuary and along the Newfoundland coast. The ice pack was composed mostly of new and grey ice. Ice coverage was near normal.

February ice conditions:

From the first week of February until the end of the season, ice coverage was normal to above normal.

At the end of the first week of February, the pack had reached the west coast of Newfoundland. Grey and grey-white ice was present along most of the coast and there was some first-year ice north of Bonne Bay.

Near mid-month, grey-white ice had drifted into Chedabucto Bay, Nova Scotia, and strips and patches of first-year ice reached Channel-Port aux Basques. Consolidated grey ice and a few areas of new ice were present in shallower waters along the south coast of Newfoundland. Across the Gulf, some of the ice had thickened to the first-year ice stage. Ice in Northumberland Strait

was predominantly medium first-year and there was up to 4 tenths of thin first-year ice in the eastern Gulf.

By the end of the third week, first-year ice was predominant in most of the Gulf and there was some medium first-year ice north of Prince Edward Island.

March ice conditions:

A few tenths of thick first-year ice were present in the Gulf in the first week of March. The maximum ice coverage for the season was reached in the second week of March, at 49.5%. The normal peak occurs in the first week of March at 41.8%. At that time the ice edge extended to 120 nautical miles southeast of Scatarie Island and there was ice present near Channel-Port aux Basques and in Chedabucto Bay.

In the last week of the month, large open water areas developed in the estuary and the northwest sections of the Gulf, and the ice coverage was almost halved from the winter peak.

April – May – June ice conditions:

The estuary cleared in early April, near normal. There were more southwesterly winds than normal in the eastern portions of the Gulf from about April 10 to April 20 and that contributed to ice melting in the south-eastern Gulf. It also contributed to ice compaction in the north-eastern Gulf as was illustrated by two different aircraft reconnaissance flights: one on April 10 reporting a trace of thick first-year ice in the area, and one on April 20 reporting 5 tenths of thick first-year ice and 4 tenths of ridging. The remaining pack ice in the southeastern gulf cleared in the last week of April, about two weeks later than normal. Some ice lingered in the northeast gulf until the third week of June before melting, more than three weeks later than normal.

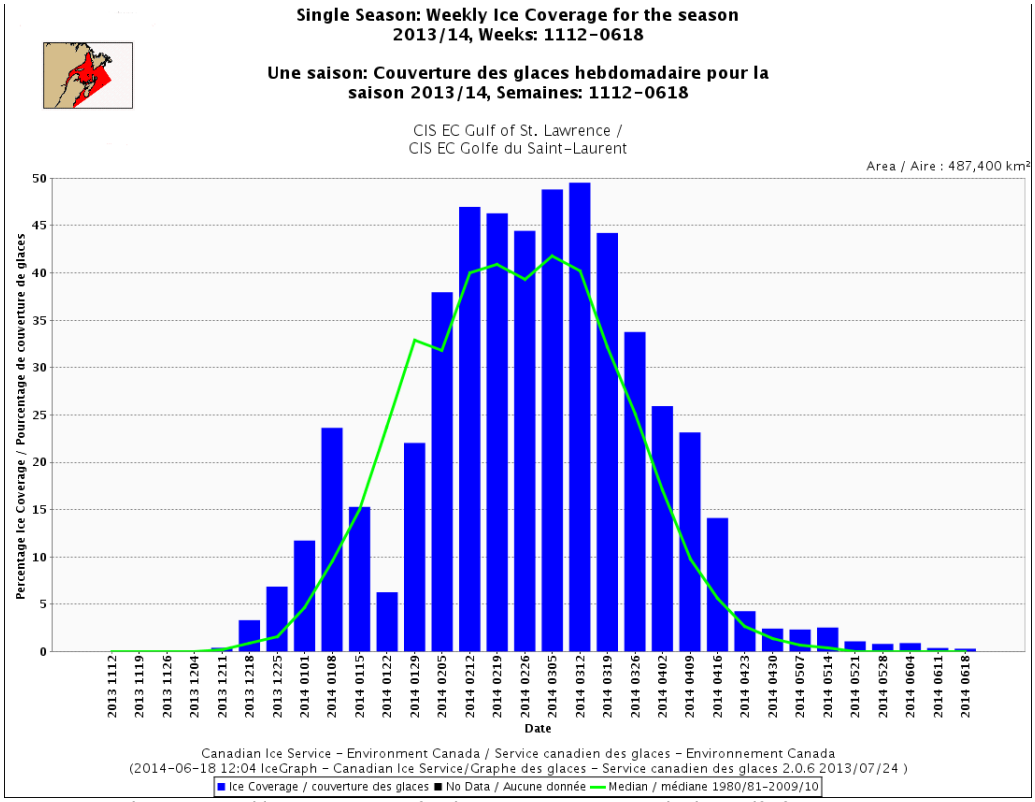

Figure 6: Weekly Ice Coverage for the 2013-2014 season in the Gulf of St. Lawrence

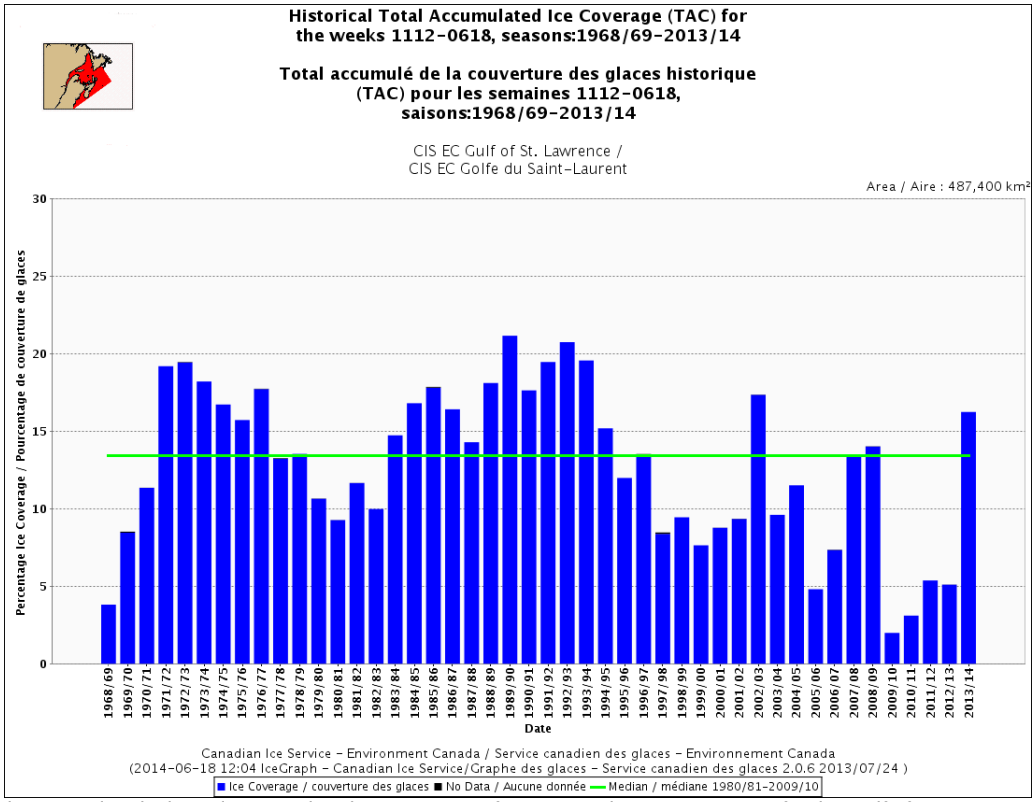

Figure 7: Historical Total Accumulated Ice Coverage from November 12 to June 18 for the Gulf of St. Lawrence

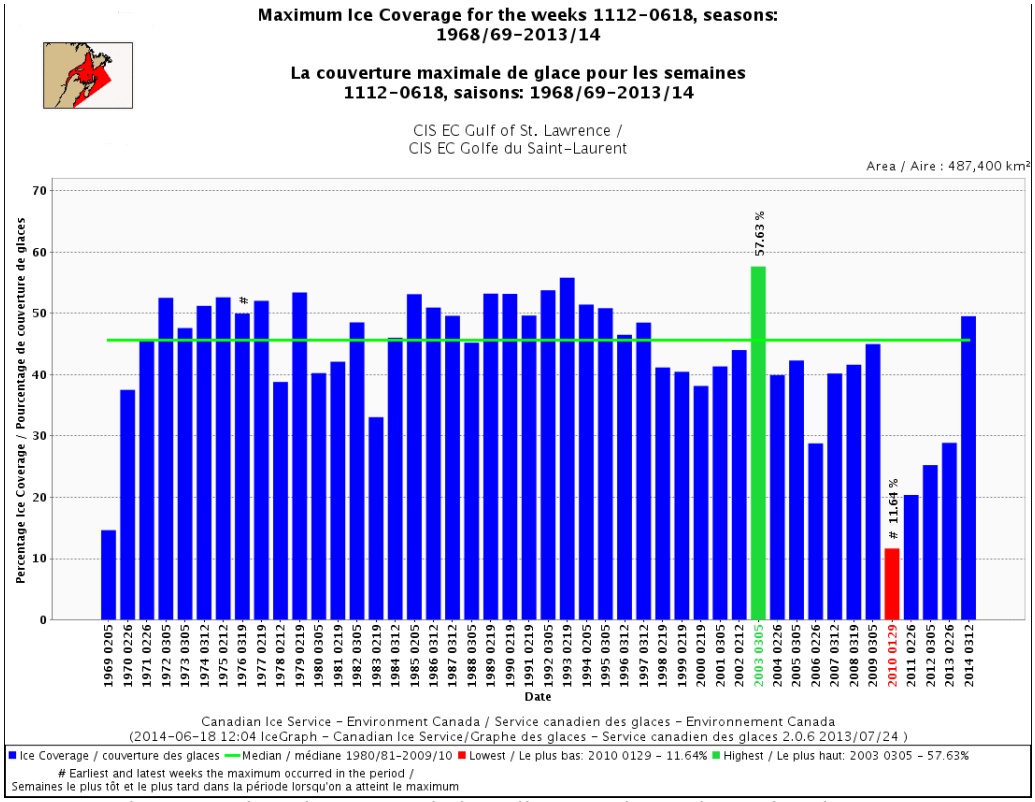

Figure 8: Maximum ice coverage in the Gulf compared to maximum of previous years

Newfoundland and Labrador waters

2013-2014 Season temperatures and Weather: November to the third week of June

Air temperatures over the 2013-2014 winter season were colder than normal, with December and March being much colder than normal. This contributed to an above normal ice year.

Sea ice in Notre Dame Bay and White Bay usually melts before the end of May but a colder than normal month of May delayed clearing and some ice was still lingering in Notre Dame Bay and White Bay in the third week of June.

November ice conditions:

New ice started forming along the mid-Labrador coast in the third week of November, as near normal. New and grey ice developed in Lake Melville towards the end of the month.

December ice conditions:

In mid-December, new ice developed in Bay of Exploits and was present along the shores of the Strait of Belle Isle. New and grey ice extended up to 20 miles off the Labrador Coast and covered Lake Melville. Near the end of the third week, fast grey ice was present south of Fogo Island and in the Bay of Exploits. In the last week consolidated grey-white ice became more widespread along the Labrador Coast and Lake Melville consolidated with grey-white and first-year ice. At the end of the month consolidated grey ice was present in shallower coastal waters in Bonavista Bay and new ice was developing in Notre Dame Bay and near St. Anthony. The Strait of Belle Isle was covered with new and grey ice and a narrow band of grey-white ice was present along its south shore. New, grey and grey-white ice extended up to about 80 nautical miles off the Labrador Coast.

January ice conditions:

Rapid ice growth occurred in early January and at the end of the first week new and grey ice was present in Bonavista Bay, Notre Dame Bay and White Bay. The pack ice was about 20 nautical miles north of Baie Verte Peninsula. Mostly grey and grey-white ice was present in the pack but there was some thin first-year ice in the Strait of Belle Isle and north of 55N. In the third week, the pack ice had not shown much southward progression but new and grey ice was briefly present in Trinity Bay. Some thin first-year ice was present in the pack ice in the Newfoundland waters and northward. At the end of the month a large area of new and grey ice had developed from Fogo Island into Bonavista Bay and southward to almost reach Baccalieu Island. New ice was briefly present in Conception Bay.

February - March – April ice conditions:

Rapid ice growth and southward drift occurred in the first half of February and early in the second week of the month the pack ice edge was east of Baccalieu Island, extending to 220 nautical miles offshore. Some thin and medium first-year ice was present in the pack. New ice was found in shallower coastal waters south of the pack ice, even along portions of the south coast of Newfoundland where consolidated grey ice developed. Farther north, a relatively large area of fast ice had formed in Notre Dame Bay. Ice coverage was well above normal and above the normal seasonal peak. It would remain above the normal seasonal peak for seven weeks. The ice edge retreated north of Baccalieu Island near mid-February but the southward progression of the ice resumed in the last week. Near the end of February new ice was present near the shore along portions of the south coast and from Cape Race to Baccalieu

Island while most of Trinity Bay and Conception Bay remained bergy water. Medium first-year ice was predominant in the Strait of Belle Isle and thick first-year ice with a trace of old ice was present in the pack ice north of Battle Harbour.

The maximum ice extent was reached near mid-March at 21.5% (the normal is 10.8%) as ice followed the Labrador Current southward to about 45N, and the East Coast was completely ice covered. New ice was present along the South Coast. Some thick first-year ice was present in the pack and a trace of old ice was found north of about 51N. At the end of March, the ice edge had retreated northward and the southern limit of the pack ice was found off Bonavista Bay. Ice coverage fell below the normal seasonal peak near the end of March/early April.

At the end of the third week of April, the ice edge extended from the Baie Verte Peninsula to north of Fogo Island and south-eastward to 180 nautical miles east of Cape Freels. A trace of old ice was generally present in the pack. There was bergy water in White Bay, most of Notre Dame Bay and along the east coast. Most of the fast ice from Notre Dame Bay southward had fractured but some was still present in Bay of Exploits and south of Fogo Island. At the end of April easterly winds had brought ice in Bonavista Bay, portions of Notre Dame Bay and White Bay. Bergy water was found in Bay of Exploits.

May to the third week of June ice conditions:

The remaining fast ice south of Fogo Island fractured near the end of the first week of May. Ice lingered around Bonavista Bay into the third week of May before melting. In the last week of May, fast ice in Lake Melville and along the Labrador Coast near Cape Harrison and southward fractured. North-easterly winds pushed the pack ice against the Northern Peninsula and into White Bay. Most of the pack ice was within 30 nautical miles of the Northern Peninsula while bergy water was found in Notre Dame Bay and along the east coast of Newfoundland. The pack ice was similarly packed within about 30 nautical miles of the Labrador Coast south of Cartwright and extended to up to 150 nautical miles offshore from Cartwright and north.

At the end of the first week of June the northward retreat of the pack ice along the Labrador Coast was under way. Open water was found in Lake Melville. Ice was still present and slowly melting in place from the Strait of Belle Isle to Notre Dame Bay. Ice in the Strait of Belle Isle melted in the third week of June. At the end of the third week of June, ice lingered in White Bay and Notre Dame Bay. The pack ice was found from Cartwright and northward.

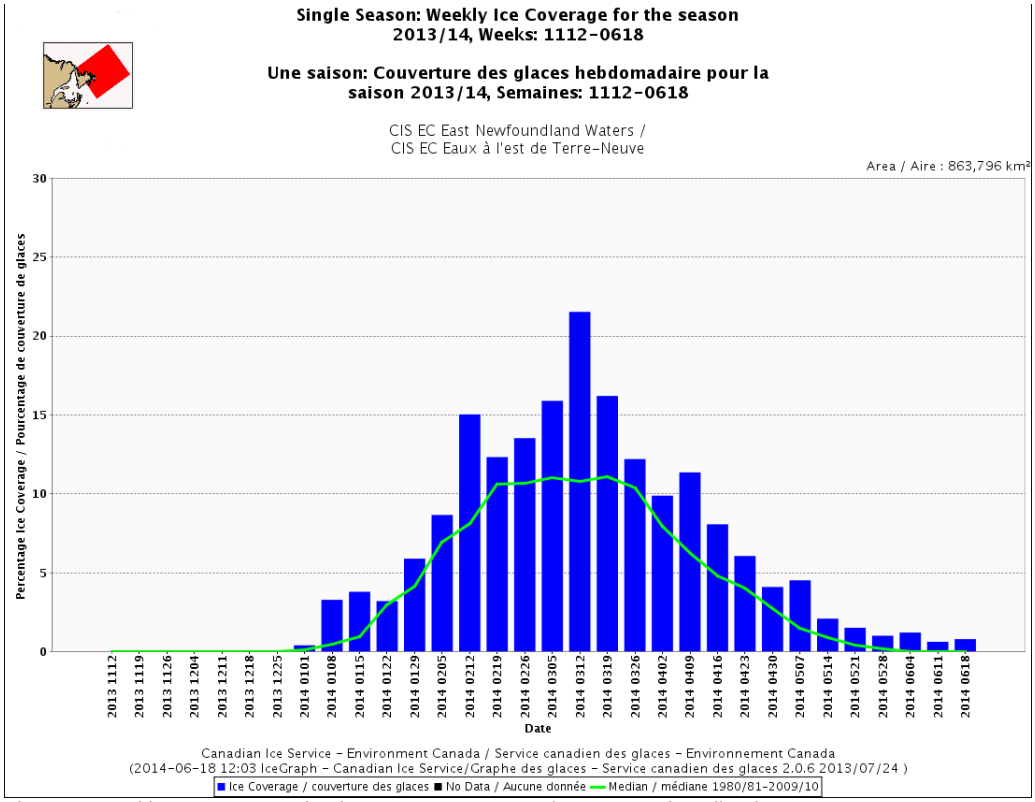

Figure 9: Weekly Ice Coverage for the 2013-2014 season in East Newfoundland Waters

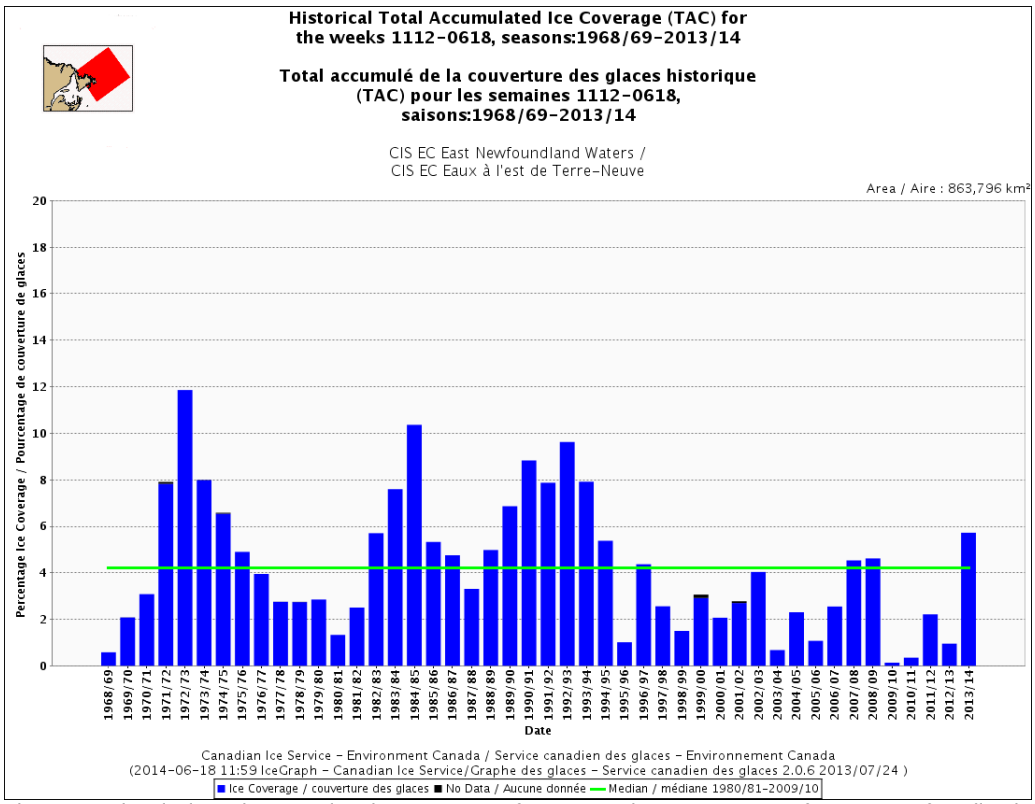

Figure 10: Historical Total Accumulated Ice Coverage from November 12 to June 18 for East Newfoundland Waters

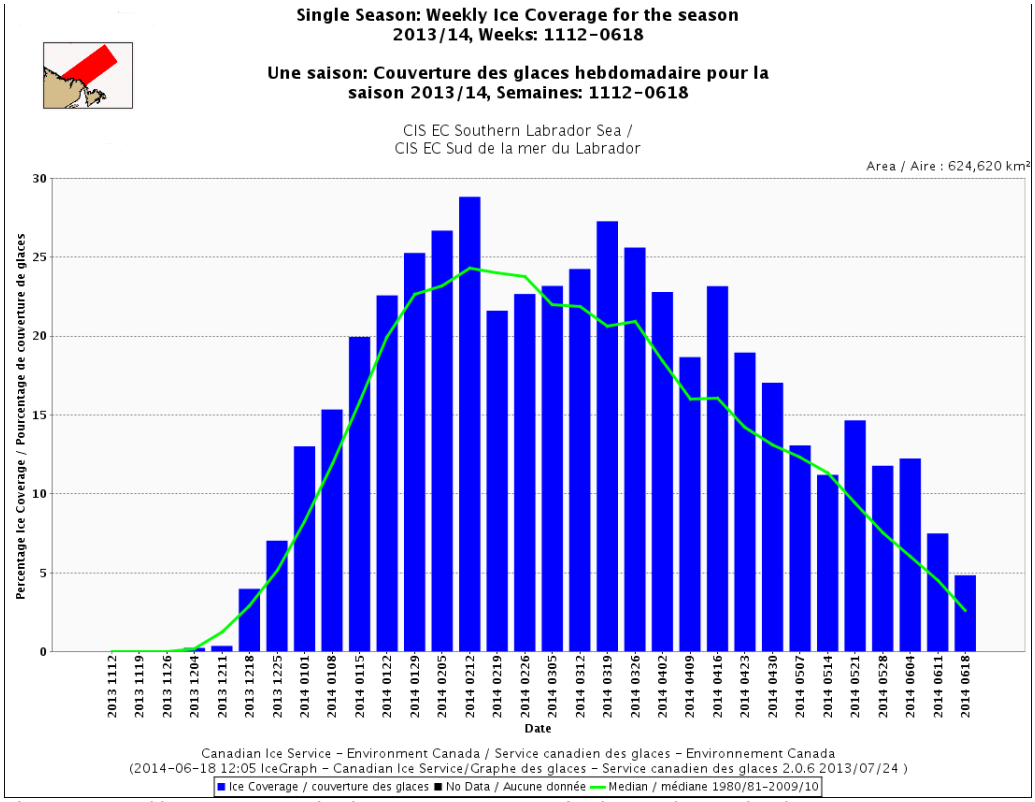

Figure 11: Weekly Ice Coverage for the 2013-2014 season for the Southern Labrador Coast

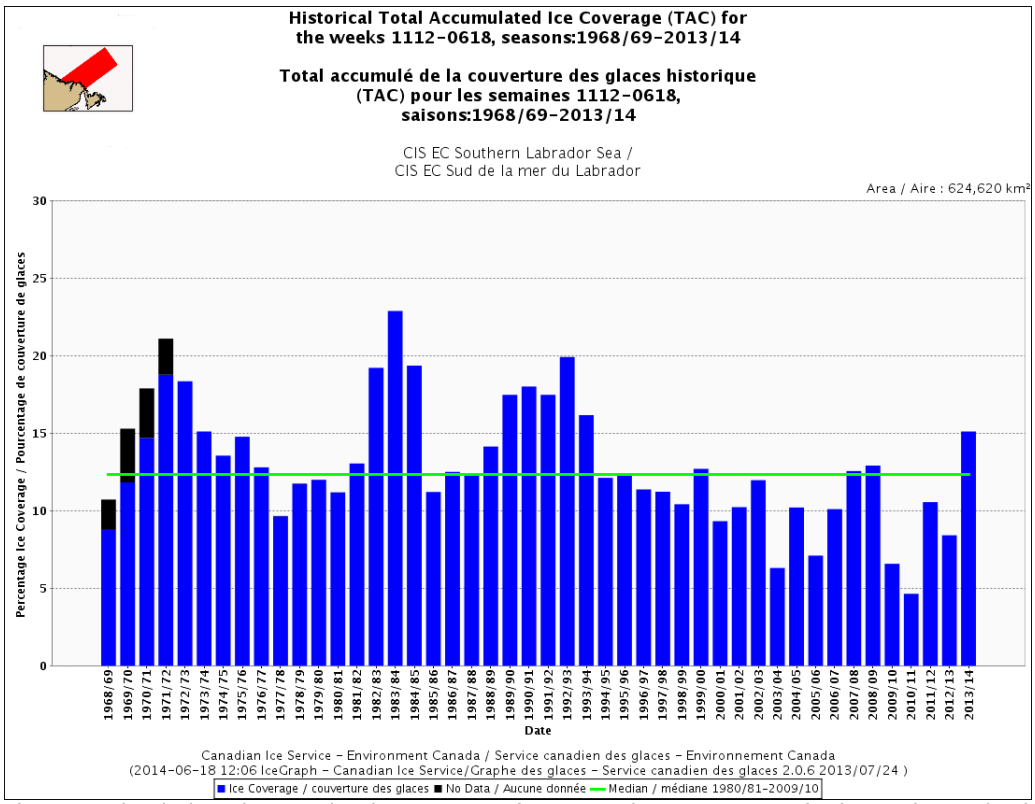

Figure 12: Historical Total Accumulated Ice Coverage from November 12 to June 18 for the Southern Labrador Coast

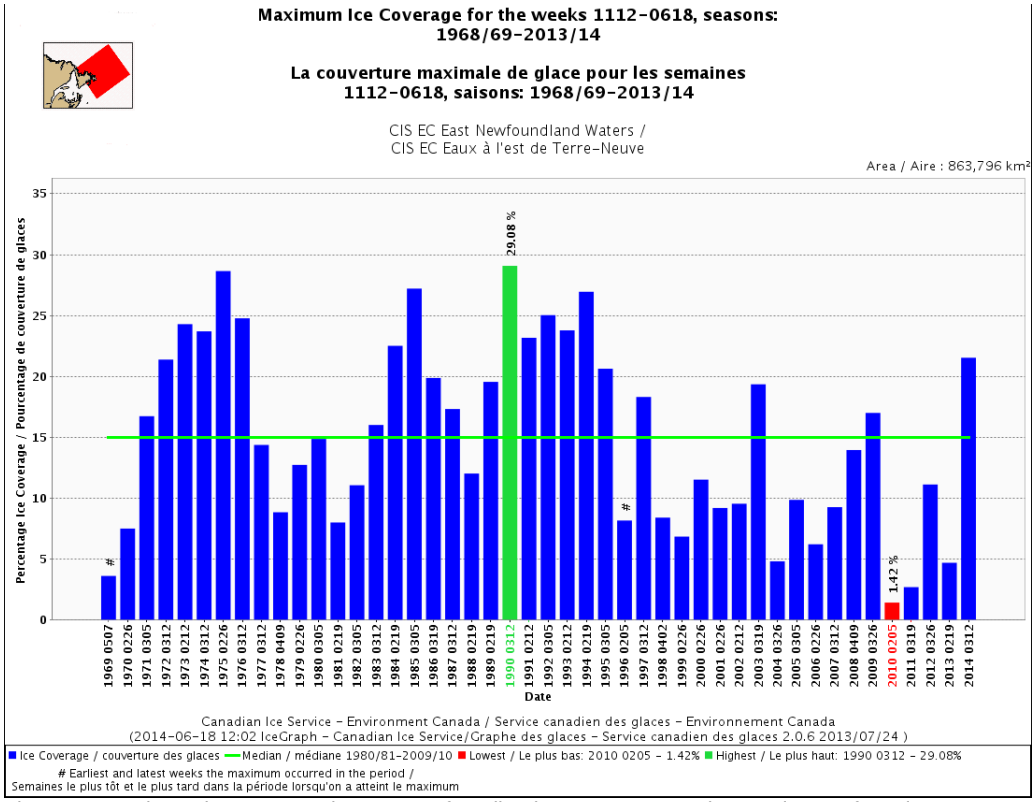

Figure 13: Maximum ice coverage in East Newfoundland Waters compared to maximum of previous years

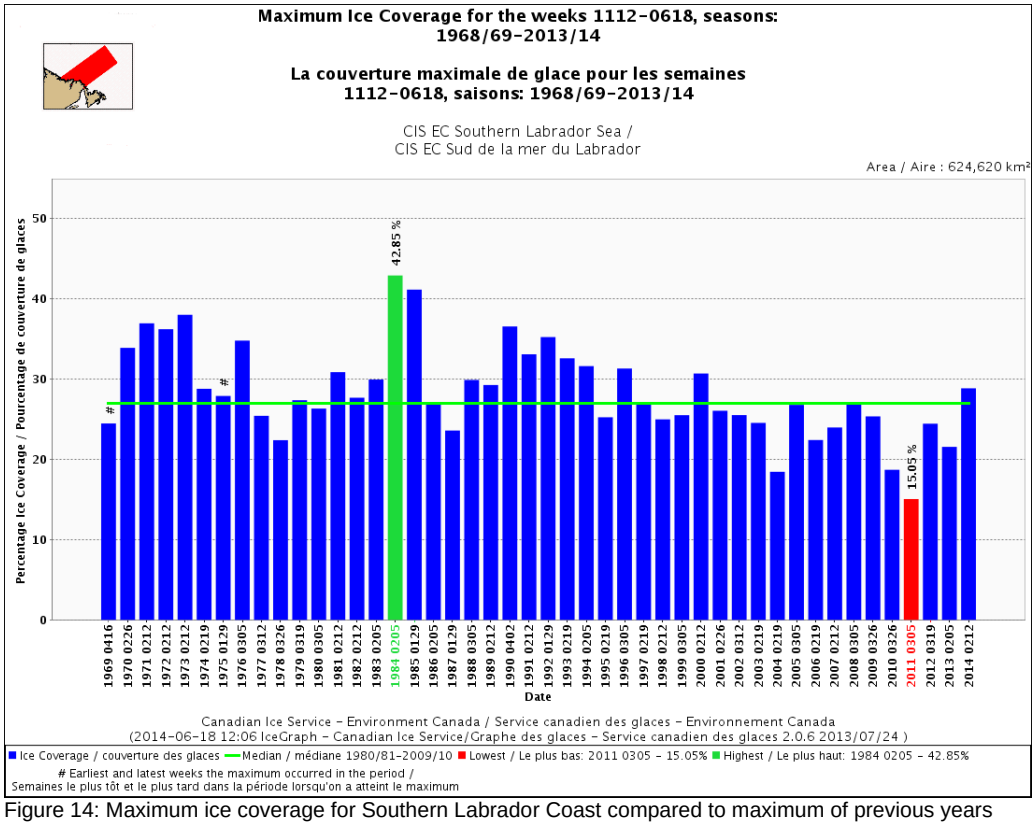

Figure 14: Maximum ice coverage for Southern Labrador Coast compared to maximum of previous years

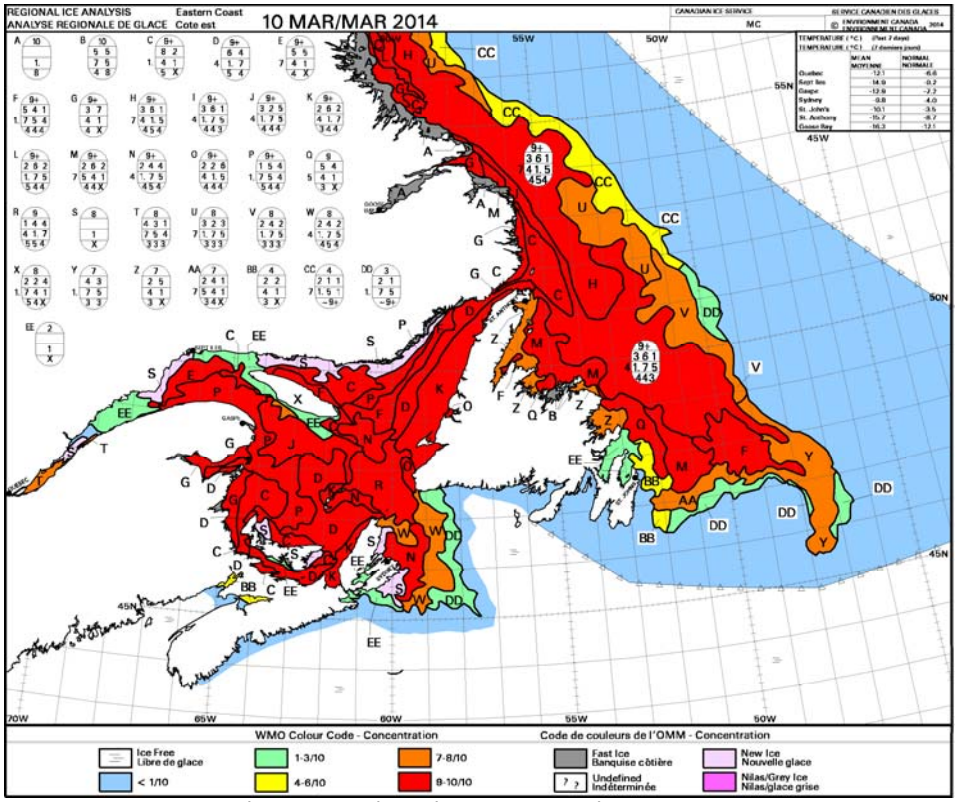

Figure 15: Maximum ice coverage on the east coast