

**Seasonal Summary**  
**For Eastern Canada**  
**Winter 2006-2007**



**Produced by the Canadian Ice Service**  
**July 10<sup>th</sup>, 2007**

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# Gulf of St. Lawrence

## November 2006

The temperatures during first half of November were near normal over the Northeast Arm and trended towards above normal values in the south-western part of the gulf near the Northumberland Strait as well as in the St Lawrence estuary. At this time of year, average temperatures were well above freezing so no significant ice formation occurred. The second half of the month saw the departure from normal temperatures climb to even higher values. The values ranged from 2°C above normal in the Northeast Arm to about 5°C above normal in the estuary which again put the brakes on any ice formation especially in the estuary.

## December 2006

During the first week of December, temperatures took a dip into the below normal range especially over the northern portion of the gulf; however the mercury bounced back to above normal by the second week. The north-western part of the gulf had between 2 to 5°C above normal while the south-eastern and southern portion of the gulf had temperatures slightly above normal during the second week of December. Still no ice formation occurred during this period.

The back half of December remained above normal over the region. A familiar trend continued as the Northeast Arm had above normal values (1.4°C Daniels Harbour to 2.3°C Blanc Sablon) to much or very much above normal values in the western part of the gulf and in the estuary (3.3°C in Bathurst to 5.3°C in Quebec City). Despite the warmer than normal temperatures, some coastal new ice began to form during the third week of December along the North Shore of Quebec. By the end of the third week some new ice began to appear along the New Brunswick and Prince Edward Island shores as well as the coastal area of Nova Scotia along the Northumberland Strait. At the same time, a very narrow band of new ice had formed along the southern shore of the St Lawrence River. At the end of the month, the ice which had formed earlier in the second half of December had expanded somewhat but never extended further off-shore than 3 to 6 miles. Most of the ice was new and grey ice. Elsewhere in the Gulf of St Lawrence, generally open water along the shore and ice free in the central part of the gulf (Figure 18).

Overall the ice coverage at the end of December was significantly less than normal. Normally, the ice coverage over the Gulf of St Lawrence region at the end of December should be about 9.9% however this year's coverage was only 1.2%. It represented the 5<sup>th</sup> lowest ice coverage at the end of December since 1969 (Figure 1).

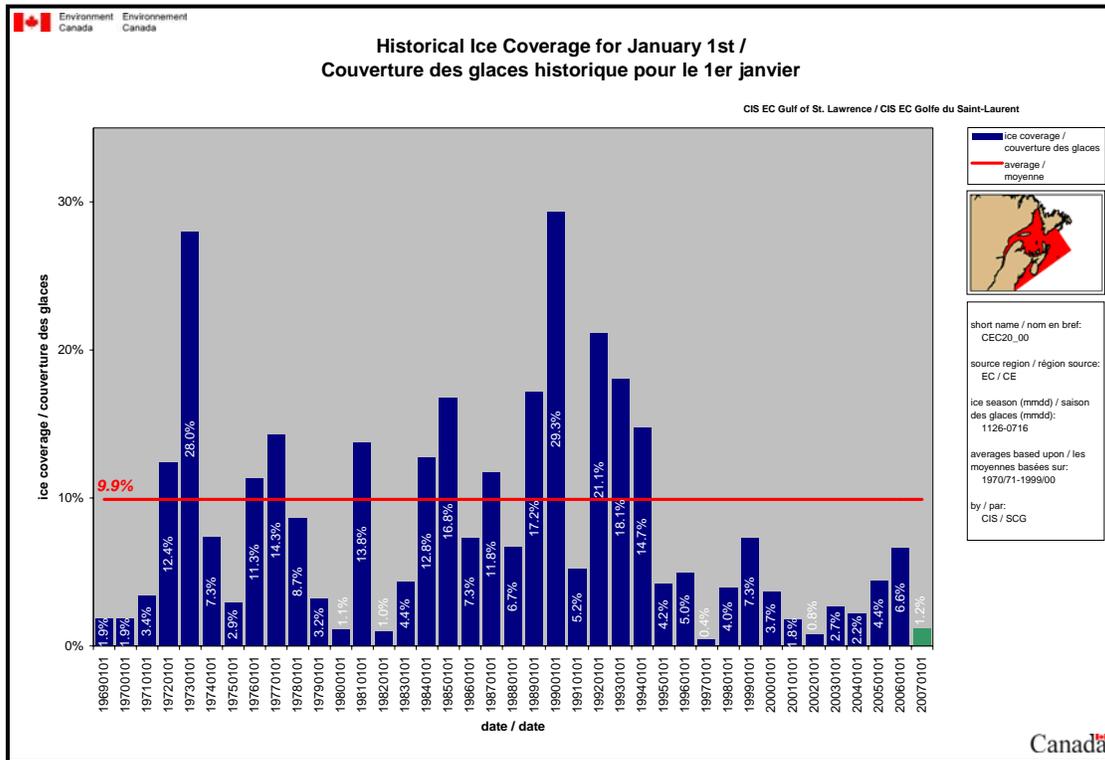


Figure 1: Historical Ice coverage for the Gulf of St Lawrence on January 1<sup>st</sup>.

## January 2007

The above normal temperatures recorded during the month of December extended into the first half of January. The departure from normal values ranged from 4.2°C in Daniels Harbour to 8.7°C in Quebec City. The very warm temperatures slowed the ice growth in the gulf in a significant fashion. At the middle of January, the St Lawrence River was covered with new ice down to the entrance of the Saguenay River. Further east in the river to the estuary, some bands of loose new ice were observed along the shore and extended no more than 2 to 4 miles from the coast. The Anticosti Island coast also had a very narrow band of new ice along the shore. In Chaleur Bay as well as the coastal area of New Brunswick down into the Northumberland Strait, mainly new ice with some grey ice covered those areas. Some fast ice began to form in the smaller bays. The north shore of Prince Edward Island as well as the western coast of Newfoundland, from Stephenville northward, also had narrow bands of new ice. The Belle Isle Strait was covered with new and grey ice. The North Shore of Quebec had an area of ice that extended about 3 to 15 miles from the shore. Elsewhere along the shore and ice edge, the area had mainly open water with ice free conditions toward the middle of the gulf.

Just before the middle of January, temperatures finally dropped to below normal values for the western part of the gulf and the estuary until the end of January. The Northeast Arm, however, did remain near or above normal during the same period. Ice

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growth began to take off so that by the end of the month the St Lawrence River and estuary were covered with grey and new ice with some bands of greywhite ice along the north shore of the Gaspé Peninsula. The northern half of the river and estuary had mostly new and grey ice. The western portion of the Gaspé Passage was covered with grey and new with some greywhite ice while the eastern half of the passage had mainly open water. The ice edge east of the Gaspé Peninsula and the north shore of New Brunswick was located about 60 to 70 miles off-shore. The area of ice was comprised of mostly new and grey ice with some greywhite. The Chaleur Bay area was mostly covered with new and grey ice except along the southern shore where some greywhite and thin first year ice blanketed the area. Some open water areas were present in the bay at the end of the month. The Northumberland Strait had grey and new ice with some patches of greywhite and thin first year mostly along the Prince Edward Island shore at the northern entrance as well as along the Nova Scotia Coast from just east of Pictou to St Georges Bay. The ice along the north-eastern shore of Prince Edward Island extended between 15 to 30 miles from the shore and was mostly grey and new with some greywhite ice. An area of new and grey ice stretched south-eastward from the Magdalen Islands by about 20 to 40 miles. The north-western shore of Newfoundland had some new and grey ice in the larger bays and fast ice in the small bays and inlets. North of Daniels Harbour towards the Belle Isle Strait and within 15 to 35 miles of the North Shore of Quebec, mostly new and grey ice with some greywhite ice covered this area at the end of January. A band of thin first year and greywhite ice covered the southern part of Belle Isle and extended south-westward to Port au Choix. Anticosti Island was rimmed with looser new ice. The rest of the gulf had open water with ice free conditions in the south-eastern part of the gulf and Cabot Strait.

The cooler than average temperatures over parts of the gulf did help bridge the gap towards a more normal ice extent, however a significant deficit still existed at the end of the January (Figure 22). In fact the ice situation near the end of the month for this year represented the 6<sup>th</sup> lightest year in terms of ice coverage since 1969 (Figure 2).

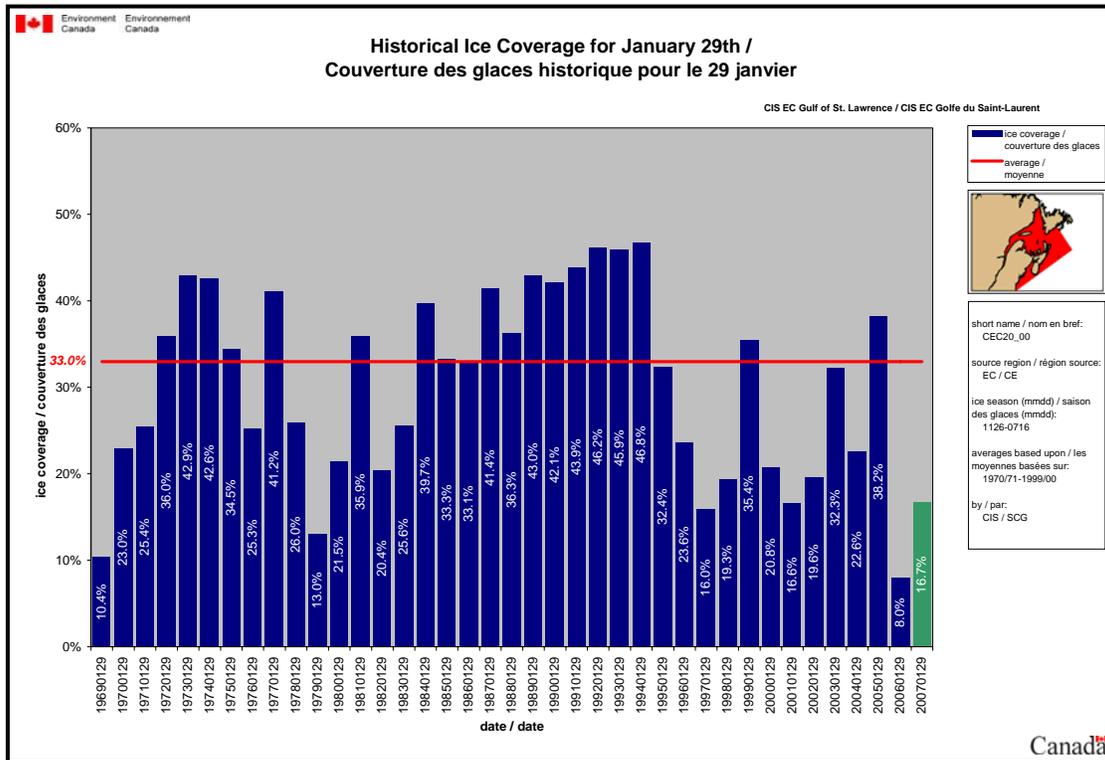


Figure 2: Historical Ice coverage for the Gulf of St Lawrence on January 29<sup>th</sup>.

## February 2007

The colder than normal temperatures registered during the latter half of January continued into the first part of February at least in the western section of the gulf. The eastern portion of the Gulf of St Lawrence still experienced near normal temperatures. Another significant feature of this period was the persistent north-westerly winds over the area which caused ice from the south-western part of the gulf to drift around Cape North of Cape Breton Island into the western part of the Cabot Strait at the end of the first week of February. The winds also permitted the northern portion of the St Lawrence River as well as the estuary to be covered with ice no thicker than new and grey ice while the southern portion had greywhite and grey ice with some thin first year ice at mid-month. This same ice edged into the western third of the Gaspé Passage. The balance of the passage had mostly open water. Incidentally, a 25 to 50 mile wide corridor of open water stretched diagonally across the gulf from just east of Sept Isles and ran south of Anticosti Island to reach the eastern side of Cabot Strait. In Chaleur Bay, mostly new and grey ice covered the northern portion of the bay with greywhite and thin first year ice in the south at mid-February. From the north shore of New Brunswick into the Northumberland Strait, the ice was mostly new and grey ice with some greywhite ice. Bands of thin first year and a trace of medium first year ice were observed along the south-western shore of Prince Edward Island. The rest of the south-western part of the gulf, southwest of the open water edge, was covered with mostly

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grey and greywhite ice. The exception was an area of greywhite and thin first year ice located northwest, west and south of the Magdalen Islands. Some of this ice spilled into the western part of Cabot Strait and extended south to about 40 miles south and east of Scatarie Island. The southern part of the Northeast Arm was covered with mostly looser grey and new ice then thickened to grey and greywhite towards the northeast and eventually became greywhite and thin first year and a bit of medium first year near and in the Belle Isle Strait. The exception was the northern portion of Belle Isle Strait and the eastern portion of the North Shore of Quebec where mostly new and grey ice prevailed. The western part of the North Shore of Quebec, 30 miles east of Natashquan, was open water at mid-February. An odd shaped area of new and grey ice started from the south-eastern tip of Anticosti Island and extended south-eastward for about 90 miles.

The second half of February saw the temperature moderate over the entire gulf. The general pattern had near normal temperatures over the river and estuary with much above normal values in the Northeast Arm. light to moderate northerly or north-easterly winds caused a significant shift in ice coverage from north to south. The result was no more apparent than in the St Lawrence River and estuary. At times during the latter part of February, this area was generally open water with a few narrow bands of ice along the north facing shores. Conversely these same winds caused the ice from the south-western part of the gulf to drift southwards through the Cabot Strait. At the end of the month, intermittent narrow bands of greywhite and thin first year with some medium first year hugged the Gaspé Peninsula. A few patches of new ice with a trace of thin first year ice floated in the river and estuary as well as in the Gaspé Passage due to the calm winds observed at the end of February. The south-eastern part of Chaleur Bay was covered with thin and medium first year ice while the rest of the bay had grey and new with some greywhite ice. The ice coverage in the south-western part of the gulf had shrunk significantly so that the ice eastern edge was located about 50 miles east of Miscou Island, 50 northeast of Prince Edward Island and near the eastern tip of the Magdalen Islands. The ice was mostly thin and medium first year ice except in the Northumberland Strait, along the Prince Edward Island coast, where new ice with a trace of thin first year ice prevailed. Looser greywhite and thin first year ice from the south-western part of the gulf drifted southwards and was located in the western part of the Cabot Strait and extended 90 miles south of the southern shore of Cape Breton Island. The higher concentration of thin first year was in the Sydney Bight area at the end of February. The ice along the western coast of Newfoundland, within 30 miles of the shore, was mostly greywhite and thin first year with some medium and thick located mostly in the northern reaches of the coast. The southern part of Belle Isle Strait was covered with medium and thick first year ice. This same ice extended south-westward along the western Newfoundland coast to about Cow Head. Over the northern part of Belle Isle Strait and the northern part of the Northeast Arm, mainly looser new ice with a trace of thin first year ice covered the area. Further west along the Quebec shore and around Anticosti Island, patches of new ice prevailed. Elsewhere in the gulf, generally open water.

Despite the cooler than normal temperatures since the middle of January, the ice coverage had not bridged the gap in terms of normal ice coverage (Figure 26). In fact,

near the end of February (February 26, 2007), the ice covered only 16.6% of the area. This represented the second lowest ice coverage since 1969 (Figure 3).

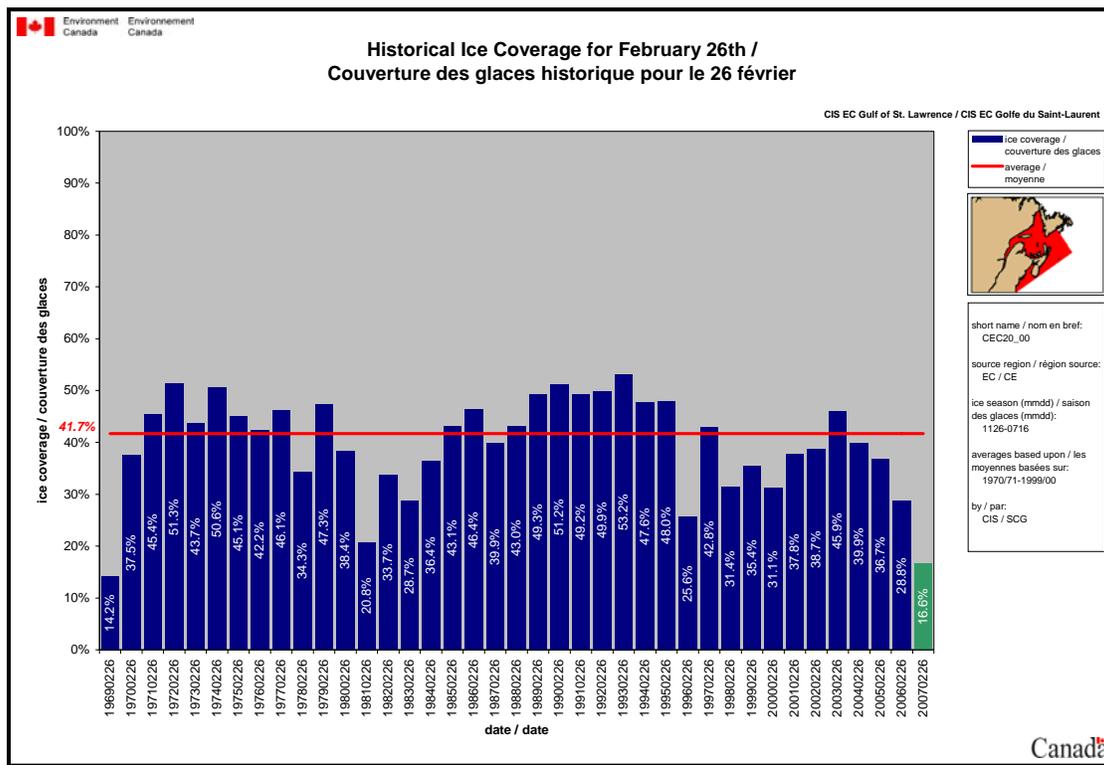


Figure 3: Historical Ice coverage for the Gulf of St Lawrence on February 26<sup>th</sup>.

### March 2007

Near to below normal temperatures characterized the first half of March. Winds blew from the northwest which caused the thicker ice to drift towards the south. At mid-month, the net result of the persistent north-westerly winds generated open water areas in the St Lawrence River and estuary. Along the southern portion of the river, west of Matane, the area was covered with loose thin first year and greywhite ice, while the northern portion had open water. An area of open water, 10 to 20 miles wide, stretched along the Gaspé Peninsula from Matane to Gaspé. The area further north to the North Shore of Quebec and the Gaspé Passage was covered with new and grey ice with some greywhite ice. The western part of Chaleur Bay was also mainly open water while the east had grey and thin first year and medium first year ice. Along the coast of New Brunswick and northern Nova Scotia coast in the Northumberland Strait was mainly open water. The southwest coast of Prince Edward Island had a narrow band of greywhite and thin first year ice with some brash ice. The north-eastern shore of Prince Edward Island had a 15 to 35 miles wide area of open water. The balance of the south-west part of gulf was covered with mainly grey and greywhite ice with a band of thin and medium first year ice along the north-western Cape Breton coast. The north-westerly winds continued to feed ice into the Cabot Strait during the first half of March. At mid-

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March, loose greywhite and thin first year ice covered mostly of the area. The exception was the extreme north-eastern part of the strait where open water prevailed and extended into the gulf along the south-western shore of Newfoundland. From just south of the Bay of Island into the Northeast Arm, mostly grey and greywhite ice with some thin first year ice covered these areas. The ice thickened along the north-western shore of Newfoundland from Sally's Cove north-eastwards into Belle Isle Strait with thin and medium first year with some thick first year.

For the most part, the ice situation at mid-March was still significantly behind normal in terms of ice extent (Figure 28 and Figure 29). The only exception was the St Lawrence River where the concentration of ice was greater than normal.

The second half of March was characterized by near normal temperatures. The ice extent morphed somewhat during the third week however a dramatic change in ice coverage occurred during the last week of the month. During the last week of March, all of the river, estuary and Chaleur Bay became open water except for some patches of fast ice along the shore and isolated patches of thin and medium first year ice spread out through the area. During the waning days of March, the New Brunswick coast as well as the Northumberland Strait also became open water except for a few bands of thin and medium first year ice. Virtually the only area of ice that remained at the end of March in all of the southern part of the gulf was located along the north-western shore of Cape Breton Island and the north-eastern shore of Prince Edward Island. The ice in these areas was looser thin first year ice except for a very narrow band of thin and medium first year ice along the north-western shore of Cape Breton. The vast majority of the Cabot Strait was open water to ice free with the exception of bands of thin and medium first year ice which extended from the Sydney area southwards to about 60 miles south of Scatarie Island. The south-western coast of Newfoundland was open water to ice free however north of the Bay of Islands and into the Northeast Arm, generally thin and medium first year ice with some thick first year ice covered the area. The exception was the bergy water in the northern part of Belle Isle Strait and the extreme north-eastern part of the Northeast Arm. Elsewhere mainly open water to ice free.

The normal ice situation, in terms of ice types, on March 12 has the following breakdown – 42% first year ice, 39.4% young ice (grey and greywhite) and 18.6% new. This year (March 12, 2007) the breakdown was 15.1% first year, 51.8% young ice and 33.1% new. As the data indicated, this year's ice situation near mid-March had only about one third of the usual amount of first year ice. At the same time, the amount of new ice was about double what should be observed at that time. Hence, the warmer temperatures and winds quickly accelerated the ice melt/destruction at the end of March. Despite the dramatic decrease in ice coverage during the last half of March, this year's ice coverage near the end of the month (actually for April 2<sup>nd</sup>) represented only the 8<sup>th</sup> lowest extent since 1969 (Figure 4).

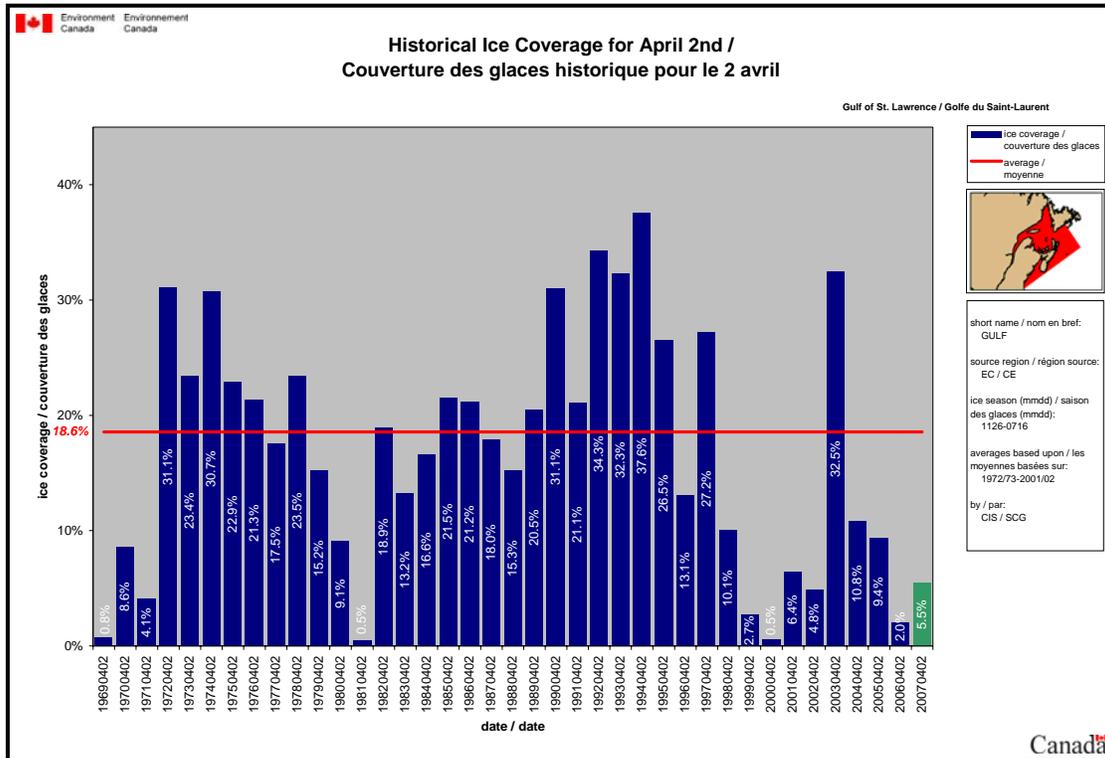


Figure 4: Historical Ice coverage for the Gulf of St Lawrence on April 2<sup>nd</sup>.

## April 2007

Temperatures took another dive into negative territory during the first half of April. The mean temperature over the entire area remained below the freezing mark for the period and permitted some new ice to form along the shore during the first week of April especially over the northern reaches of the area. The ice along the north-western shore of Cape Breton melted during the first week of April however some thin and medium first year ice in St Georges Bay and in south-eastern Northumberland Strait still prevailed during the period. However, by the end of the second week this area was mainly open water. The floating ice along the east shore of Cape Breton Island extending southward melted during the first week of April and gave way to open water to ice free by the end of the first week. By the middle of April, the western coast of Newfoundland was generally open water except in Belle Isle Strait which was still covered with thin to thick first year ice with a trace of old ice. Further north in the Northeast Arm and along the North Shore of Quebec to just east of Natashquan, mostly thick, medium and thin first year covered the area with varying concentrations. Elsewhere mainly open water with some coastal fast ice. The central part of the gulf as well as the eastern side of Cabot Strait was ice free (Figure 31).

The temperature during the last two weeks of April moderated somewhat to near normal values however the ice in the Northeast Arm continued to prevail although with decreased extent. The fast ice in Chaleur Bay and in the small bays of the New

Brunswick and Prince Edward Island had fractured and melted during the latter part of the third week and into the last week of April. At the end of the month, the ice in the Northeast Arm had retreated north-eastward and was located north of 50N and west of 59W. The ice in the area was mostly medium and thick first year ice with a trace of old ice. The smaller bays along the North Shore of Quebec from Natashquan eastward still had fast ice. Elsewhere mainly ice free except along the North Shore of Quebec were open water hugged the shore (Figure 35).

Despite the precipitous drop in ice coverage at the end of March, the decrease was somewhat gradual for the entire month of April. At the end of April, the ice in the Northeast Arm represented 1% coverage compared to 3.6% seen normally at this time of year. Obviously below normal but this years ice was only the 16<sup>th</sup> lowest in terms of ice coverage which placed it close to the median (Figure 5).

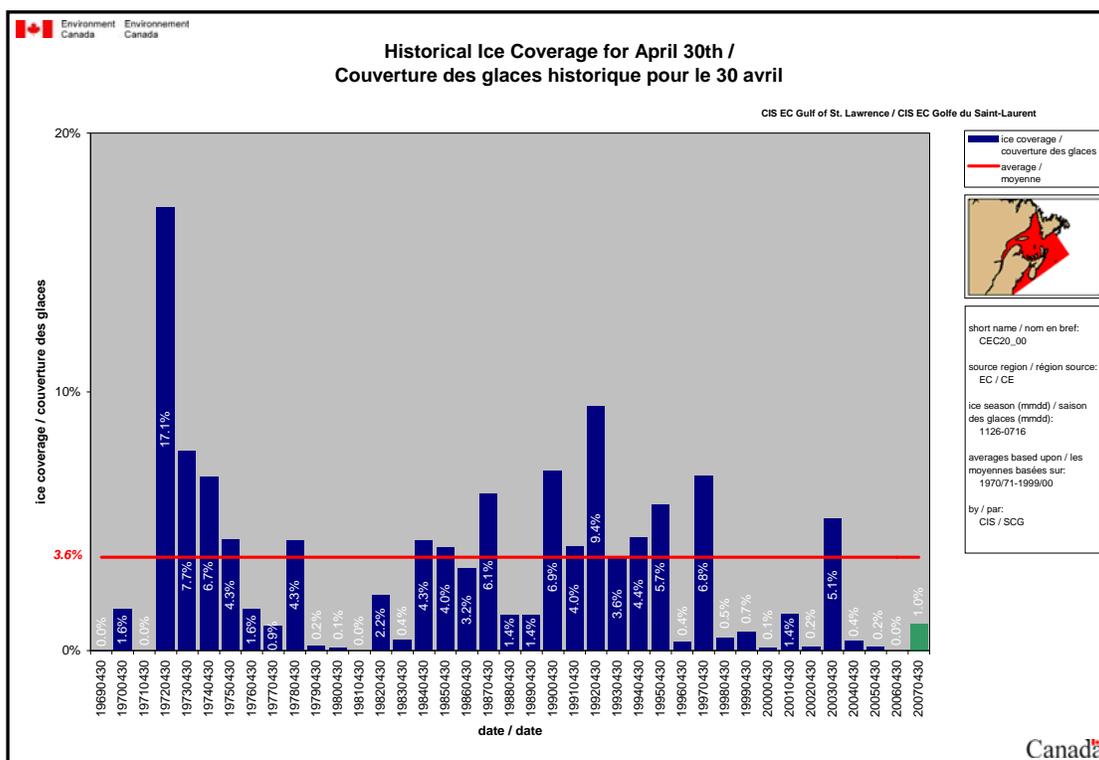


Figure 5: Historical Ice coverage for the Gulf of St Lawrence on April 30<sup>th</sup>.

## May 2007

The temperatures were generally above normal over the estuary and the western two-thirds of the Gulf while the eastern third had near normal values during the first half of May. The ice in the Northeast Arm continued to migrate north-eastward and shrink in size. By the middle of May, the Belle Isle Strait had mostly thick and medium first year ice with up to 2 tenths old ice. The westward ice extent was near 5810W and north of

5500N. Some fast ice was still present along the North Shore of Quebec, west of 6100W. Elsewhere, ice free except for bergy water north of 5400N and east of 6000W.

Temperatures took a dip during the second half of May as below normal readings were registered over the entire gulf area. Occasional winds from the northeast caused the ice in the Belle Isle Strait and drift into the Northeast Arm. All of the fast ice in the small bays melted during the third week. By the end of the month, the area of ice was strung out along the North Shore of Quebec east of 5930W and within 35 miles of the coast. The ice was mostly loose thick and medium first year with one tenth of old ice. The rest of the gulf was ice free with bergy water east of 6050W and north of 4925N (Figure 39).

The month of May, although featured a significantly reduced ice covered, had above normal ice extent for the entire month in the Northeast Arm region (Figure 36 to Figure 39). Normally, the Gulf of St Lawrence would be ice free during the third week of May.

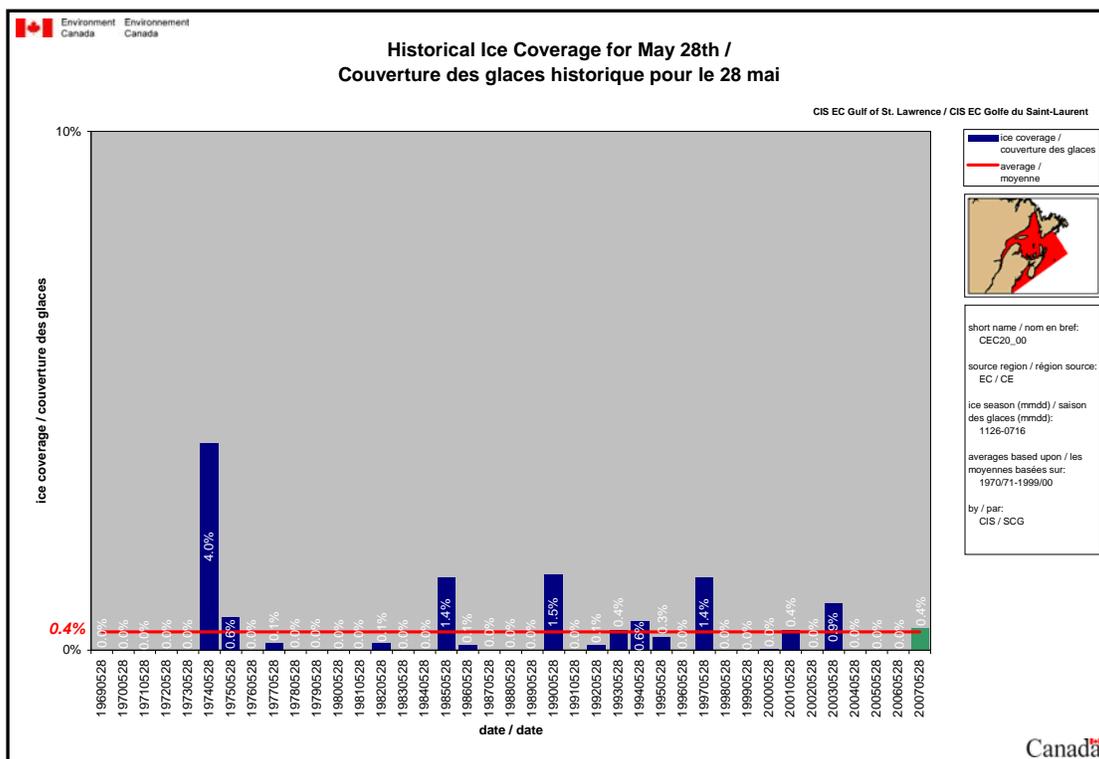


Figure 6: Historical ice coverage for the Gulf of St Lawrence on May 28<sup>th</sup>.

### June 2007

Temperatures varied from near normal over the northern part of the Gulf as well as the estuary while the southern section of the gulf was below normal during the first half of June. Meanwhile, the Northeast Arm area was basking in above normal temperatures during the same time. During the first week of June most of the ice in the Northeast Arm area had melted however only a few patches of ice remained near the

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Blanc Sablon area as well as the southern part of the Belle Isle Strait area. Early in the second week, the area finally became bergy water as the last bit of ice had melted.

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# East Newfoundland Waters

## November 2006

The mercury was above normal during the first half of November and continued into the second half with above or much above normal values. The net effect was to keep ice formation next to nil. The only area that showed signs of ice formation was the Lake Melville area during the last week of November. The extreme western part of Lake Melville as well as the northern coast of Groswater Bay has some new ice. Otherwise generally open water except for bergy water north of 5800N.

## December 2006

The temperature for the first half of December were generally near to slightly above normal. New and grey ice began to form along the entire shore of Labrador to the Belle Isle Strait. By the end of the second week, some fast ice began to form in the northern bays and inlets of Labrador and in the western part of Lake Melville. Generally speaking, the ice edge was no further than 20 to 30 miles from the shore. The iceberg limit had slipped down to about 5640N at mid-month with open water along the shore and ice free about 40 to 60 miles off-shore. The Newfoundland region remained ice free.

During the second half of December, the Newfoundland region had near normal temperatures while the Labrador coast had much above normal values. The overall effect of these warmer temperatures along the Labrador coast kept the ice growth close to the shore. Other than a bit of greywhite ice along the northern shore of Labrador, the remainder of the ice along the shore was mostly grey and new. The eastern and central part of Lake Melville became mostly fast with greywhite and grey ice during the third week while the rest of the lake had mobile greywhite, grey and new ice. Still no significant ice formed over Newfoundland at the end of December (Figure 18).

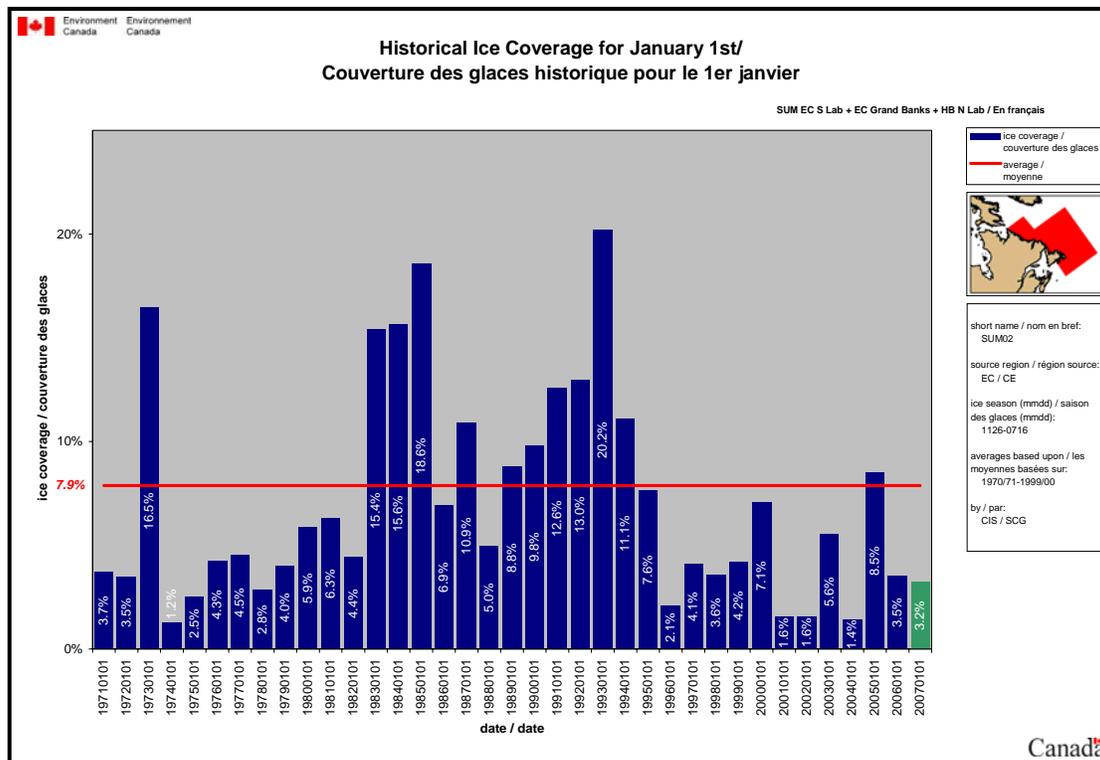


Figure 7: Historical ice coverage for Newfoundland and Labrador for January 1<sup>st</sup>.

### January 2007

The temperature trend along the Labrador coast throughout the latter part of December was extended over the entire region during the first part of January. The region was bathed with very much above normal values. The ice pack that drifted along the Labrador coast did not cross the Belle Isle Strait until the end of the second week of January. However, some new and grey ice did form in some of the bays of Newfoundland from Notre Dame Bay northwards. By the middle of January, the ice pack along the Labrador coast extended about 90 miles east of the shore in the northern section and about 40 to 50 miles along the central and southern shore. Generally grey and new with greywhite ice covered the entire Labrador ice pack except for some patches of thin first year ice along the northern part of the coast. The Belle Isle Strait was covered with new and grey ice. Some fast ice formed in the small bays along the Northern Peninsula while new ice appeared in the Botwood area. The iceberg limit had continued its southward drift and was located around 5420N with open water within 10 to 20 miles of the ice edge and coast. Further off-shore mainly ice free conditions prevailed.

The temperatures came back to more normal values during the second half of January over most of Newfoundland however the extreme northern part of Newfoundland and all of Labrador were still above normal. The ice edge along the Labrador coast continued to expand eastwards during the second half of January. Lake Melville became completely fast during the middle part of the third week of January. The

southern ice edge located near the Belle Isle Strait had drifted southward during the third week but was halted due to strong southerly winds which resulted in significant ice destruction along the Northern Peninsula. Ice expansion resumed during the last week of the month and was located at 5020N or about 50 miles north of Notre Dame Bay. The eastward ice extent was about 110 miles from the northern coast of Labrador, 90 miles east of central Labrador and narrowed to only 60 miles east of the southern part of Labrador. Once south of Belle Isle Strait the ice pack flared out to about 90 east of the northern portion of the Northern Peninsula. The composition of the ice varied from thin and medium first year ice with a trace of old ice in the northern portion of the Labrador coast while the central and southern section of the Labrador shore had mostly thin first year and greywhite ice with some grey and new ice. From the Belle Isle Strait area southward to the southern ice edge, mainly looser grey and new ice with some greywhite and thin first year ice covered the area. South of the ice edge, only a few strips of ice were visible. In the small bays of Notre Dame Bay, some fast ice had formed while an area of new ice was present in Hamilton Sound and stretched along the Newfoundland coast to Cape Freels and into the northern part of Bonavista Bay. This area of ice was located within 4 to 8 miles of the shore. At the end of the month the iceberg limit was located around 5330N with open water along the ice edge and shore to Conception Bay. Further off-shore, ice free conditions prevailed (Figure 22).

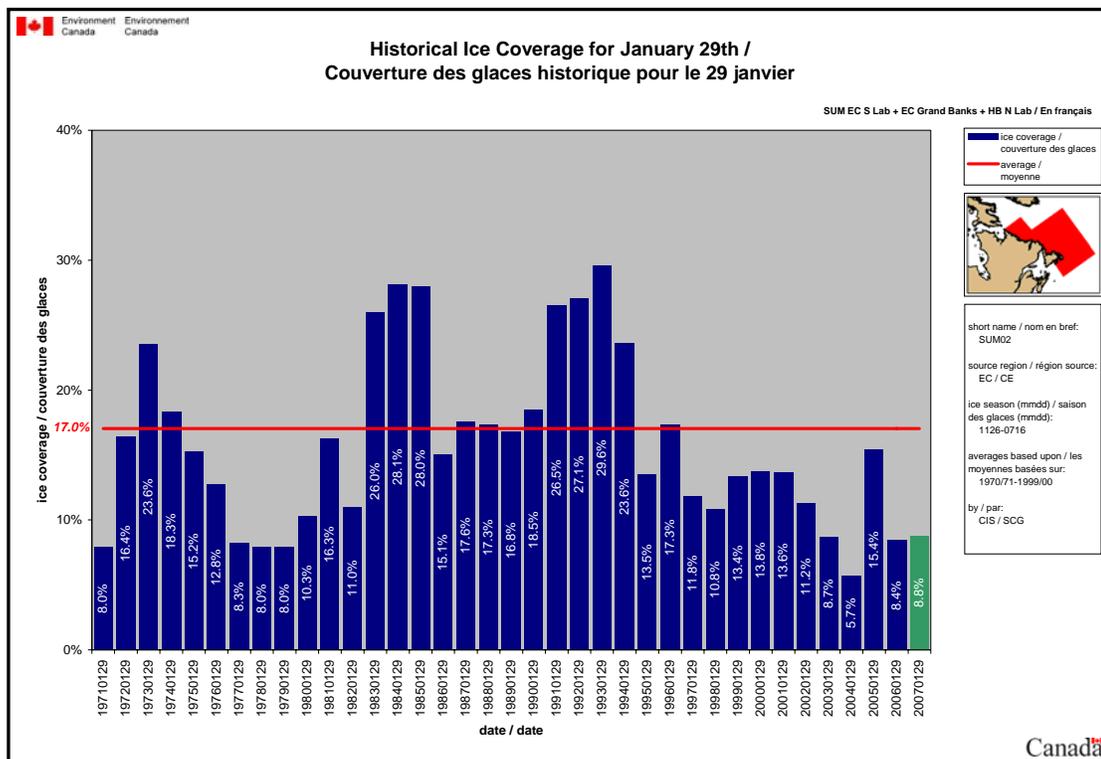


Figure 8: Historical ice coverage for Newfoundland and Labrador on January 29<sup>th</sup>.

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## February 2007

The mercury varied from near to below normal over Newfoundland and southern Labrador and above or much above normal over the remainder of the Labrador coast during the first part of February. The southern ice edge continued its slow southward progression so that by the middle of February it was located just north of Notre Dame Bay near 4920N. The seaway extent of the sea ice along the northern and central portion of the Labrador coast retreated towards the shore as northerly or north-easterly winds during the latter part of the second week of February caused the area of ice to shrink. However, at the same time, the ice edge along the southern part of Labrador and over the Newfoundland region expanded further east during the same period. At mid-month, the ice edge along the northern and central part of Labrador was about 60 to 90 miles from the shore. The ice edge located east of the southern part of the Labrador coast was about 140 miles offshore. As for the ice edge east of Newfoundland, it varied between 150 to 180 miles east of the Northern Peninsula. Most of the ice along the Labrador coast was thin and medium first year ice with a trace of old ice while the ice south of Belle Isle Strait was mostly thin first year and greywhite with some medium first year ice. Elsewhere along the Newfoundland coast south of the ice edge, areas of fast ice were present in the smaller bays located mostly north of Trinity Bay. The area between New World and Fogo islands as well as the area south of these islands was covered with fast ice. An area of new ice stretched from Hamilton Sound to Cape Freels and southwards across the entrance of Bonavista Bay. The iceberg limit drifted south to about 5350N at the middle of February.

The mild temperatures registered along the Labrador coast continued into the second half of February. Consequently, very much above normal values covered this region while the Newfoundland area had more modest departures of near or above normal. The southern ice edge finally reached the Notre Dame Bay area during the last week of February. Meanwhile, a low pressure system swept south of Newfoundland and became stationary northeast of the Island and generated persistent northerly and north-easterly winds. The ice edge at the end of February was located about 90 miles east of the northern part of Labrador and 10 to 40 miles east of the central and southern Labrador coast. From just north of Belle Isle Strait, the ice edge flared out significantly with a tongue of ice that curled around the northern part of the Grand Banks. The eastern tip of this tongue of ice was about 140 miles east north-east of St John's while the eastern edge of the ice pack was about 100 miles east of St. Anthony and 60 miles north-east of Cape Freels. The ice type along the entire Labrador coast was mostly medium and thick first year ice with a trace of old ice. The areas within 10 to 30 miles of the Northern Peninsula and in Notre Dame Bay had mostly bergy water to looser new ice with a trace of greywhite. Further offshore but within 60 to 80 miles of the shore, this area had mainly medium and thin first year ice with a trace of old ice. The conditions along the ice edge were mostly loose thin first year and greywhite ice. The iceberg limit had continued to drift southwards and was located near Hamilton Sound at the end of February (Figure 26).

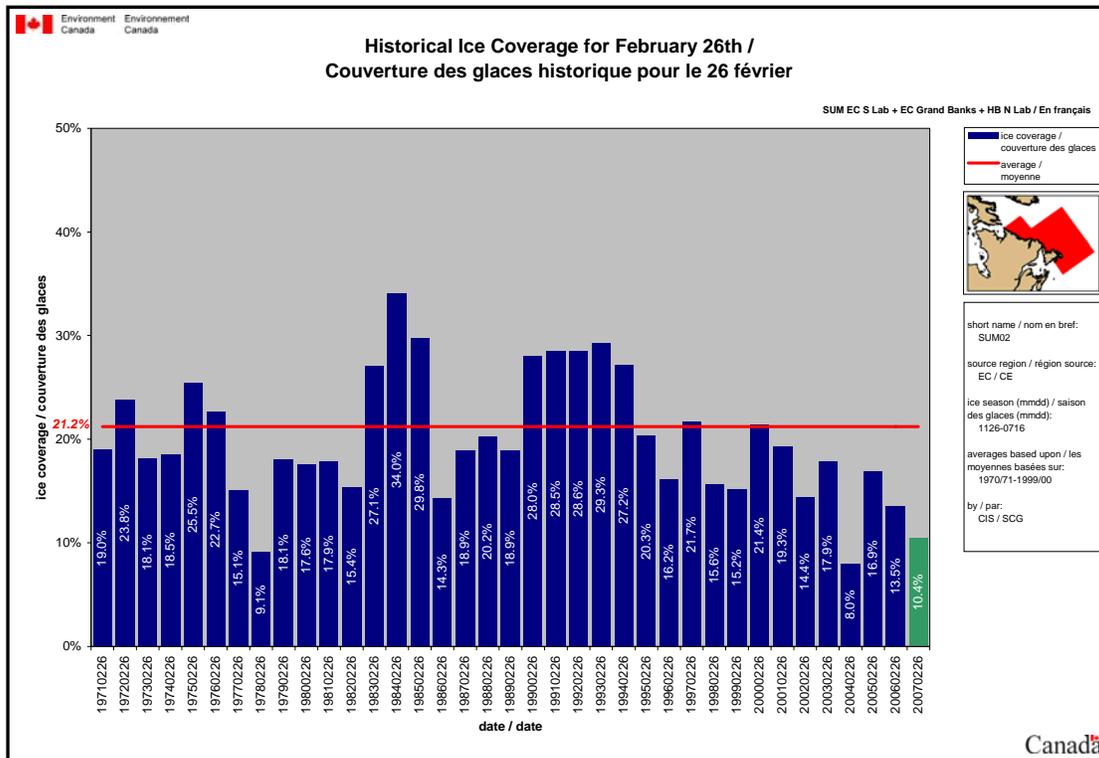


Figure 9: Historical ice coverage for Newfoundland and Labrador on February 26<sup>th</sup>.

### March 2007

The temperatures during the first half of March were generally near normal over most of the region except for the northern part of Labrador where below normal values were registered. The first part of the month saw the ice along the Labrador stretch further offshore. The area of ice over the Newfoundland area was also observed drifting southwards from its position at the end of February; however south-westerly winds near the middle of March caused the ice along the north shore of Newfoundland to drift northwards. At mid-month, the area from White Bay to Notre Dame Bay was covered with bergy water. The southern ice edge was located about 30 miles north of Notre Dame Bay. The ice east of Newfoundland also retreated somewhat northwards during the same period and was located generally north of 4845N. The furthest eastward location of the ice was 140 miles east of Cape Freels. East of the Northern Peninsula, the ice edge was between 180 to 210 miles offshore. North of Belle Isle Strait and along the Labrador Coast, the ice edge was located between 90 and 130 miles east of the coast. Generally speaking the ice pack was mostly comprised of medium and thick first year ice with a trace of old ice. The exception was in the Groswater Bay area where bergy water to grey and new ice conditions prevailed. This same band of grey and new ice extended within 10 to 20 miles of the southern Labrador coast. The ice in Newfoundland was also mainly medium and thick first year ice with a trace of old. Along the eastern ice edge, looser ice conditions were observed. The iceberg limit had drifted down to the St John's area.

Temperatures during the second half of March were generally near normal over Newfoundland and near to below normal over Labrador. The southern ice limit began to drift northwards during the third week of March however by the middle of the last week of the month, the ice edge shifted southwards and reached the southern shore of Notre Dame Bay during the last few days of the month. However, at the end of the month, not all areas along the north coast of Newfoundland had ice; most of White Bay and the western end of Notre Dame Bay had bergy water. The southern tip of the ice edge was near 4830N and about 30 miles southeast of Cape Bonavista. The eastern ice edge east of the Northern Peninsula was located about 140 miles offshore. Further north, the ice edge was located about 120 miles east of the southern Labrador coast, 90 miles east of central Labrador and 150 miles east along the northern part of Labrador at the end of March. Generally thick and medium first year ice with a trace of old ice covered the entire area with somewhat looser ice conditions along the ice edge (Figure 31).

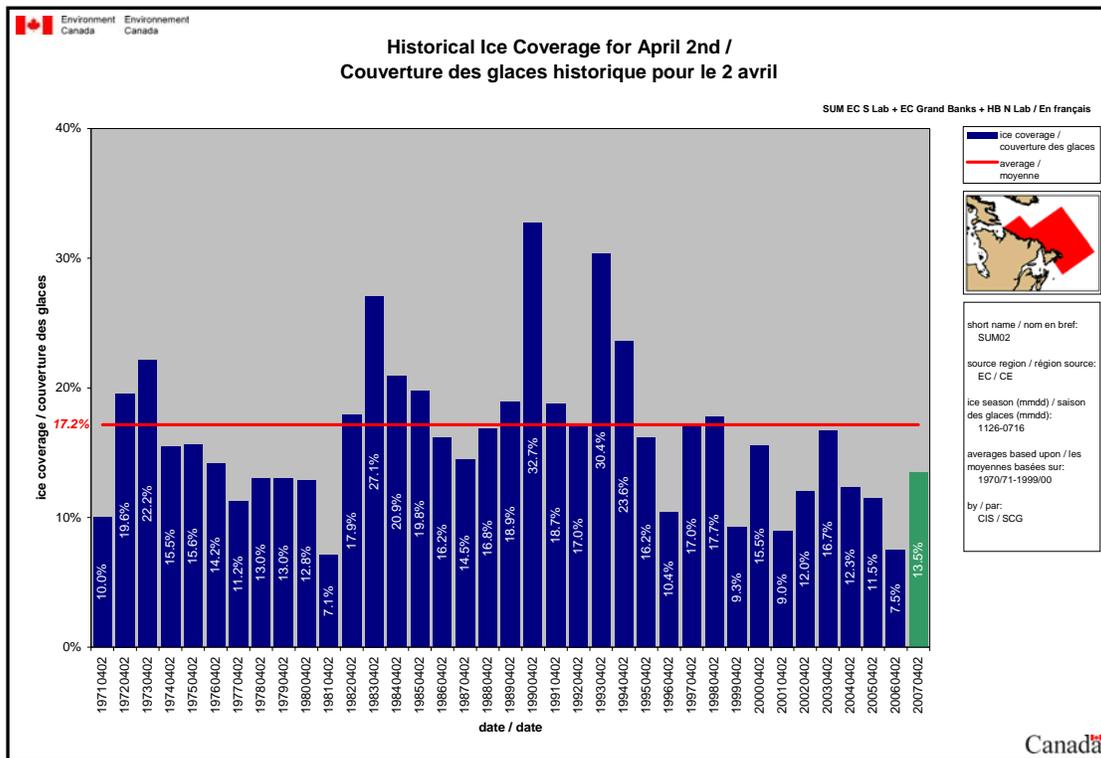


Figure 10: Historical ice coverage for Newfoundland and Labrador on April 2<sup>nd</sup>.

## April 2007

The first part of April was characterized by generally below or slightly below normal temperatures. Winds from the north veered to the northeast during the first week of April and remained moderate to strong during the period. The end result was a compressed ice pack towards the shore of Labrador and Newfoundland. The areas of bergy water in White Bay and the western end of Notre Dame Bay were replaced by

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thin, medium and thick first year ice with a trace of old ice by the middle of the first week of April. At the end of the first week, the southern ice edge was located south of Trinity Bay, near Pouch Cove. The eastern ice edge was 50 miles east of Cape Freels, 60 miles east of St Anthony, 45 miles northeast of Cartwright, 90 miles east of Nain and 140 miles east of Northern Labrador. At the beginning of the second week a low pressure system passed north of Newfoundland and generated south-westerly winds and loosened the ice pack in the Newfoundland area and generated some bergy water along the Northern Peninsula, White Bay and western Notre Bay. The southern ice edge also migrated northwards. However a return of the northerly and north-westerly winds during the latter part of the second week caused the ice to drift back southwards. At mid-month, the southern ice edge was located around 4820N and extended about 75 miles east of Cape Bonavista. Bonavista Bay was mostly bergy water except for some medium and thick first year ice and a trace of old ice in the northern portion of the bay. As well, most of Notre Dame Bay was bergy water with some patches of fast ice around and south of New World Island. White Bay also had bergy water at mid-April. The eastern extent of the ice edge was about 60 miles east of Cape Freels, 60 miles east of St Anthony, 80 miles along the southern Labrador coast and between 110 and 140 miles east of the central and northern portion of the Labrador coast. The composition of the ice throughout the entire area was mostly medium and thick first year ice with a trace of old ice. The exceptions were the Belle Isle Strait, the eastern shore of the Northern Peninsula and the area north of Notre Dame Bay; one tenth of old ice was observed in these areas.

Temperatures during the second half of April were below or slightly below normal for Newfoundland and near normal for Labrador. Winds during the third week were from the east and backed to northeast, mostly over Newfoundland and southern Labrador. Strong ice pressure developed during the period in the ice pack and caused significant problems to the shipping and fishing industry especially in the northern Newfoundland area. The winds also drove ice into Conception and Trinity bays and went as far south as St Johns' during the period. The entire Bonavista Bay was covered with medium and thick first year ice with one tenth old ice. The eastward extent of the ice was only 15 miles east of Cape Freels, 25 miles east of St Anthony. The ice flared out to 120 miles east of Cartwright and between 110 to 150 miles east of the central and northern Labrador shore. During the last week of the month, the winds were from the west and caused the ice pack to expand in extent and decrease in concentration. At the end of April, the southern ice edge was located near 4810N. Most of Trinity Bay and all of Conception Bay had bergy water. Looser ice conditions or bergy water covered the southern part of Notre Dame Bay. The eastern coast of the Northern Peninsula had looser ice with some areas of bergy water. The exception was White Bay were thick and medium first year ice with one tenth of old ice filled most of the bay. An area of bergy water was present in the northern part of Belle Isle Strait and along the extreme southern part of the Labrador Coast. Looser ice conditions extended further north along the southern Labrador coast into Groswater Bay. The eastward ice extent at the end of the month was 65 miles east of Cape Freels, 120 miles east of St Anthony, 160 miles east of Cartwright and about 110 miles east of the central and northern shore of Labrador. Most areas south of Belle Isle Strait had up to one tenth of old ice within the

thick and medium first year ice pack. Meanwhile the ice situation further north had only a trace of old ice in the pack.

Due to periodic northerly and north-easterly winds over the Newfoundland area, a gradual increase in ice concentration relative to normal occurred during the month of April ( Figure 35 to Figure 35). The area which was impacted the most was the zone north of the north shore of Newfoundland (Figure 35).

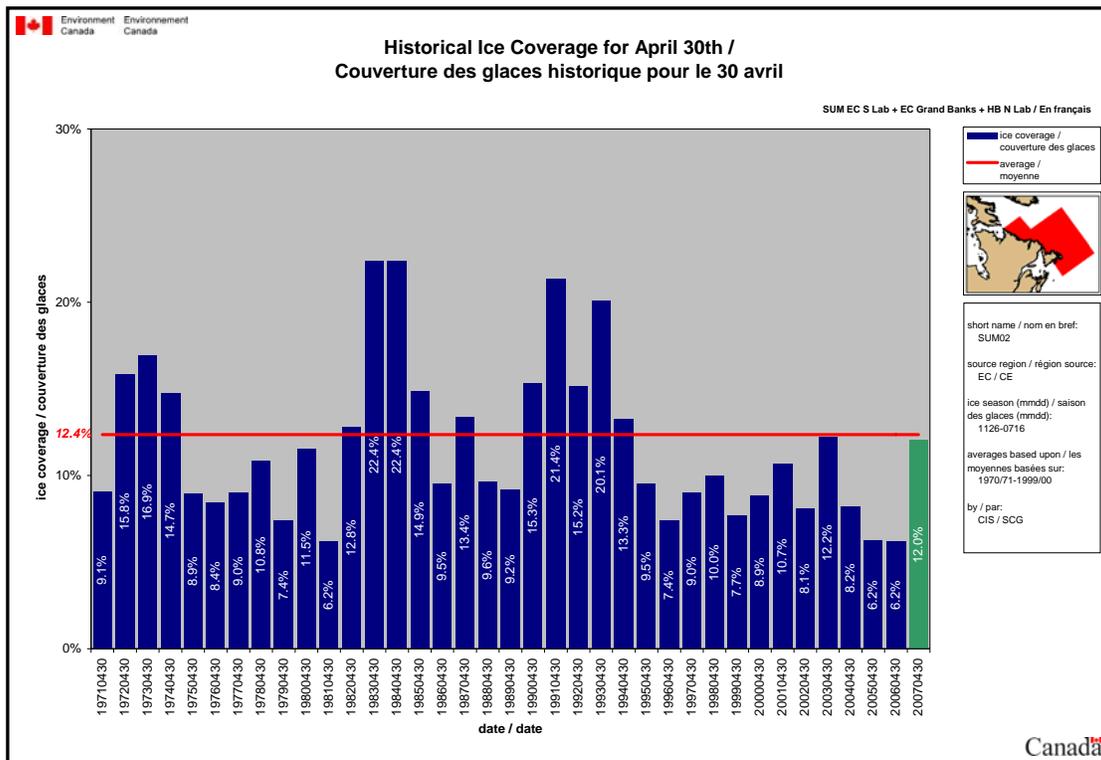


Figure 11: Historical ice coverage for Newfoundland and Labrador on April 30<sup>th</sup>.

### May 2007

Temperatures still remained on the cool side as below or slightly below normal values covered the entire Newfoundland and Labrador area. Winds continued to blow from the northeast during the first week of May but shifted to a more westerly component during the second week. Over the two week period, strips and patches of thick and medium first year ice with some old ice remained just east of the Avalon Peninsula however the main southern edge of the ice pack remained north of Conception Bay. Some moderate to strong ice pressure was still observed in the ice pack in and just north of Notre Dame Bay during the first week but by the second week, the pack loosen and drifted slowly eastward. Meanwhile, the fast ice near and south of New World Island fractured during the first week of May. Bonavista Bay became bergy water during the second week. By mid-month, the southern ice edge was located just north of Conception Bay. The eastward ice extent was located about 110 miles east of

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Cape Freels however only isolated patches were located that far east. Further north, the eastern ice edge was located about 50 miles east of St Anthony, 140 miles east of Cartwright and between 90 and 120 miles east of the central and northern Labrador coast. The main ice pack was located north of Cape Freels with only patches of ice south. Some areas of bergy water were located in Hamilton Sound and stretched to near Cape Freels. All of White Bay as well as some narrow areas along the eastern shore of the Northern Peninsula had bergy water. Another narrow area of bergy water also stretched from just east of Belle Isle Strait to the Groswater Bay area along the southern Labrador coast. Due to the melting of the first year ice, the concentration of old ice had increased to the point where generally one tenth of old ice was embedded in the ice pack. A very small area of fractured ice began to appear in the western portion of Lake Melville while the balance of the lake remained fast with medium and thin first year ice.

Again, temperatures registered during the second half of May were below normal over the entire region. The ice continued its slow retreat northwards during the period. At the end of the month of May, the southern ice edge was located in the western part of Notre Dame Bay however there were some patches of thick first year and old ice along the Newfoundland coast from Hamilton Sound to Bonavista Bay. The eastward extent of ice along the Northern Peninsula was about 60 miles. Further north along the southern Labrador coast, the ice was about 130 miles from the shore. Further north, the ice edge was about 90 to 120 miles east of the shore along the central and northern coast of Labrador. Generally speaking, the close or very close pack ice was north of 5300N while looser conditions prevailed south. Throughout the entire ice pack, mainly thick first year and old ice covered the area. The consolidated ice in Lake Melville began to fracture in earnest in the western part of the lake during the second half of May however the eastern section of the lake still remained unchanged (Figure 39).

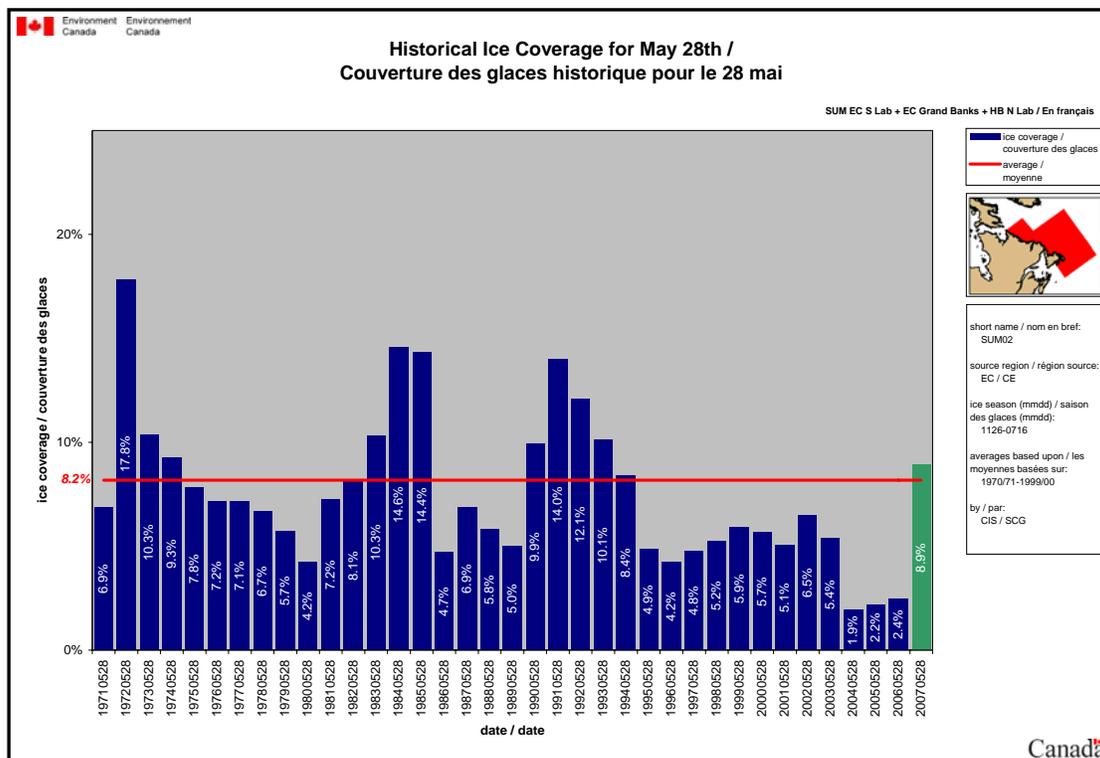


Figure 12: Historical ice coverage for Newfoundland and Labrador on May 28<sup>th</sup>.

## June 2007

For the first time since the beginning of April, the average temperatures went above normal for the first part of June. Over Newfoundland the temperatures were above normal while further north over the Labrador region, much above normal values blanketed the area. Midway through the first week of June, all the ice in Bonavista Bay melted. At the end of the first week, the fast ice in the eastern part of Lake Melville was completely fractured. By the middle of the second week, Notre Dame Bay was bergy water. By mid-June, the entire Newfoundland region was bergy water except for some isolated patches of rotten old ice. Lake Melville was open water while the coastal area of Labrador from Groswater Bay southward along the southern Labrador coast had bergy water. The southern ice edge was located near 5230N. The eastward extent of the ice varied from about 150 miles east of Cartwright, and between 80 and 100 miles east of the central and northern shore of Labrador. The generally looser thick first year and up to one tenth of old ice was located south of 5710N with some patches of very close pack thick first year and a trace of old ice along the Labrador coast. Some patches of fast thick and medium first year ice with a trace of old ice were present along the Labrador coast however area of open water was developing near the shore due to the run-off from the rivers. North of 5710N, close or very close pack thick first year and a trace of old ice.

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Temperatures for the second half of June were near normal over Newfoundland. As for the Labrador coast, the mercury varied from above normal along the southern shore to near normal for central and northern sections. The ice pack continued its slow retreat northwards during the period. Areas of fast ice along the shore deteriorated during the period so that by the end of the last week of the month, all fast ice had fractured. The southern ice edge was located near Groswater Bay near 5420N. The eastward extent of the ice along the Labrador shore varied between 80 and 120 miles from the coast. At the end of the month, the ice pack was mostly very open to open drift thick first year and a trace of old ice. Up to one tenth of old ice was present in isolated patches along the northern portion of the ice pack.

## **July 2007**

The temperatures took a bit of a drop as the Labrador area experienced below or slightly below normal temperatures over the entire area. Despite the cooler temperatures, the southern ice edge continued its slow march northwards. By the middle of the week of July, the southern ice edge finally moved north of 5500N. The ice pack was generally very open to open drift with a few patches of close pack in the northern portion of the Labrador coast with an isolated patch very close pack. The ice was mostly thick first year and up to one tenth of old ice. The eastward ice extent was between 80 and 110 miles from the shore.

In general, the northward retreat of the ice edge this year might be perceived as being tardy, especially during the late June and early July period. In fact, the ice has been retreating at a near normal pace for this year. Figure 13 depicts the concentration of ice on July 2<sup>nd</sup> for Newfoundland and all of Labrador since 1969. Upon further examination of the figure shows that only once since 1992 has the concentration even approached the average concentration. The exception was 2002 where the coverage was greater than normal.

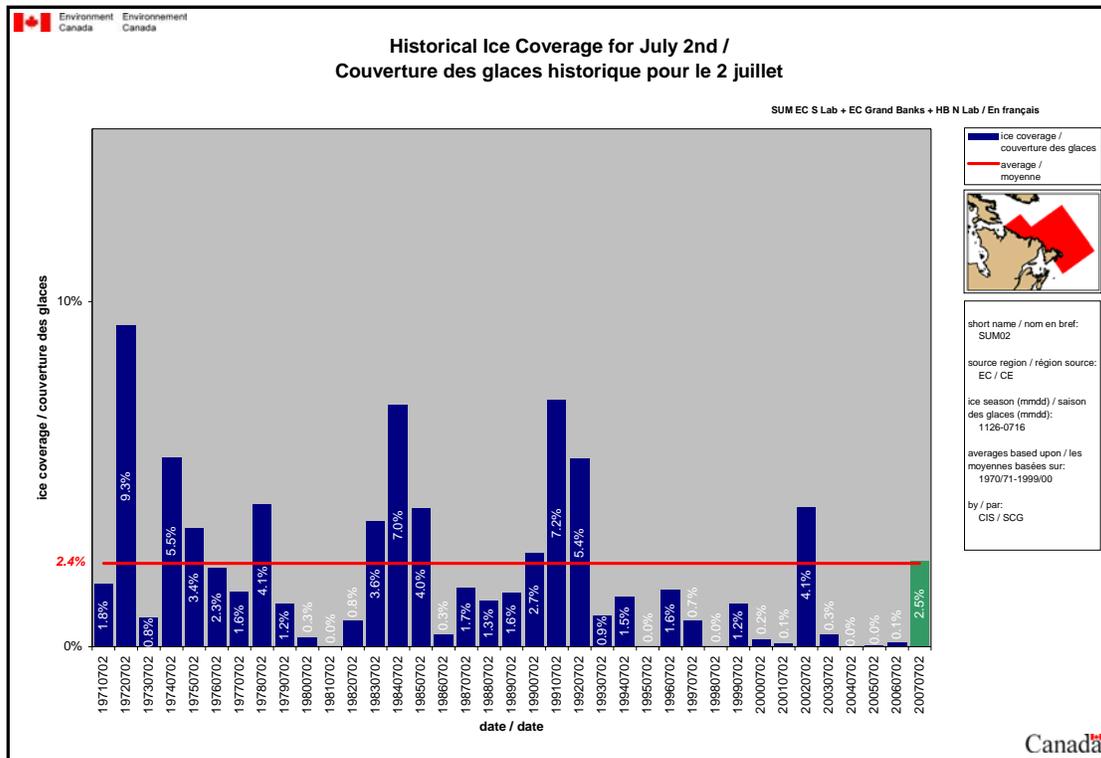


Figure 13 Historical ice coverage for Newfoundland and Labrador on July 2<sup>nd</sup>.

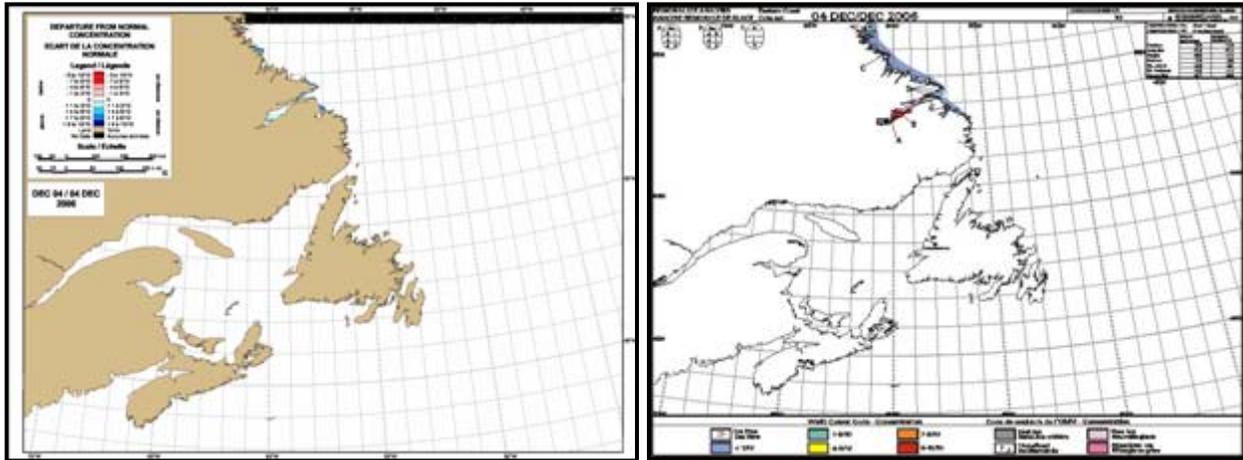


Figure 14: Departure from normal ice concentration and observed ice situation – December 4<sup>th</sup>, 2006.

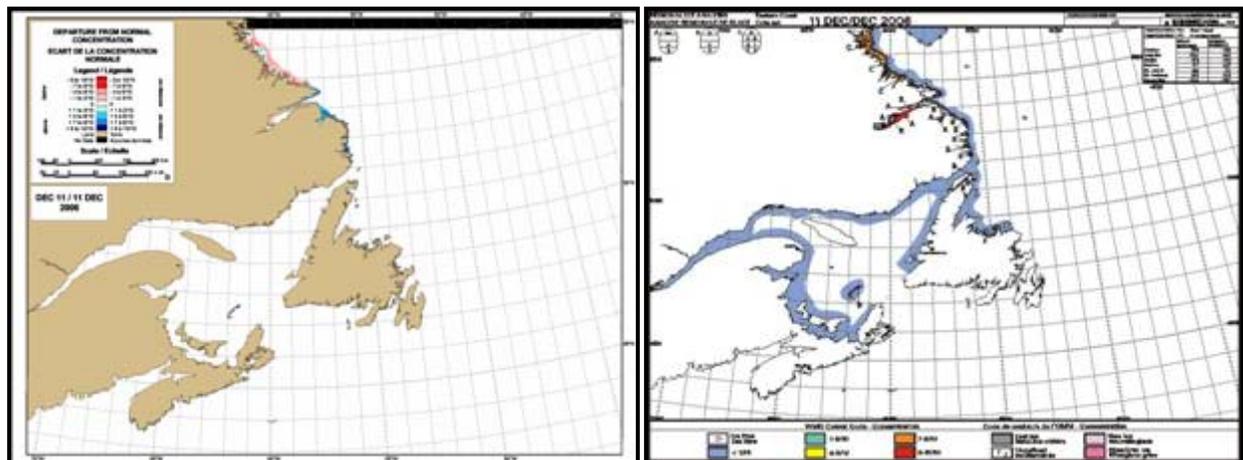


Figure 15: Departure from normal ice concentration and observed ice situation – December 11<sup>th</sup>, 2006.

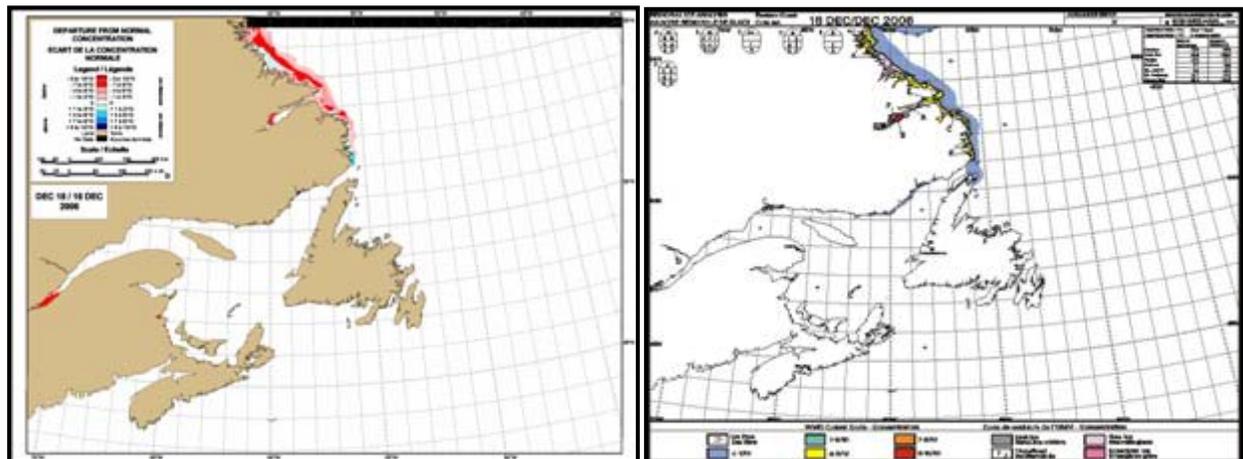


Figure 16: Departure from normal ice concentration and observed ice situation – December 18<sup>th</sup>, 2006.

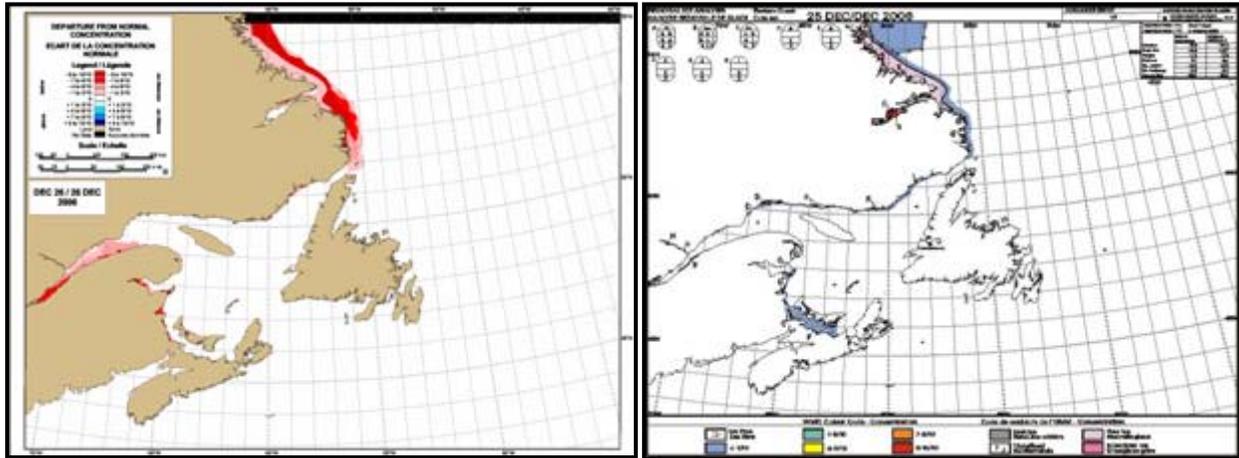


Figure 17: Departure from normal ice concentration and observed ice situation – December 25<sup>th</sup>, 2006.

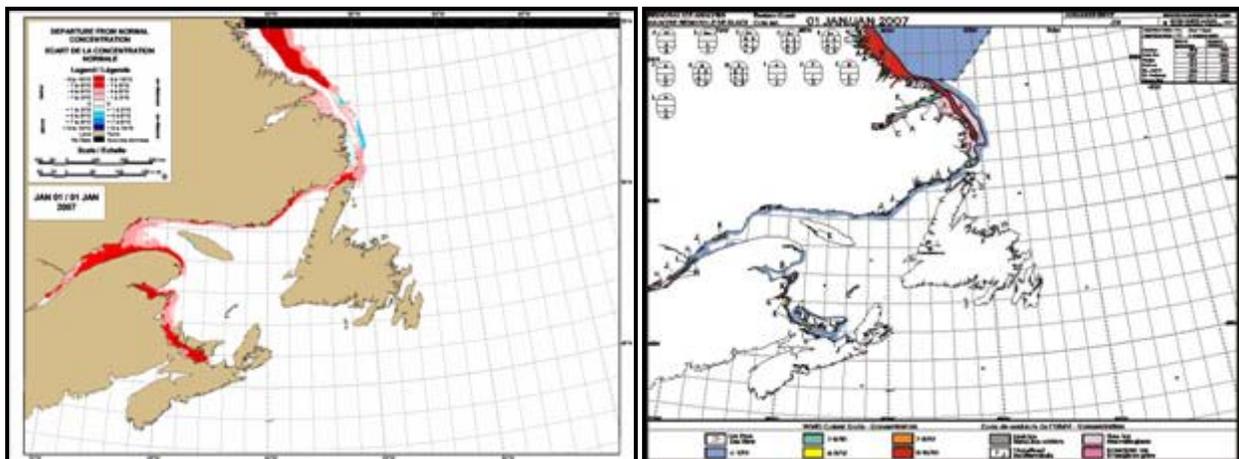


Figure 18: Departure from normal ice concentration and observed ice situation – January 1<sup>st</sup>, 2007.

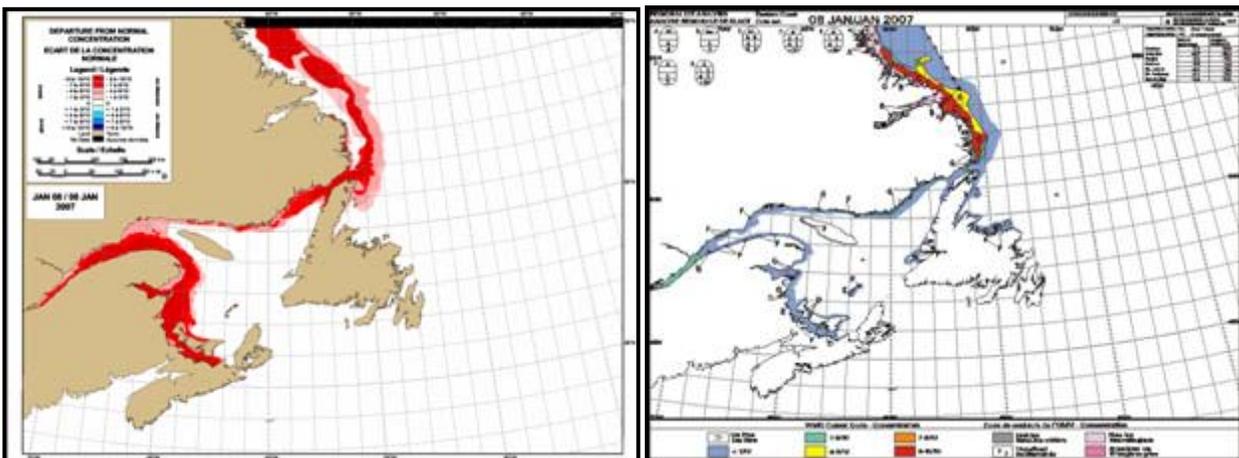


Figure 19: Departure from normal ice concentration and observed ice situation – January 8<sup>th</sup>, 2007.

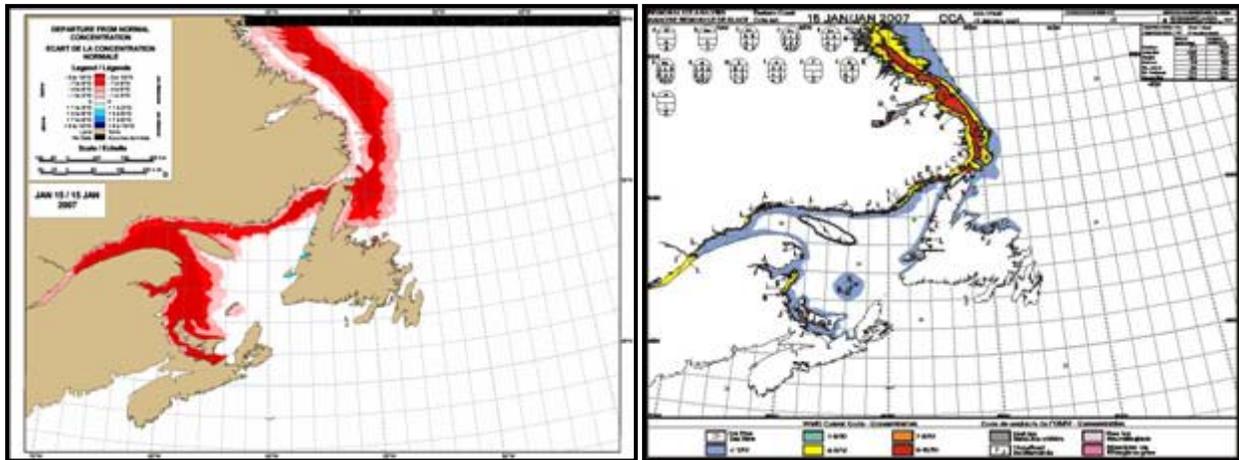


Figure 20: Departure from normal ice concentration and observed ice situation – January 15<sup>th</sup>, 2007.

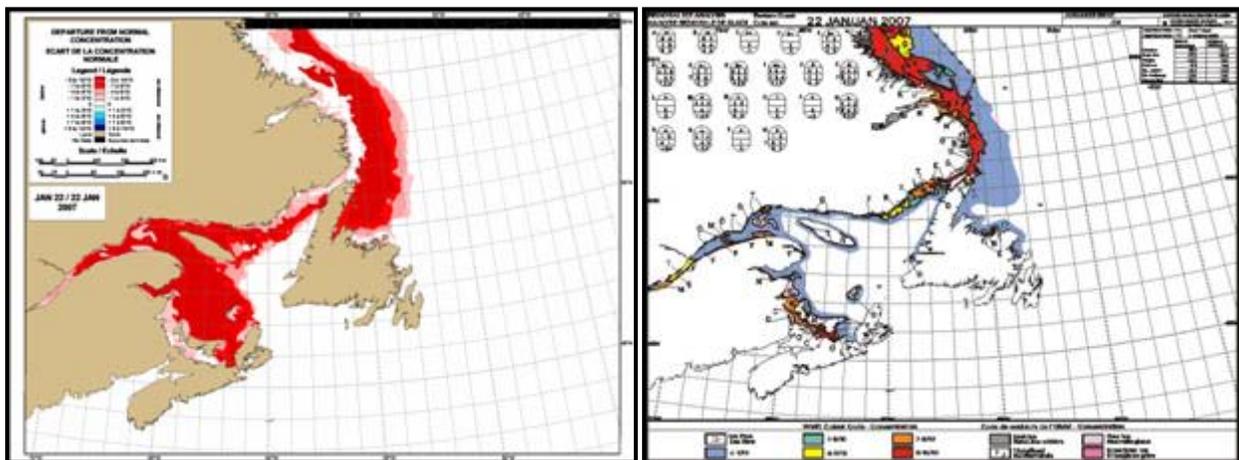


Figure 21: Departure from normal ice concentration and observed ice situation – January 22<sup>nd</sup>, 2007.

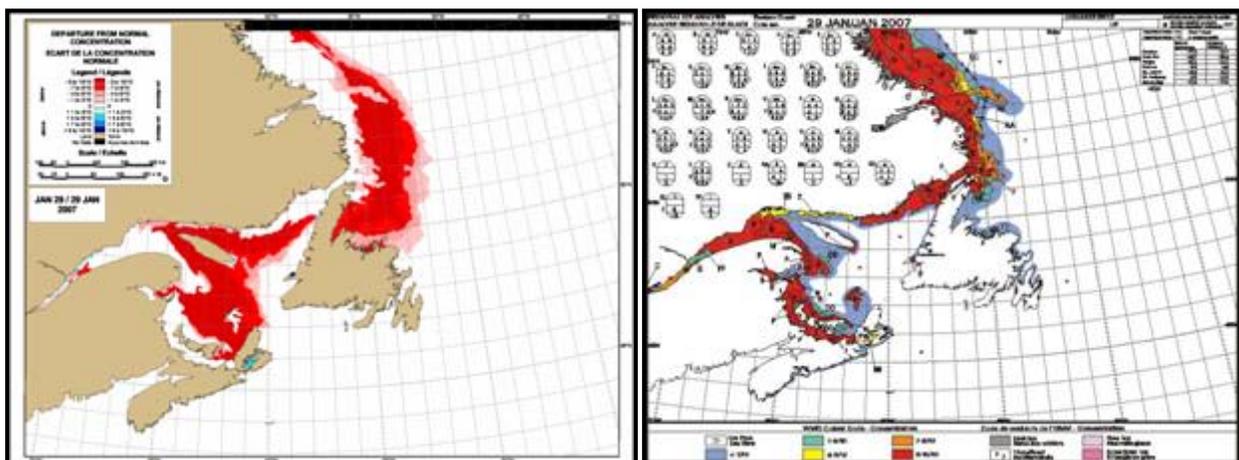


Figure 22: Departure from normal ice concentration and observed ice situation – January 29<sup>th</sup>, 2007.

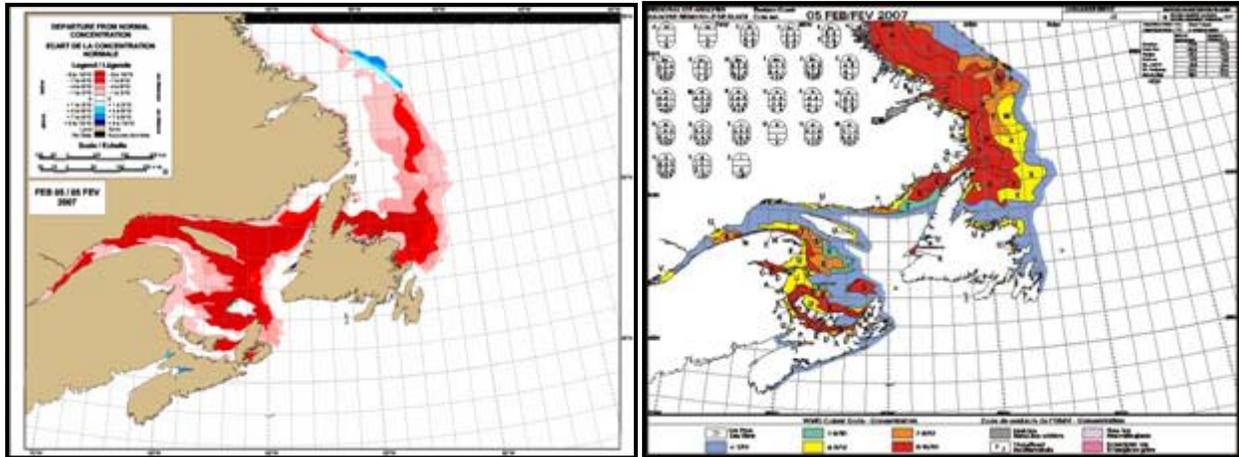


Figure 23: Departure from normal ice concentration and observed ice situation – February 5<sup>th</sup>, 2007.

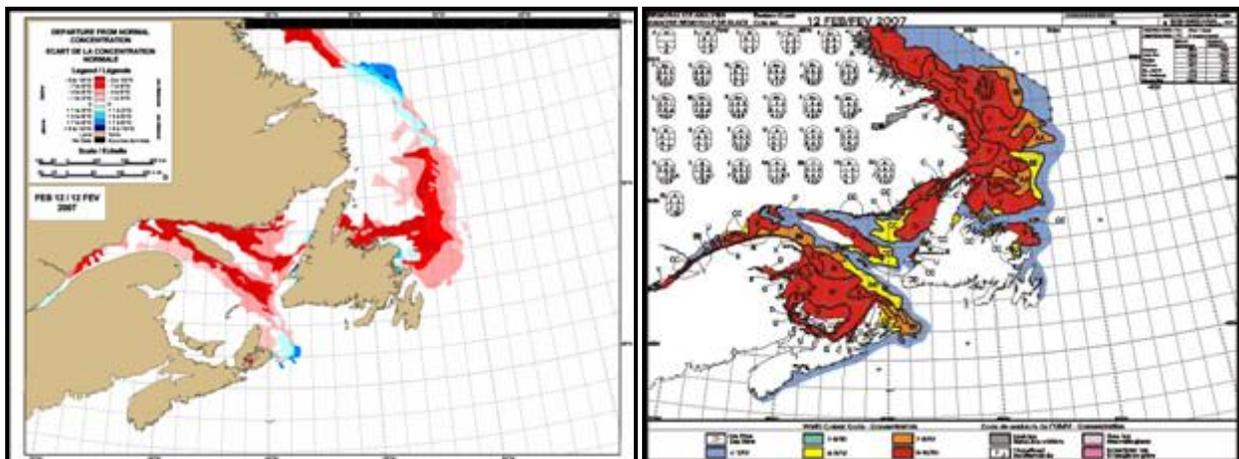


Figure 24: Departure from normal ice concentration and observed ice situation – February 12<sup>th</sup>, 2007.

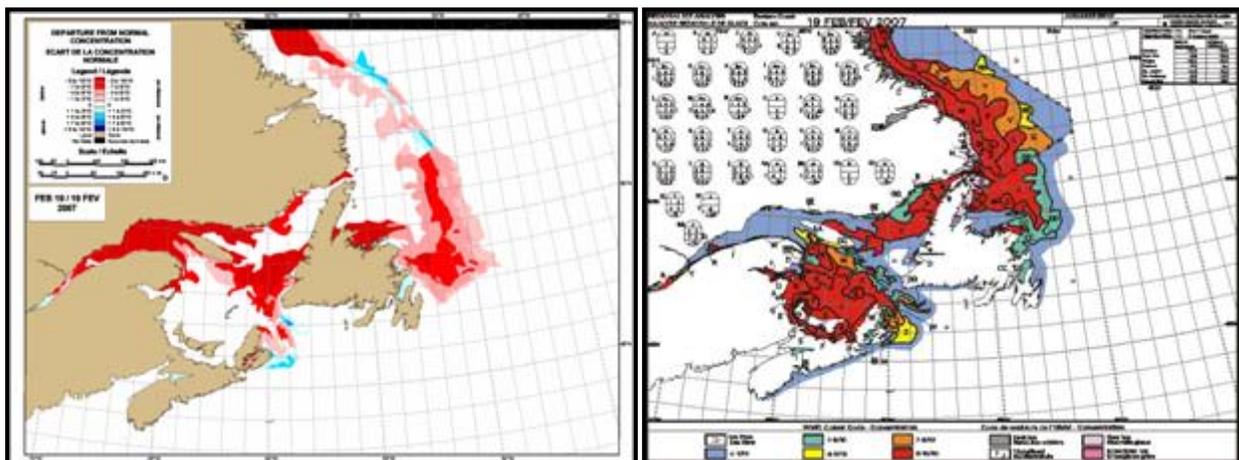


Figure 25: Departure from normal ice concentration and observed ice situation – February 19<sup>th</sup>, 2007.

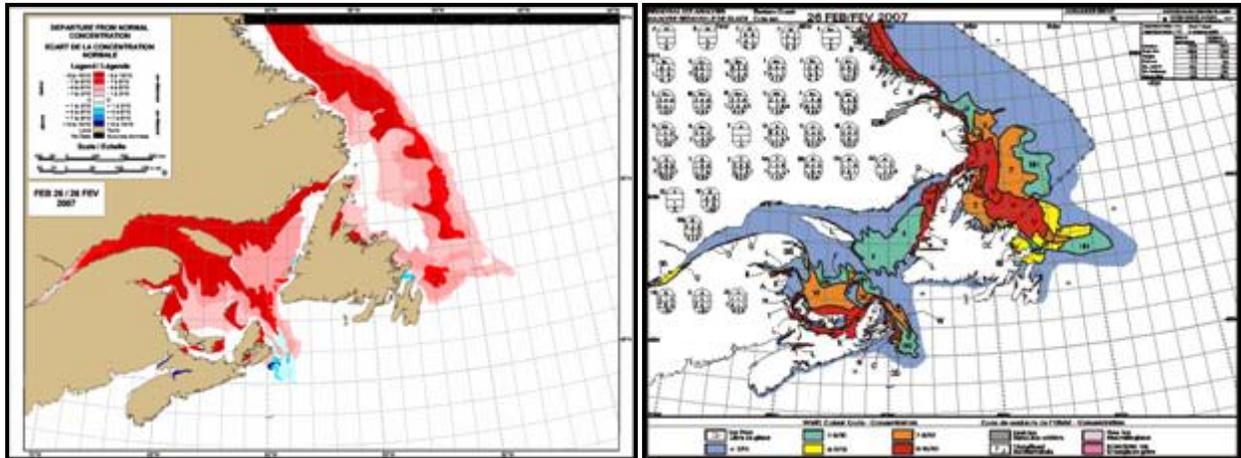


Figure 26: Departure from normal ice concentration and observed ice situation – February 26<sup>th</sup>, 2007.

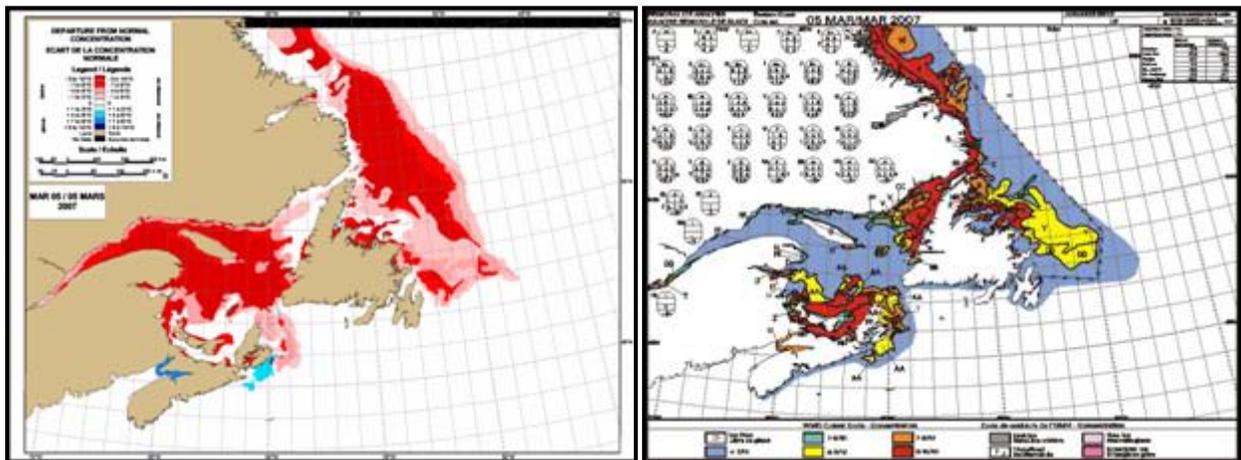


Figure 27: Departure from normal ice concentration and observed ice situation – March 5<sup>th</sup>, 2007.

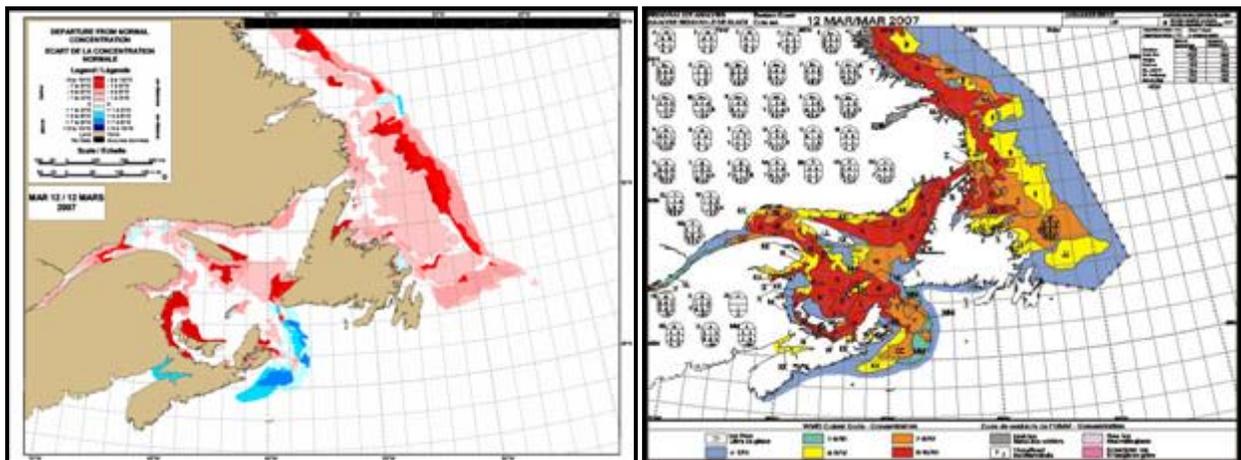


Figure 28: Departure from normal ice concentration and observed ice situation – March 12<sup>th</sup>, 2007.

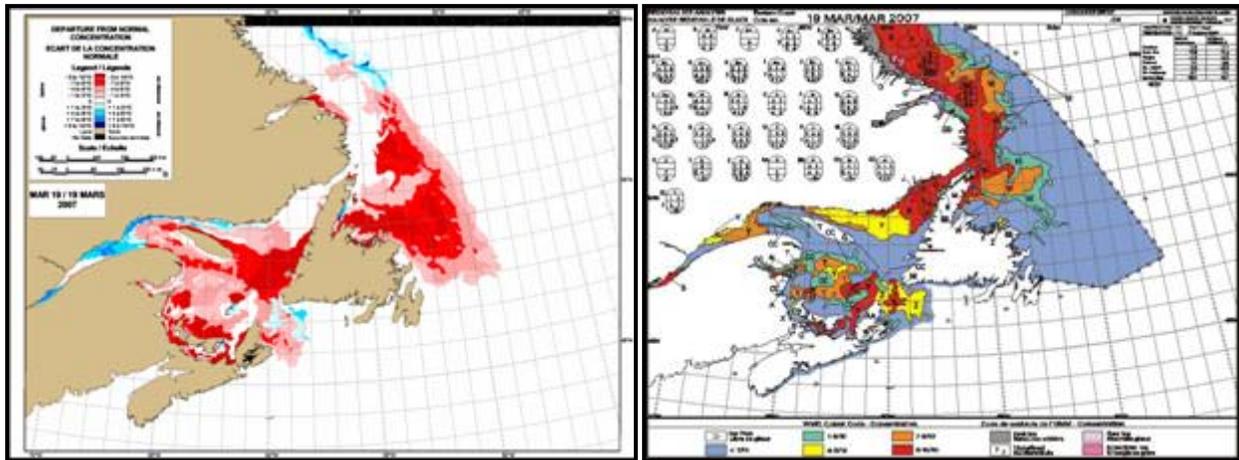


Figure 29: Departure from normal ice concentration and observed ice situation – March 19<sup>th</sup>, 2007.

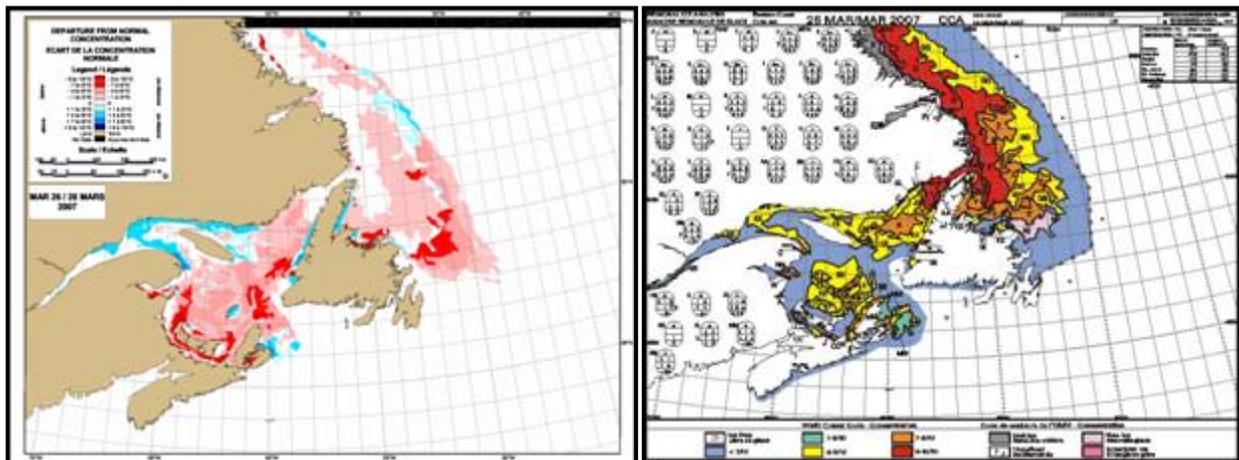


Figure 30: Departure from normal ice concentration and observed ice situation – March 26<sup>th</sup>, 2007.

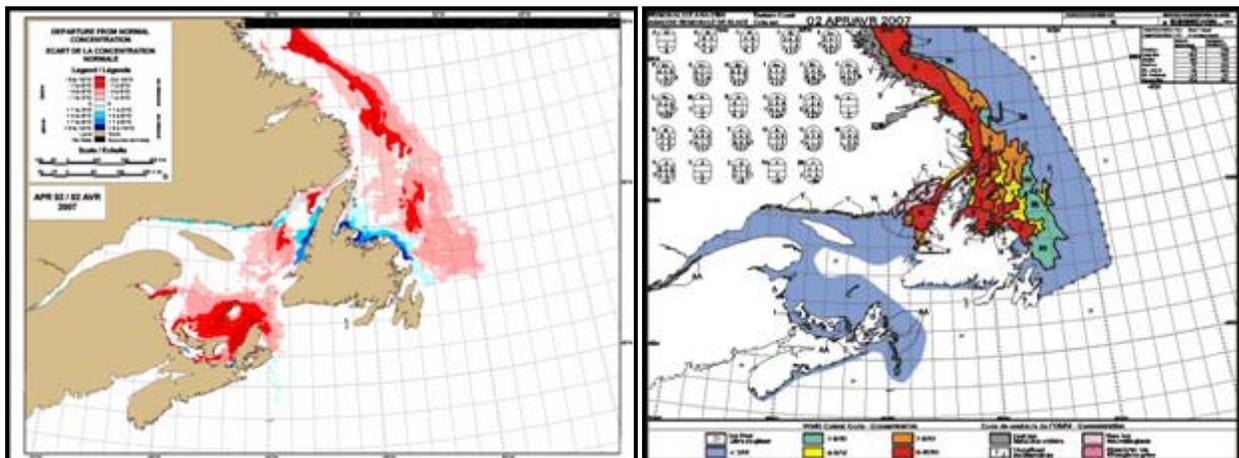


Figure 31: Departure from normal ice concentration and observed ice situation – April 2<sup>nd</sup>, 2007.

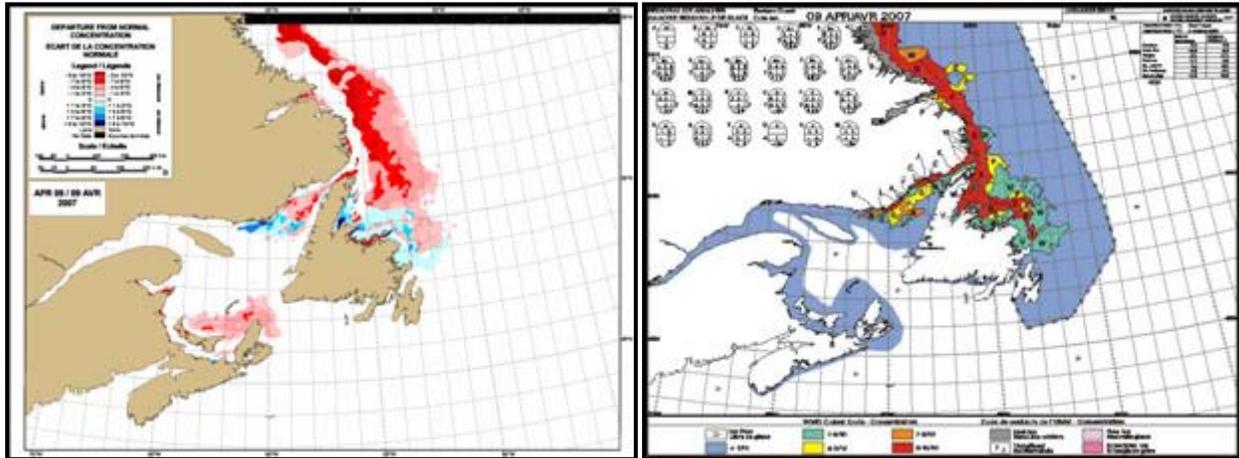


Figure 32: Departure from normal ice concentration and observed ice situation – April 9<sup>th</sup>, 2007.

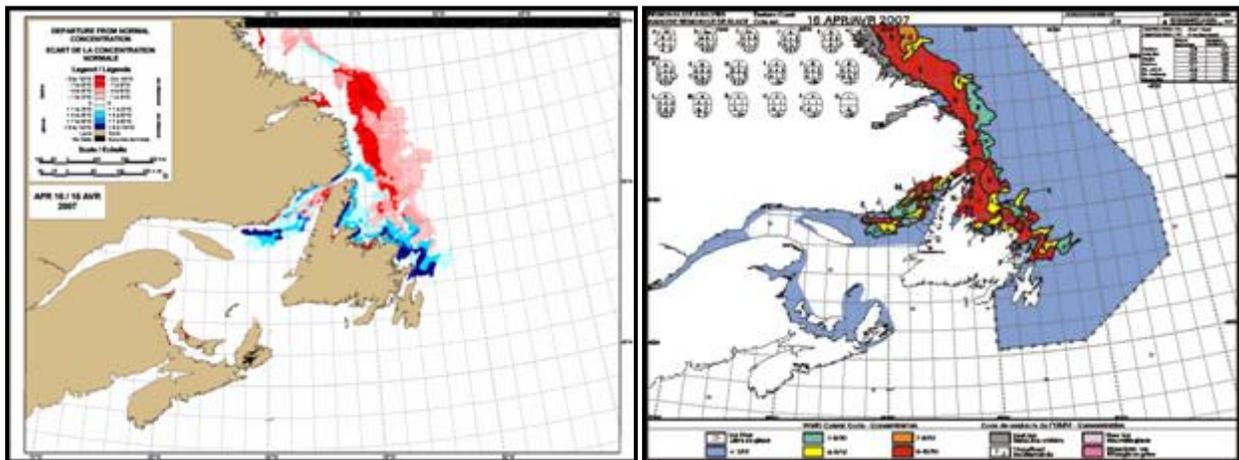


Figure 33: Departure from normal ice concentration and observed ice situation – April 16<sup>th</sup>, 2007.

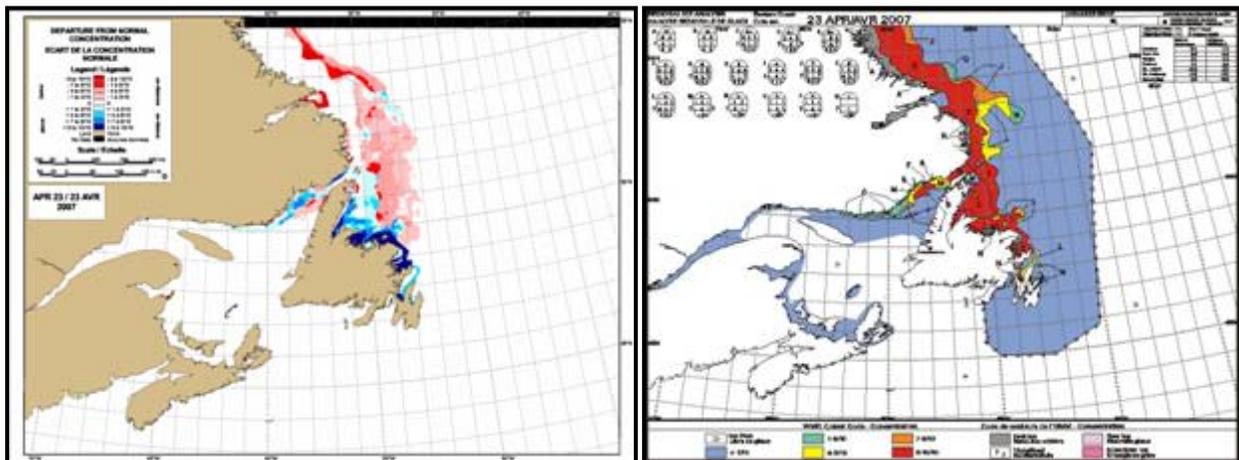


Figure 34: Departure from normal ice concentration and observed ice situation – April 23<sup>rd</sup>, 2007.

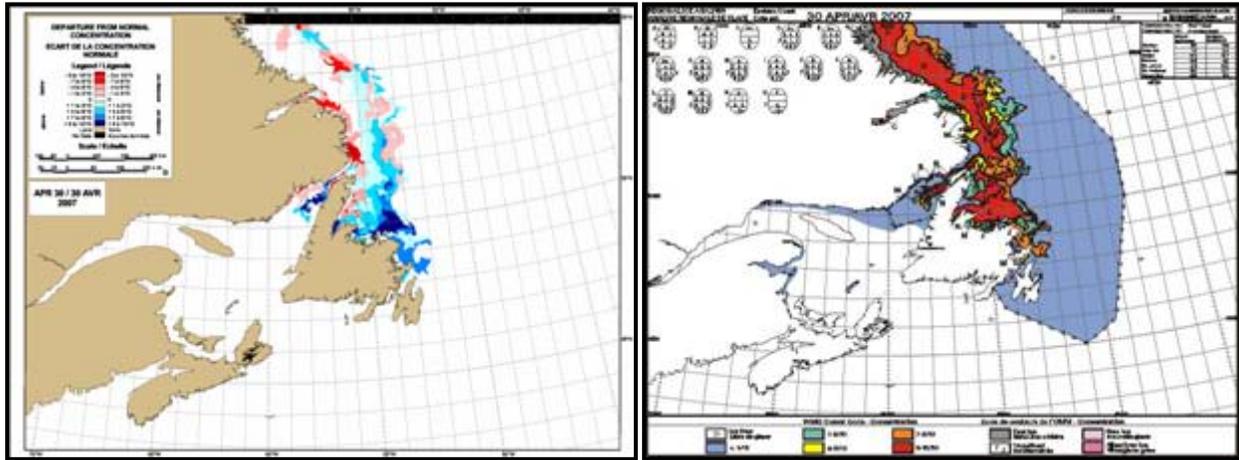


Figure 35: Departure from normal ice concentration and observed ice situation – April 30<sup>th</sup>, 2007.

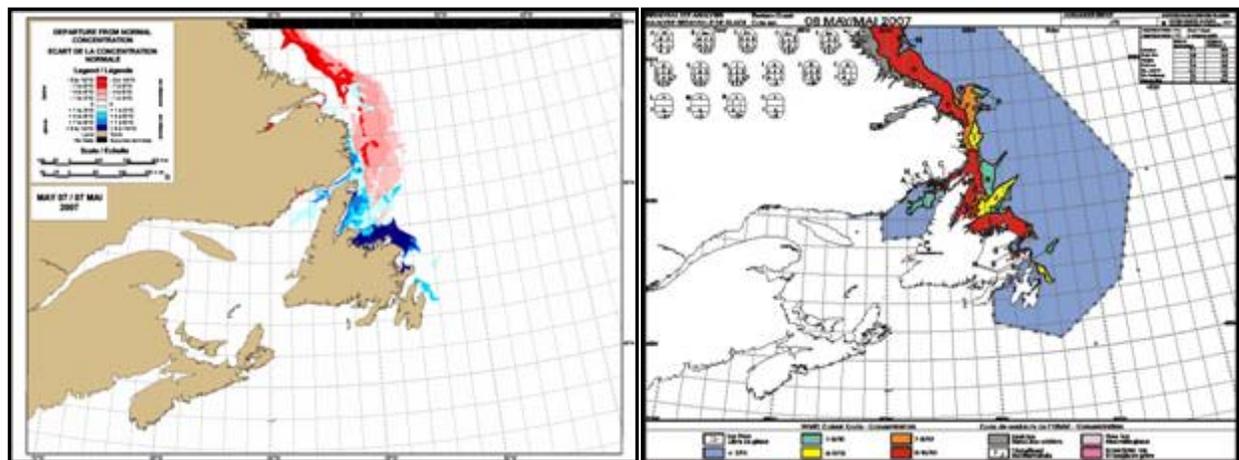


Figure 36: Departure from normal ice concentration and observed ice situation – May 7<sup>th</sup>, 2007.

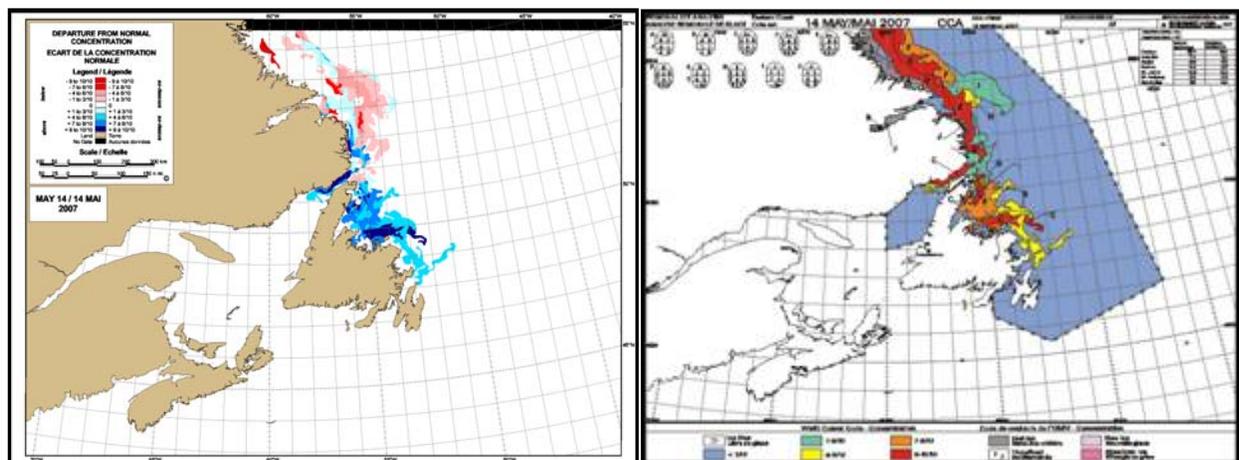


Figure 37: Departure from normal ice concentration and observed ice situation – May 14<sup>th</sup>, 2007.

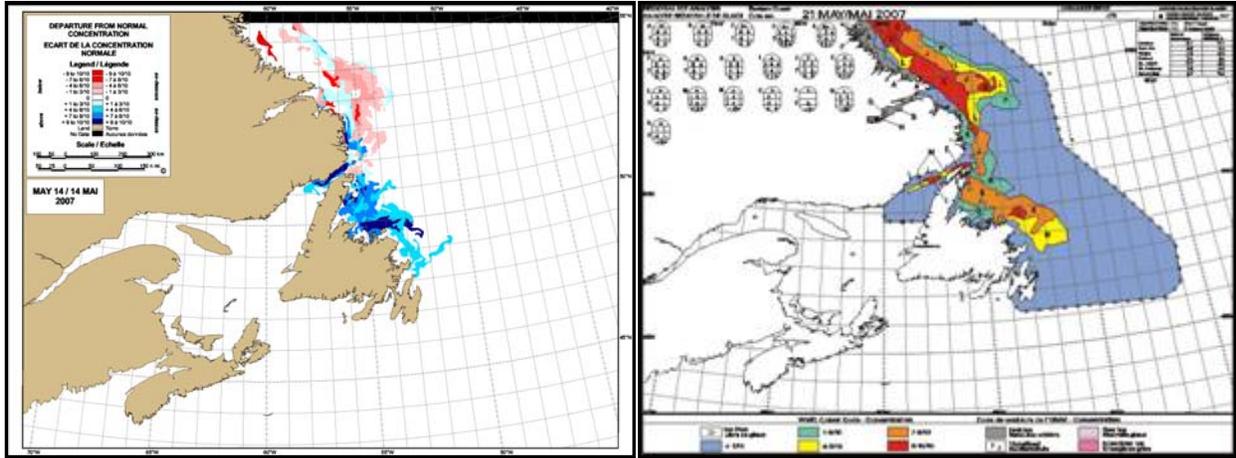


Figure 38: Departure from normal ice concentration and observed ice situation – May 21<sup>th</sup>, 2007.

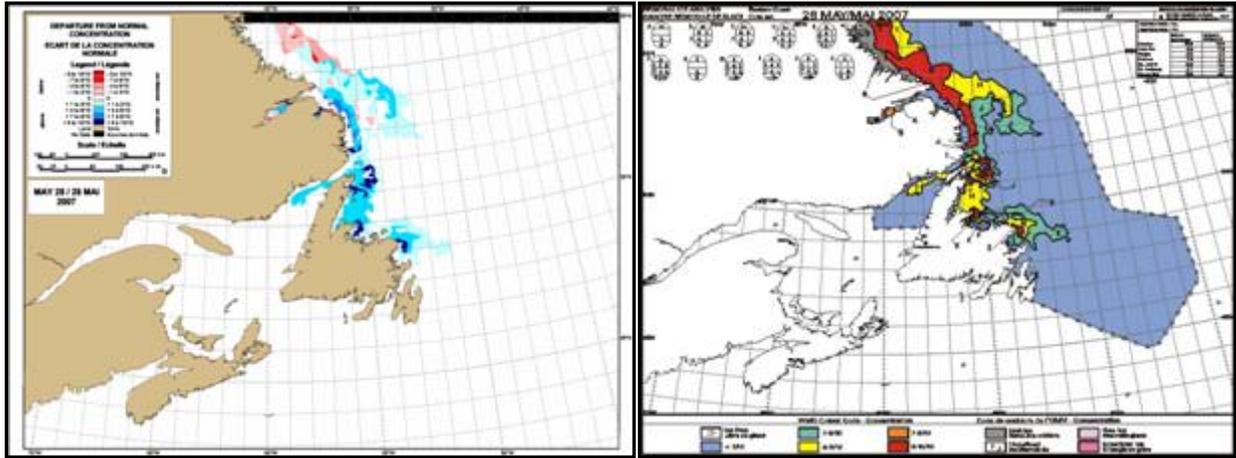


Figure 39: Departure from normal ice concentration and observed ice situation – May 28<sup>th</sup>, 2007.

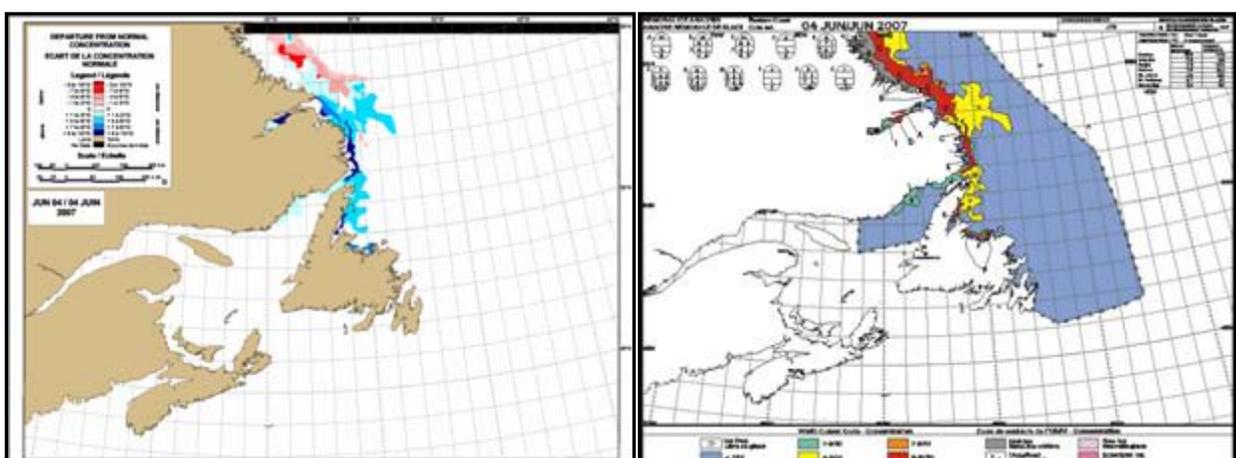


Figure 40: Departure from normal ice concentration and observed ice situation – June 4<sup>th</sup>, 2007.

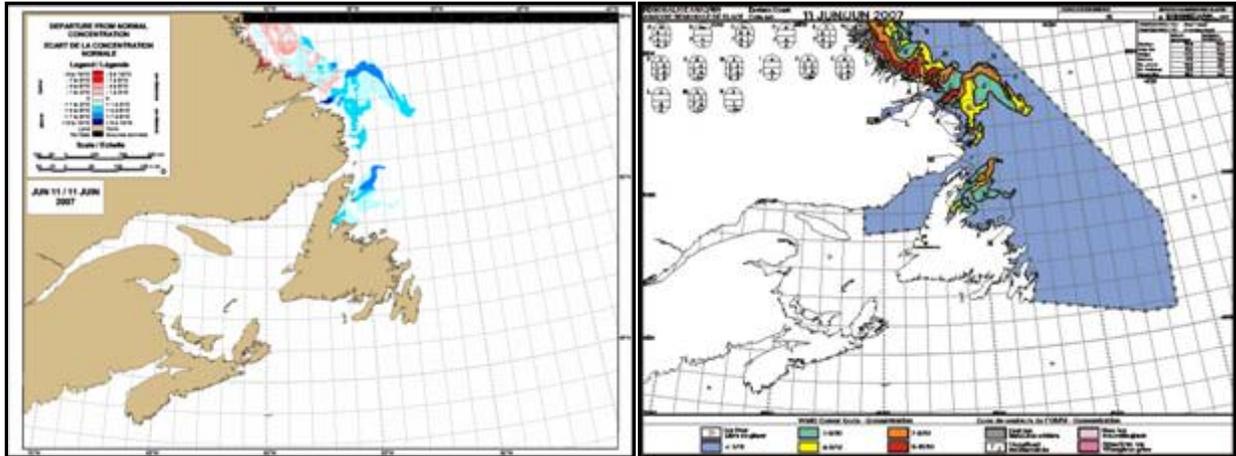


Figure 41: Departure from normal ice concentration and observed ice situation – June 11<sup>th</sup>, 2007.

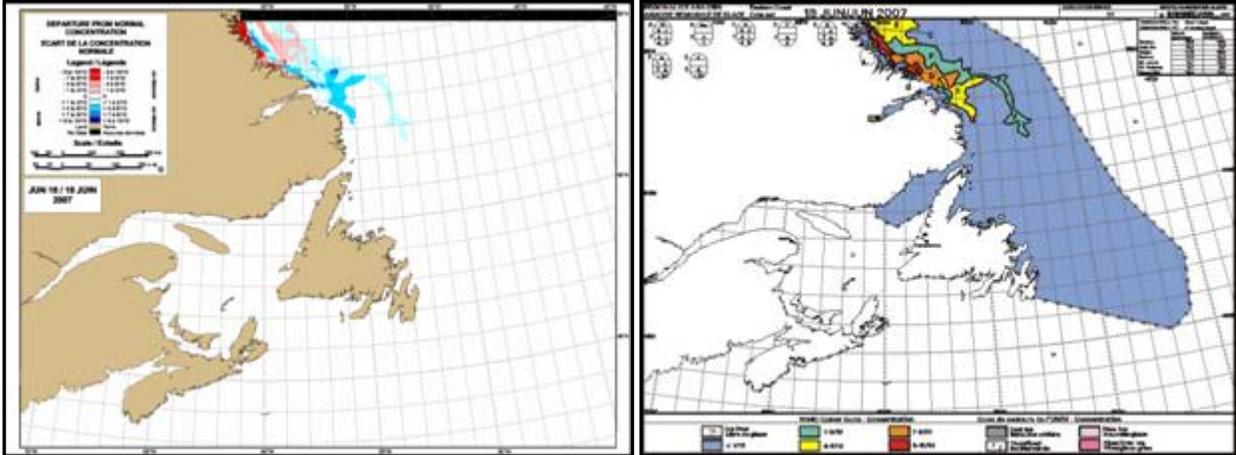


Figure 42: Departure from normal ice concentration and observed ice situation – June 18<sup>th</sup>, 2007.

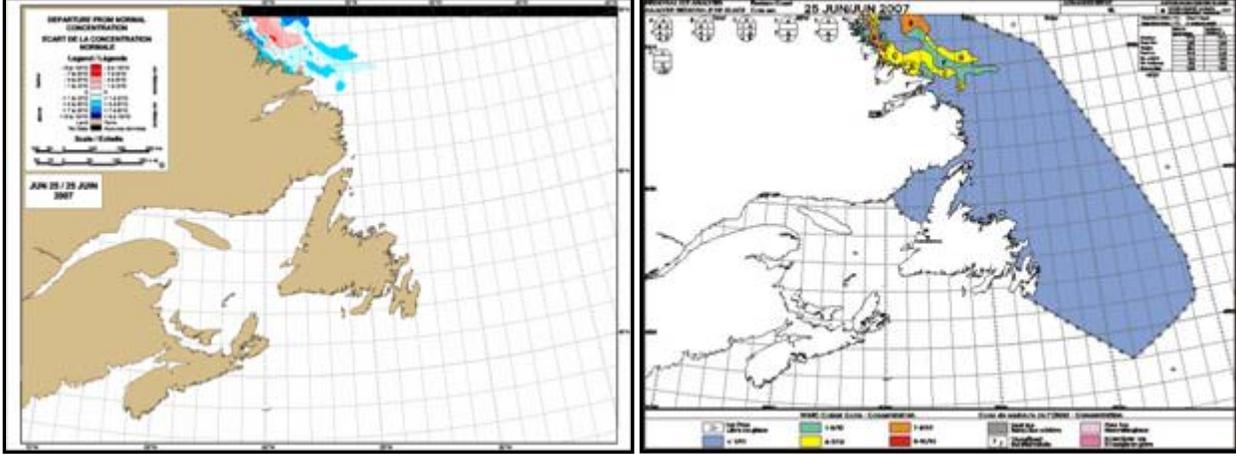


Figure 43: Departure from normal ice concentration and observed ice situation – June 25<sup>th</sup>, 2007.

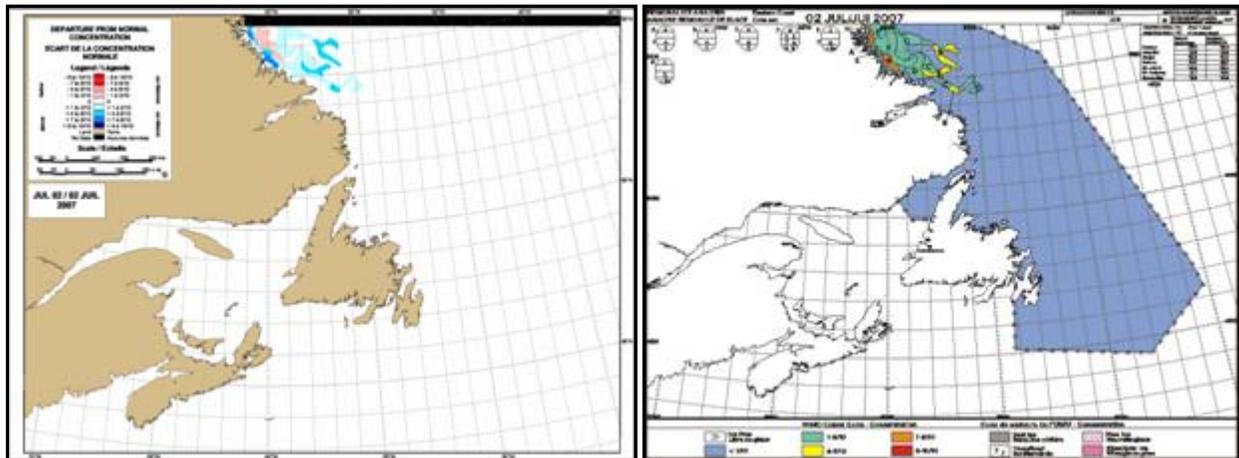


Figure 44: Departure from normal ice concentration and observed ice situation – July 2<sup>nd</sup>, 2007.