Environment Canada Environnement Canada

Produced by Canadian Ice Service of
Environment Canada
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Seasonal Outlook
Gulf of St. Lawrence and East Newfoundland Waters
Winter 2008-2009

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GULF OF ST. LAWRENCE AND NEWFOUNDLAND WATERS

WINTER 2008-2009

Introduction

This outlook of the expected pattern, timing, and the extent of ice growth attempts to identify areas and periods where conditions should be more or less favourable than normal. It has been developed through an analysis of the oceanographic and meteorological parameters for the summer and the fall proceeding the ice season. These conditions are compared with earlier years, the December wind and temperature forecasts plus the seasonal temperature outlook. A prediction of the ice regime is then produced. **It should be noted that significant variations of these conditions will have an impact on the timing and extent of ice formation.**

Throughout the winter, this outlook will be updated by a twice monthly issue of 30-day forecasts. These forecasts will also indicate the beginning of the spring break-up process throughout the area. Daily radio broadcasts of ice charts and forecasts will be made to support ongoing operations in the various areas where ice affects marine activity. For more information regarding the broadcast schedule, please consult the following Canadian Coast Guard web site (Appendix B - General information from the Canadian Coast Guard).

http://www.ccg-gcc.gc.ca/mcts-sctm/ramn/docs/aa.ae/index.htm#part5

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General Seasonal Outlook

The temperature profile since the beginning of June until the end of October over the Atlantic Provinces ranged from near to slightly above normal over the St Lawrence River and the Estuary to above normal in the Gulf of St Lawrence and the Newfoundland and Labrador waters. The first half of November was generally characterized by above normal temperatures over the forecast area except near normal along the Labrador coast. The observed temperature pattern was reversed in the second half of December where near normal temperatures were generally the norm except above normal along the Labrador coast. Water temperatures in late November were generally above normal except near normal along the northern Labrador coast.

At the beginning of December an area of very close pack grey ice was found in the western end of Lake Melville while patches of new ice prevailed elsewhere in the lake. Along the northern Labrador coast new and grey ice has developed in shallow bays. Elsewhere in the forecast area open water or bergy water generally prevails. These conditions are close to normal.

The forecast for December for the Gulf of St Lawrence, Newfoundland and the southern coast of Labrador is for above normal temperatures. Below normal temperatures are forecast along the northern Labrador coast. Freeze-up over the St. Lawrence River and the south-western section of the Gulf of St Lawrence will occur near or slightly after their normal dates. Over North-eastern Gulf, Newfoundland waters and along the southern Labrador coast freeze up is expected to be delayed by a few days to a week.

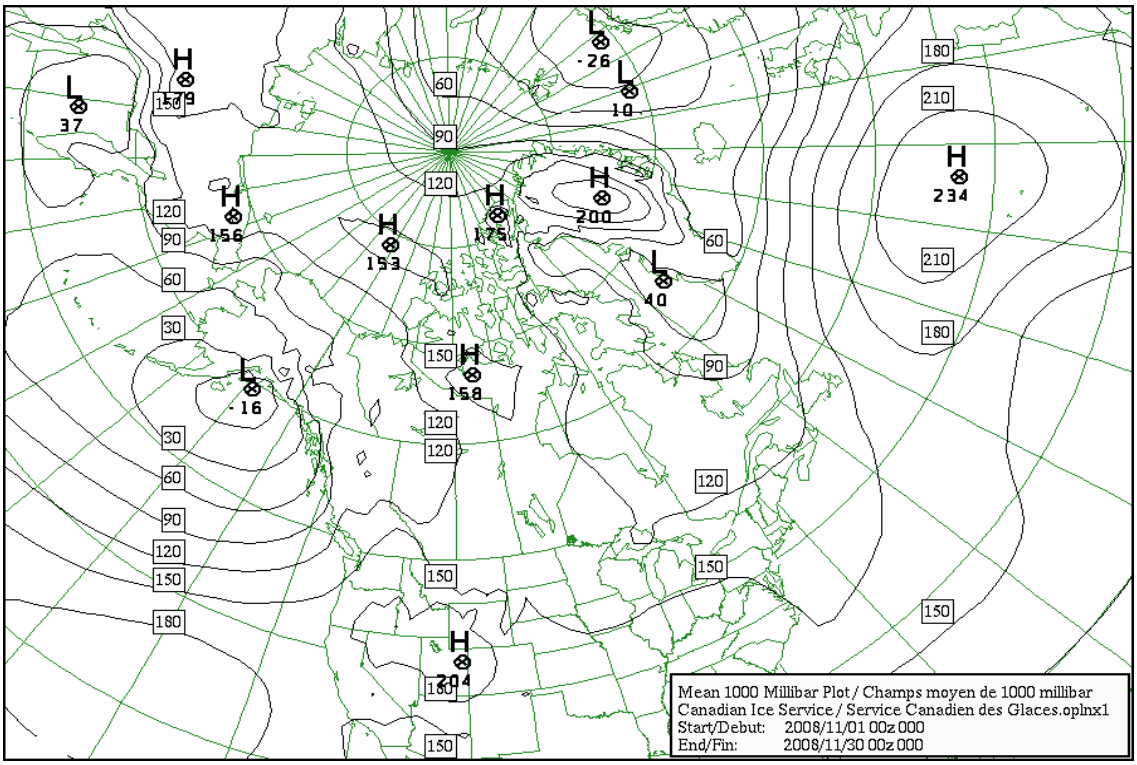

Figure 1: 1000 mbs pressure pattern – November 2008

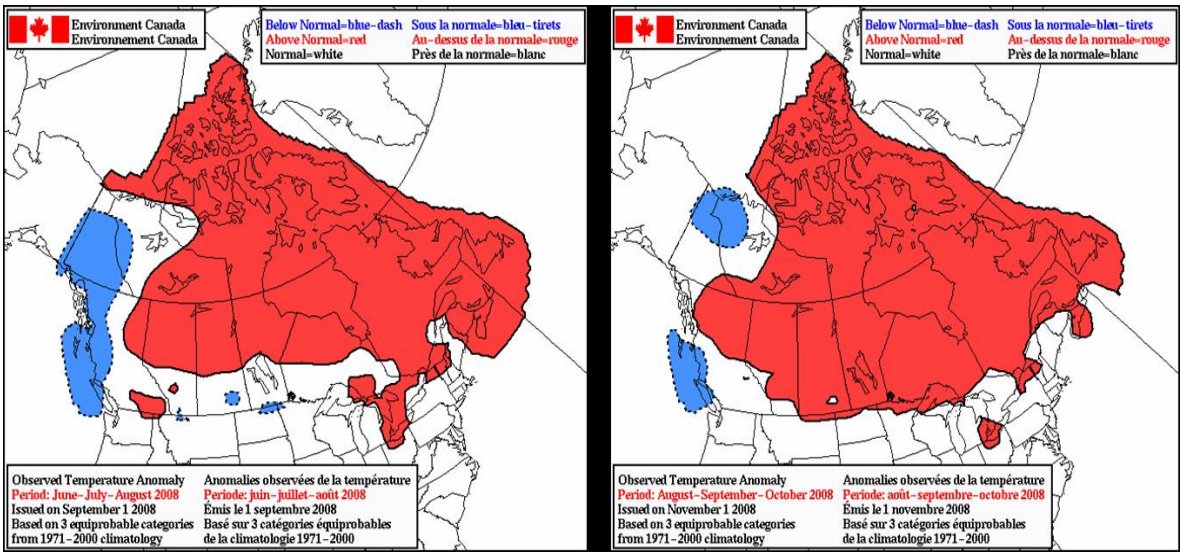

Figure 2: Temperature anomaly, June to August and September to October

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Table 1: Departure from normal temperatures – November 2008

	Normal Temperatures	Observed	Departure
Quebec	-0.7	0.9	1.6
Sept-Iles	-3.0	-0.3	2.7
Gaspe	-0.7	0.8	1.5
Sydney	3.2	5.3	2.1
Stephenville	2.2	4.8	2.6
St John's	2.5	5.5	3.0
Gander	0.8	3.8	3.0
Cartwright	-2.5	-0.4	2.1
Goose Bay	-4.6	-2.4	2.2
Nain	-5.2	-3.7	1.5
Average	-0.8	1.4	2.2

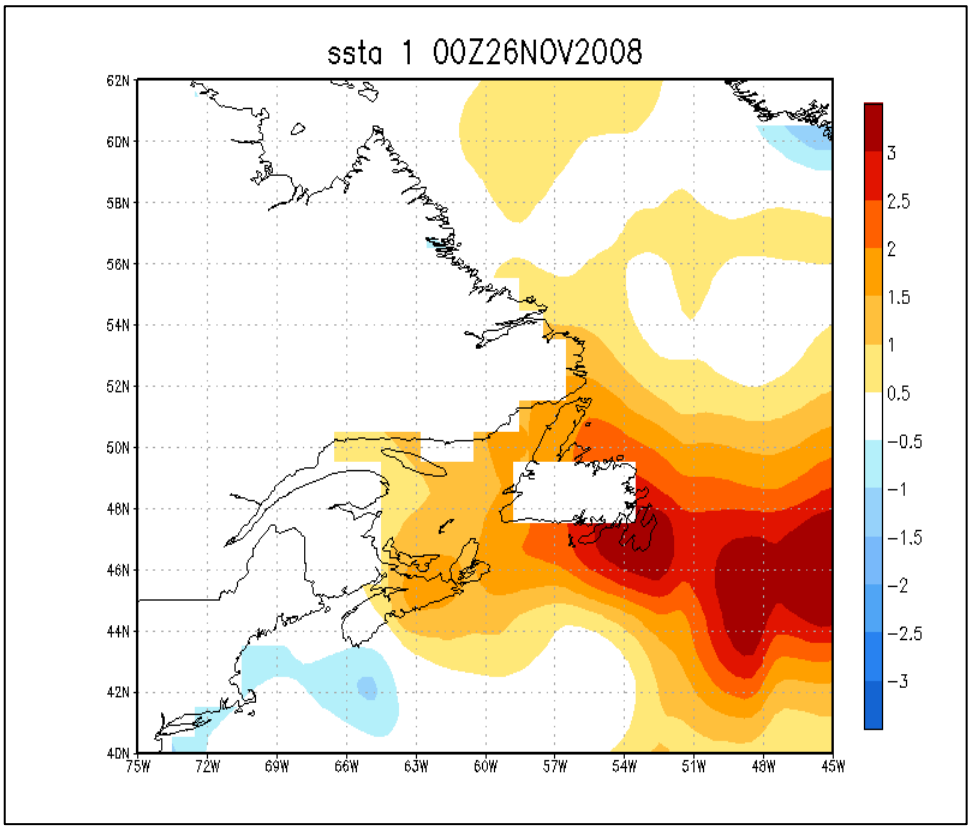


Figure 3: Water temperature anomalies – 26 November 2008

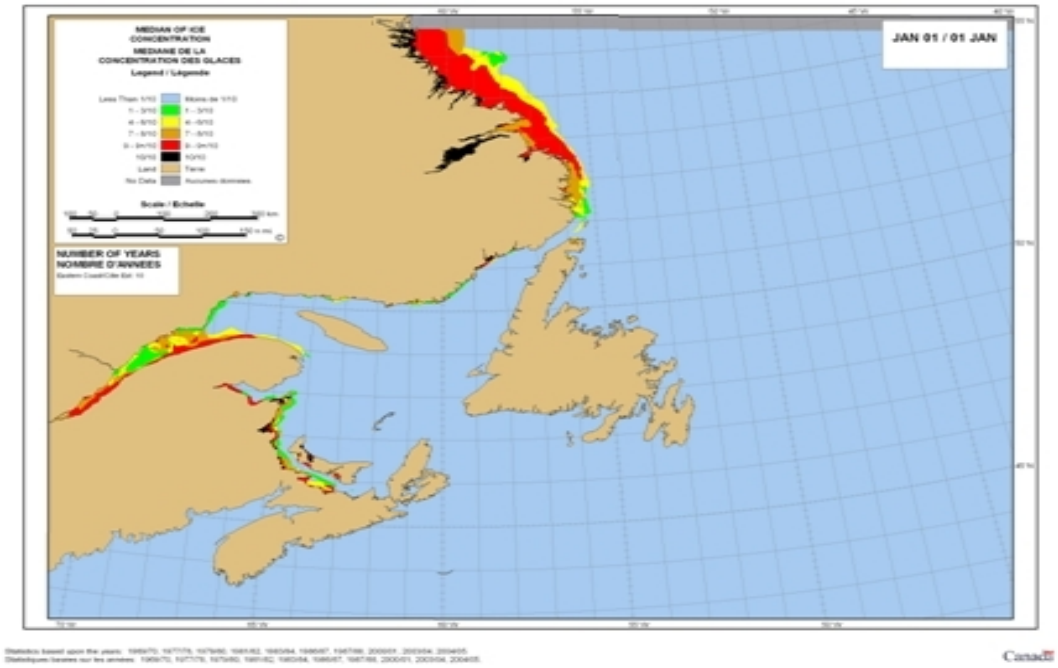


Figure 4: Expected ice conditions – 1 January 2009

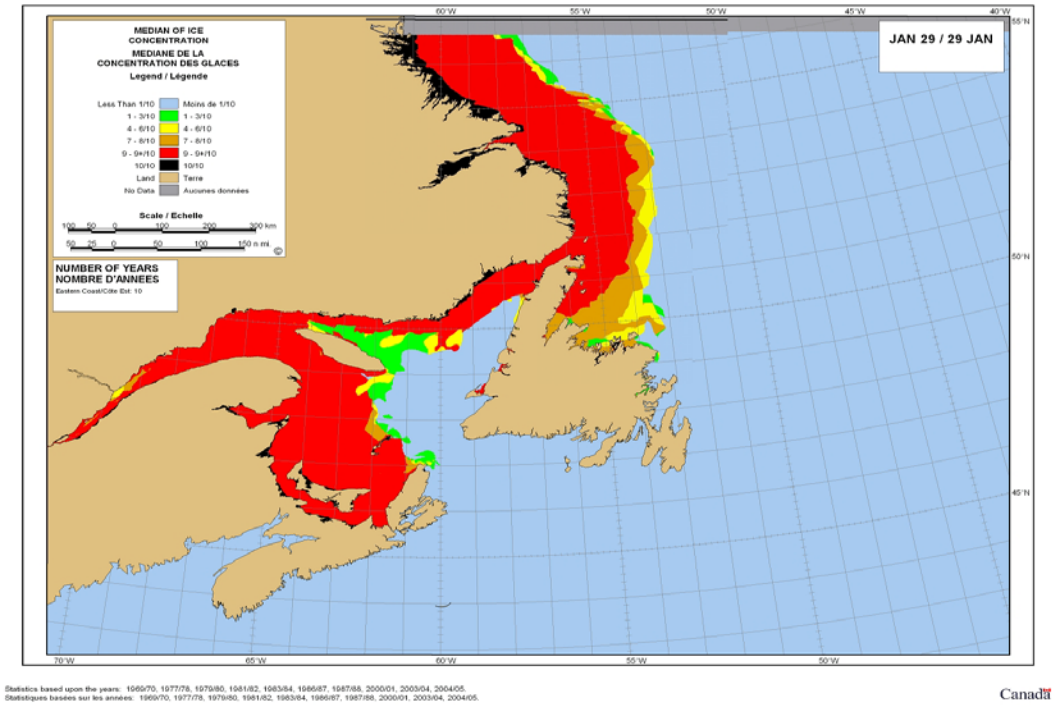
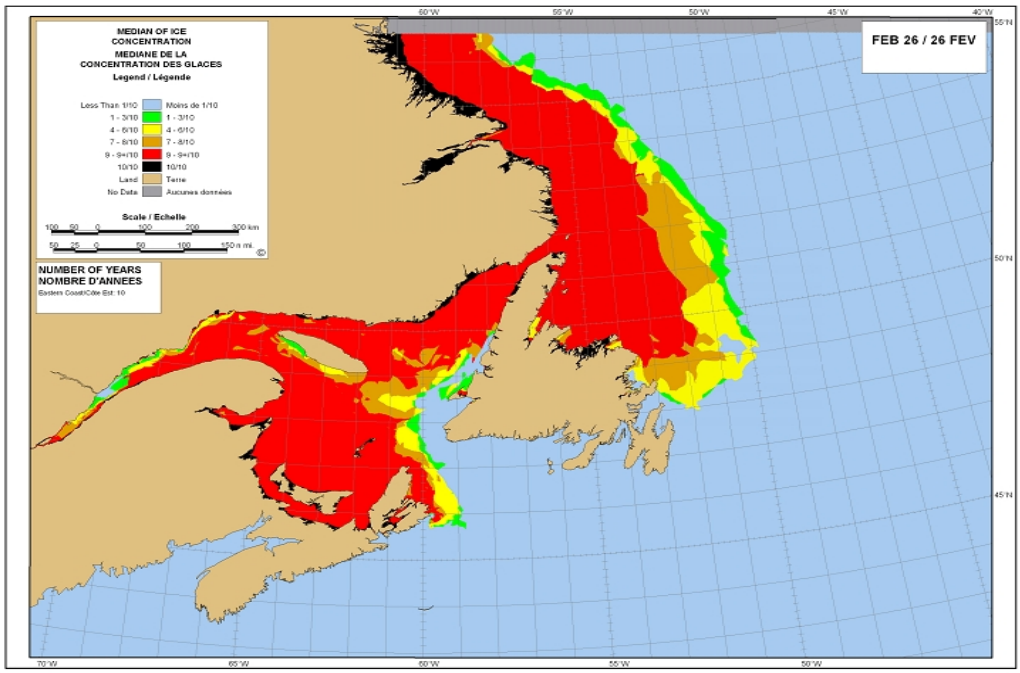


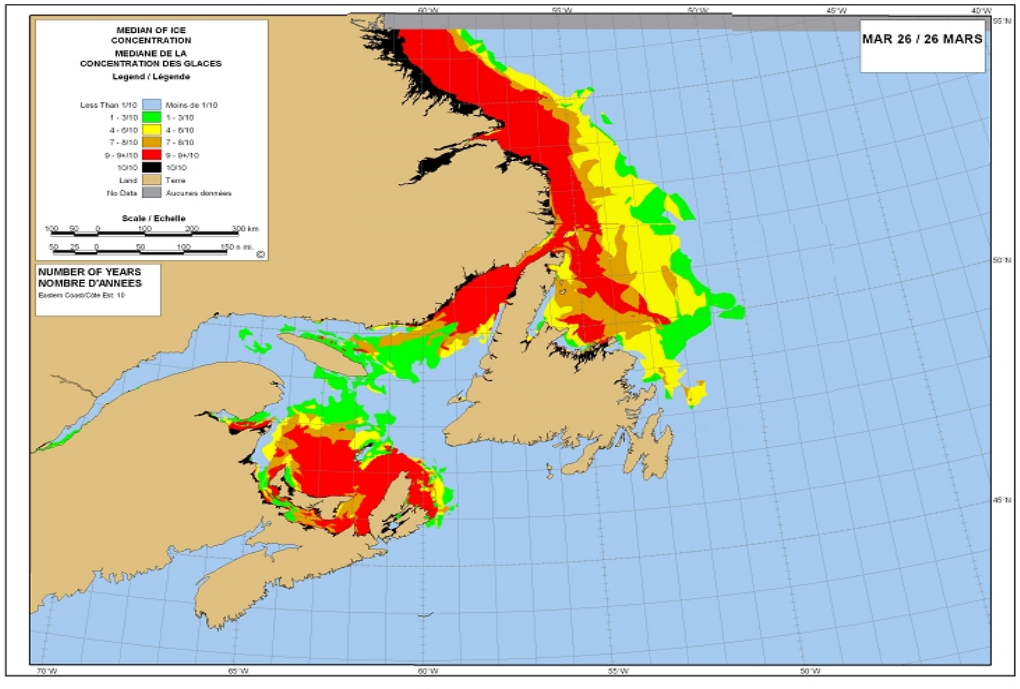
Figure 5: Expected ice conditions – 29 January 2009



Statistics based upon the years: 1969/70, 1977/78, 1978/80, 1981/82, 1983/84, 1986/87, 1987/88, 2000/01, 2003/04, 2004/05.
Statistiques basées sur les années: 1969/70, 1977/78, 1979/80, 1981/82, 1983/84, 1986/87, 1987/88, 2000/01, 2003/04, 2004/05.

Canada

Figure 6: Expected ice conditions – 26 February 2009



Statistics based upon the years: 1969/70, 1977/78, 1978/80, 1981/82, 1983/84, 1986/87, 1987/88, 2000/01, 2003/04, 2004/05.
Statistiques basées sur les années: 1969/70, 1977/78, 1979/80, 1981/82, 1983/84, 1986/87, 1987/88, 2000/01, 2003/04, 2004/05.

Canada

Figure 7: Expected ice conditions – 26 March 2009

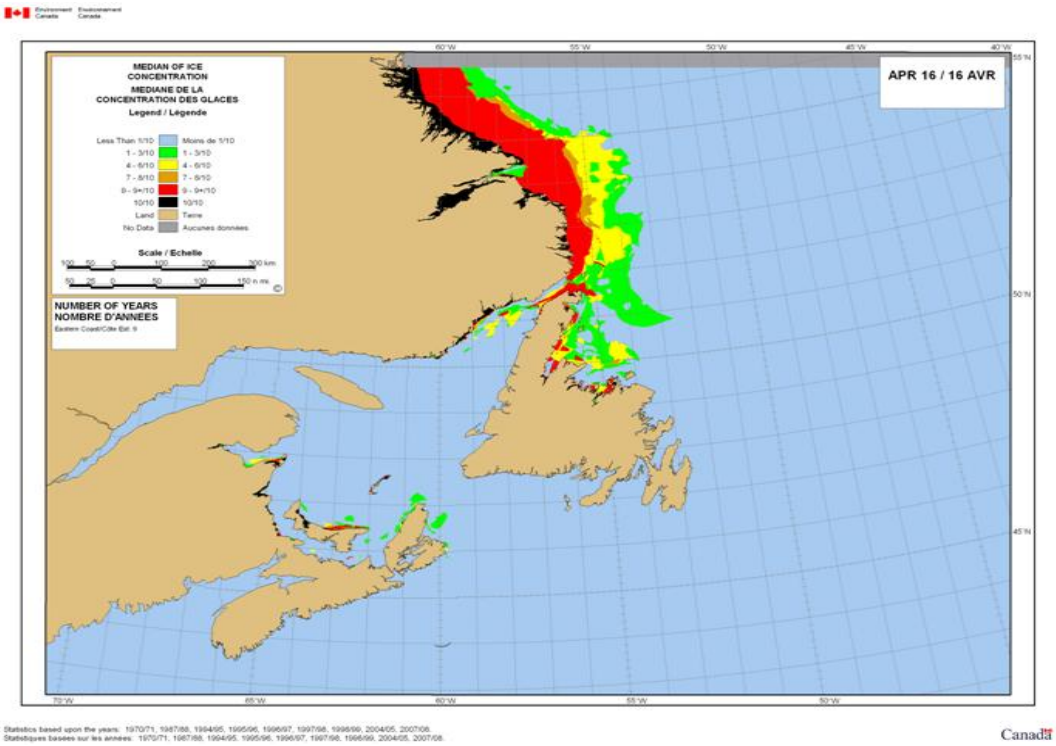


Figure 8: Expected ice conditions – 16 April 2009

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Gulf of St-Lawrence

Near the end of November water temperatures were around 1.0˚C to 2.0˚C above normal in the Gulf of St Lawrence (Figure 3). Above normal air temperatures are forecast for the first half of December, followed by near normal temperatures in the second half.

New ice will develop in the western end of the St-Lawrence River during the first weekend of December and will spread rapidly to cover the western section of the river shortly after mid-December. Ice will further spread to cover the eastern section of the St-Lawrence River by Christmas Day. At that time new and grey ice will be present in most of the shallow bays along the New Brunswick coast as well as along the southern shore of Chaleur Bay. By New Year's Day a narrow band of new and grey ice will be present along the New Brunswick coast and loose areas of new and grey ice will be found in Northumberland Strait, along the northern shore of the Gaspe Peninsula and along sections of the northern shore of the Gulf up to the Strait of Belle. The forecast ice extent for January 01st is illustrated in Figure 4.

The long range temperature forecasts are generally calling for above normal temperatures for the rest of the winter for the Gulf of St Lawrence. Significant fluctuations in temperature are likely as a series of low pressure systems tracks over the Gulf area. Ice thicknesses and extent at the peak of the ice season will be somewhat less than normal.

Despite above normal temperatures ice development is expected to accelerate in January. During the first week of 2009 ice will spread over the rest of Northumberland Strait and Chaleur Bay. The ice in the southern section of the Estuary will advance and reach Gaspe by the end of the first week of the year. At that time greywhite ice will start to develop in the St Lawrence River. At mid-January the Estuary, Northumberland Strait as well as the Strait of Belle Isle will be covered by mainly grey ice and the ice along the New Brunswick coast will expand to about 20 to 30 miles offshore. Ice development will continue in the second half of January. The ice along the New Brunswick coast will continue its seaward expansion and reach Îles de la Madeleine during the third week of January and Cape North a week later. At that time Gaspe Passage will be covered with greywhite ice except looser and thinner ice in the eastern section and greywhite and grey ice will be predominant in the Strait of Belle Isle and in the northeast end of the Gulf. The forecast ice extent for the end of January is shown in Figure 5.

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Above normal temperatures will persist for most of February and ice extent and thicknesses will continue to increase. Ice will round Cape North and reach the Approach to Sydney during the second week of February. The ice in the Northeast Arm will continue its southward progression along the west coast of Newfoundland and reach the area just north of Bay of Islands at mid-February. At that time the eastern ice edge in the southeast portion of the Gulf will lie about 15-25 miles west of Port-aux-Basques. At mid-February greywhite ice will be the predominant ice type in the Gulf except for thin first year ice along the southern shore of the Estuary, in most of Northumberland Strait and the Strait of Belle Isle. Ice in Western Cabot Strait will continue its southward progression and reach Scatarie Island during the third week of February. However the eastern third of the Strait is expected to remain open water throughout the second half of the month. The ice along the west coast of Newfoundland will reach Cape St George around that same time but loose ice conditions should generally prevail along the route along the west coast of Newfoundland to Bay of Islands at the end of February. Greywhite ice will still be the predominant ice type in the Gulf but high amount of first year ice will be found especially in Northumberland Strait, along the Newfoundland coast and in the south-western section of the Gulf. Episodes of strong onshore winds will, at times, result in strong ice pressure in coastal areas and within the ice pack. The forecast ice extent for the end of February is shown in Figure 6.

The ice extent will reach its maximum in late February or early March. With near normal temperatures in March and the fact that the ice should be thinner than normal, the break-up is expected to occur close to a week earlier than normal. Clearing of the St Lawrence River and the Estuary should then occur during the third week of March. An open water route through the central Gulf should develop during the last week of the month. The forecast ice conditions for the end of March and for mid-April are illustrated in Figure 7 and Figure 8, respectively.

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East Newfoundland Waters

Near the end of November water temperatures over the east Newfoundland Waters were 1.5˚C to 2.5˚C above normal. Along the Labrador coast water temperatures ranged from 1˚C above normal along the southern section to near normal along the northern section (Figure 3).

In early December new and grey ice areas were found in Lake Melville as well as in shallow bays along the northern Labrador coast. Elsewhere in the east Newfoundland Waters and along the Labrador coast bergy water or open water prevailed. The ice edge at the beginning of December was located near Resolution Island which is about a week to 10 days later than the long term average. Above normal temperatures are expected along the Labrador coast and in the east Newfoundland waters for December. Ice in Lake Melville will reach the greywhite stage during the second week of the month. Two weeks later Lake Melville will be consolidated with thin first year ice. New and grey ice will continue to form along the northern Labrador coast and will spread southward to reach Nain during the third week of December. At the end of December, the southern ice edge will approach the entrance to the Strait of Belle Isle. South of the ice edge, some new ice will form in the smaller bays and inlets. No significant ice will begin to form along the Newfoundland coast before the New Year except for new and grey ice developing in Bay of Exploits near Christmas' Day. The expected ice cover for January 1st is illustrated in Figure 4.

The seasonal temperature forecast indicates above normal temperatures over the Newfoundland Waters and along the southern Labrador coast in January and February. For the same period near normal temperatures are forecast along the northern half of the Labrador coast. However, temperatures will fluctuate between above and below normal values as storms track over the area. This, combine with a slightly later than normal freeze-up, will result in the ice extent and thickness to be slightly less than normal at the end of January. Ice will reach St Anthony by the end of the first week of 2009 and then progress southward along the northern half of the Northern Peninsula the following week. At mid-January the Strait of Belle Isle will be covered with mainly grey ice and new and grey ice will be found in shallow bays and inlets along the north coast of Newfoundland. At that time the main pack will extend about 30 miles and 70 miles off the southern and northern Labrador coast respectively. In the main pack grey and greywhite ice will be predominant but some thin first year ice will be found along the northern Labrador coast. During the second half of January ice will continue its southward progression and reach the Baie Verte Peninsula late in the month. New and grey ice will continue to develop in bays west of Fogo Island but Notre Dame Bay will

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remain mainly bergy water at the end of January. At that time the pack will extend 60 to 80 miles off the Northern Peninsula and the southern Labrador coast. Off the Northern Labrador coast the pack will extend about 100 miles offshore. Greywhite ice will be predominant in the Strait of Belle Isle and inside the pack except north of Groswater Bay where first year ice will predominate. The expected ice extent for the end of January is illustrated in Figure 5.

Ice will continue to progress and will invade Notre Dame Bay early in February. The pack will then reach Fogo Island a few days later and the latitude of Cape Bonavista towards mid-month. Grey and greywhite ice will predominate inside the pack along the Newfoundland coast but first year ice will prevail farther offshore and along the Labrador coast. First year ice will develop in the Strait of Belle Isle early in February. At mid-February the ice pack will extend about 60 miles off Cape Freels and about 90 miles off the southern Labrador coast. The southward ice edge will continue to progress along the east Newfoundland coast and will lie just north of the entrance to Conception Bay at the end of February. In the main ice pack greywhite ice will be predominant south of Cape Freels while first ice predominates further north. The expected ice extent for the end of February is illustrated in Figure 6.

A slow southward drift of the ice edge is expected during the first 3 weeks of March after which time it will start its northward retreat. Periods of strong onshore winds could occasionally result in moderate to strong ice pressure developing along the Newfoundland coast north of Cape Bonavista. Patches of greywhite and first year ice could at times drift in Trinity Bay and Conception Bay. The southern ice edge will retreat at a somewhat faster pace than normal in the spring. The forecast ice conditions for the end of March and for mid-April are illustrated in Figure 7 and Figure 8, respectively.

Concentrations of old ice in western Baffin Bay were near normal and small amounts of this old ice will be dispersed in the southern pack during the spring season. Note that ice concentration, ice type, and ice pressure in coastal areas will vary according to winds associated with storm systems passing over Newfoundland waters.

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Appendix

Appendix A - Stages of Development of Sea Ice.

For more information on this section, please refer to the following web link on the Canadian Ice Service web site:

http://ice-glaces.ec.gc.ca/App/WsvPageDsp.cfm?ID=11170&LnId=29&Lang=eng

Appendix B - General information from the Canadian Coast Guard.

General information regarding transmission times for bulletins and charts from various radio broadcast stations:

http://www.ccg-gcc.gc.ca/eng/CCG/MCTS_Radio_Aids

Appendix C - WMO (World Meteorological Organization) Colour Code

Information regarding the ice chart colour code using the WMO standard.

http://ice-glaces.ec.gc.ca/App/WsvPageDsp.cfm?ID=11500&LnId=19&Lang=eng

Appendix D - Ice Services for Canadian East Coast Waters

In Canada, ice services are provided to shipping, fishing and offshore operators by a co-operative effort of Environment Canada and Department of Fisheries and Oceans. Department of Fisheries and Oceans, through the Canadian Coast Guard, provides icebreaker services and operates seasonal Ice Operations Offices at Dartmouth, St. John's and Quebec City. Canadian Ice Service of the Atmospheric Environment Service (division of Environment Canada) is responsible for gathering and generating ice information services and forecasts.

The following forecasts are issued:

1. Gulf of St. Lawrence Ice Hazard Bulletin (FICN17): A tactical ice bulletin with an ice edge delimiter and, if required, a warning of hazardous ice conditions for the

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next 36 hours. This Ice Hazard Bulletin briefly describes general ice conditions within each marine forecast area.

2. East Newfoundland Waters Ice Hazard Bulletin (FICN18): A tactical ice bulletin with an ice edge delimiter and, if required, a warning of current hazardous ice conditions for the next 36 hours. This Ice Hazard Bulletin briefly describes general ice conditions within each marine forecast area.

3. Iceberg Bulletin (FICN10): a narrative providing information on the distribution of icebergs in East Newfoundland waters and along the Labrador Coast. During the navigation season emphasis is placed on the Strait of Belle Isle and approaches.

Ice bulletins on ice conditions in the St. Lawrence River below Montreal are prepared twice daily (SRCN01 and SRCN03) by the ice office in Quebec City.

Daily ice analysis charts and a weekly "Regional Ice Chart" covering a larger area are issued by Canadian Ice Service. In addition to the distribution outlined in Appendix B, ice forecasts and bulletins and the Seasonal Outlook are available from the Canadian Ice Service website (http://ice-glaces.ec.gc.ca). The seasonal outlook is issued once yearly then updated twice monthly by 30-day forecasts.

For further information concerning these services please contact Canadian Ice Service by phone (613) 996-1550, facsimile (613) 947-9160 or e-mail at:

cis-scg.client@ec.gc.ca.

Canadian Coast Guard Ice Operation Offices provide ship routing advice and arrange for icebreaker support when available and necessary. In order to obtain maximum benefit from Ice Operation Offices, it is essential that Masters report to 'ECAREG CANADA' office before entering ice covered waters.