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 2010-2011

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GULF OF ST. LAWRENCE AND NEWFOUNDLAND WATERS

WINTER 2010-2011

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 preceding 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:

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

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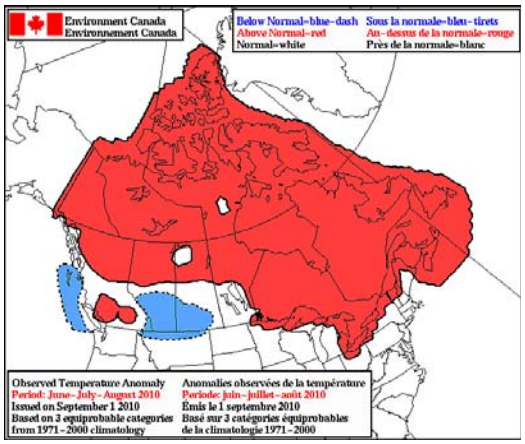
General Seasonal Outlook

Above normal air temperatures were generally reported between the beginning of June and the end of November over the forecast area. Water temperatures at the end of November were also above normal.

At the beginning of December bergy water was the norm along the Labrador coast. At that time new and grey ice was beginning to form in the western end of Lake Melville. These conditions are a week behind normal.

For December to February temperatures are generally forecast to be above normal. Freeze-up in the Gulf of St Lawrence and along the southern Labrador coast should be about a week later than normal. In the Newfoundland waters freeze-up is expected to be more than a week later than normal.



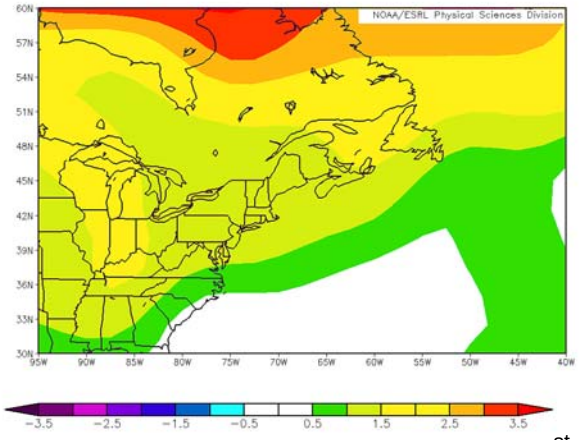


Figure 1: Temperature anomaly, June to August from CMC and September 1st to November 27th from NOAA

Table 1: Departure from normal temperatures – November 2010

	Normal Temperatures	Observed	Departure
Quebec	-0.7	0.6	1.3
Sept-Iles	-3.0	-0.6	2.4
Gaspe	-0.7	1.1	1.8
Sydney	3.2	4.4	1.2
Stephenville	2.2	4.1	1.9
St John's	2.5	3.7	1.2
Gander	0.8	2.9	2.1
Cartwright	-2.5	1.3	3.8
Goose Bay	-4.6	0.0	4.6
Nain	-5.2	-0.2	5.0
Average	-0.8	1.7	2.5

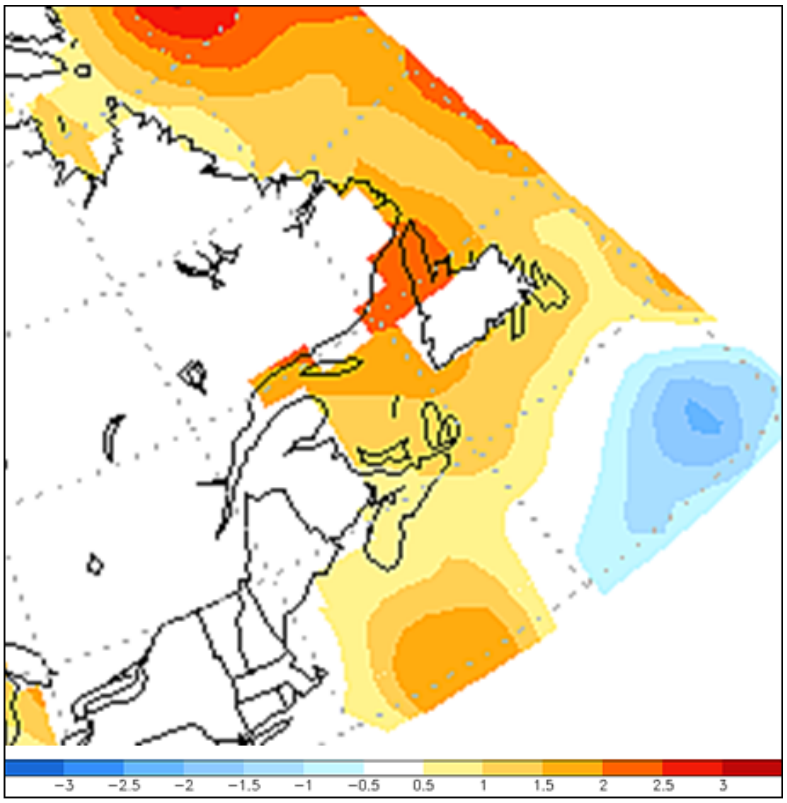


Figure 2: Water temperature anomalies – 24 November 2010 (NOAA)

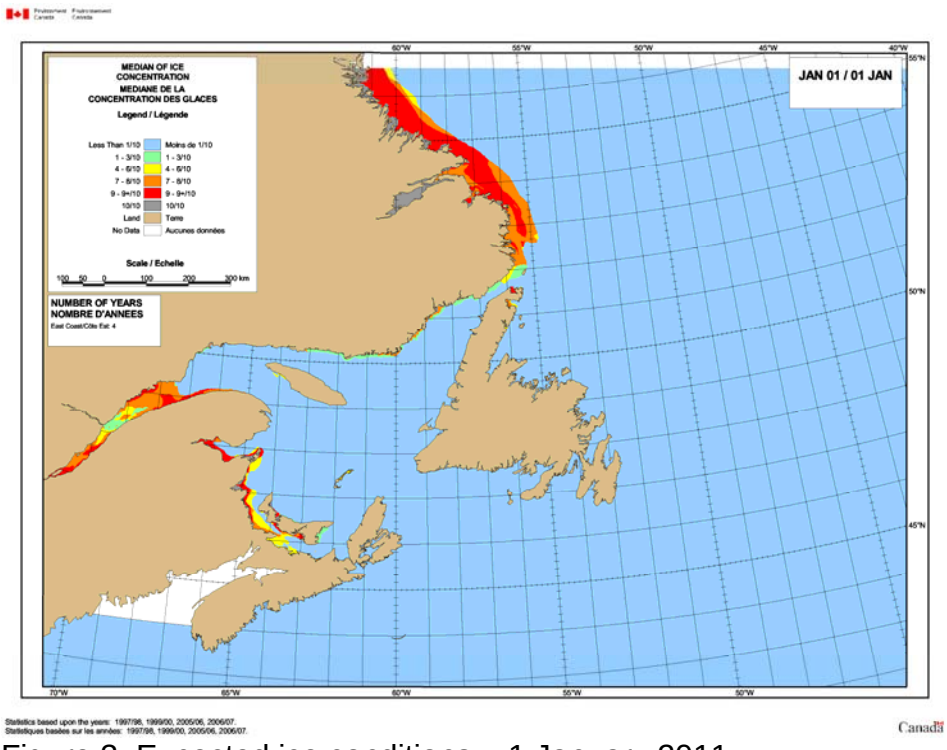


Figure 3: Expected ice conditions – 1 January 2011

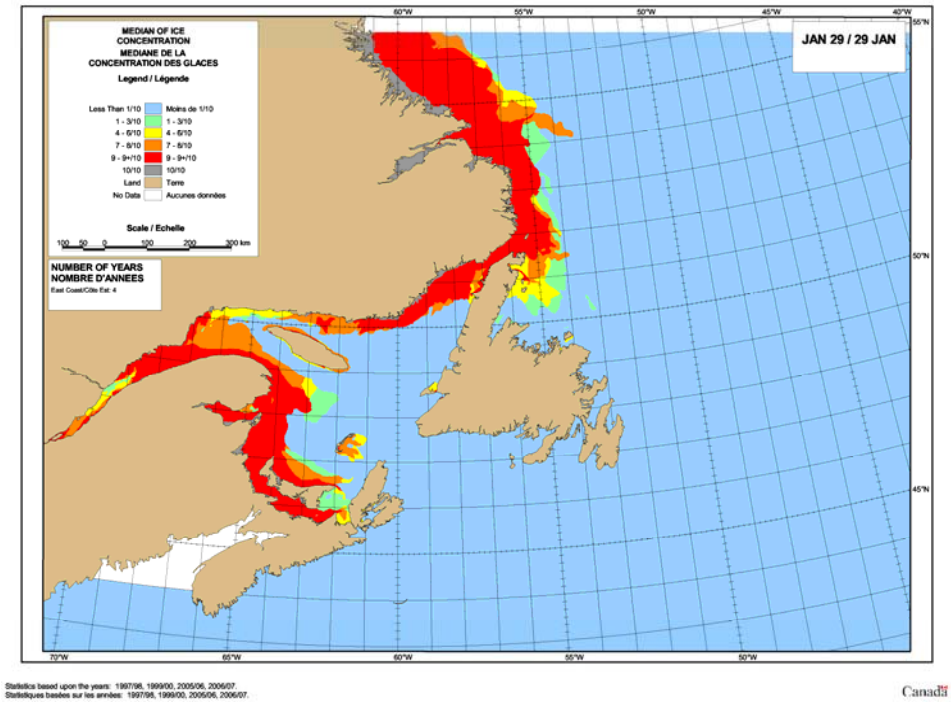


Figure 4: Expected ice conditions – 29 January 2011

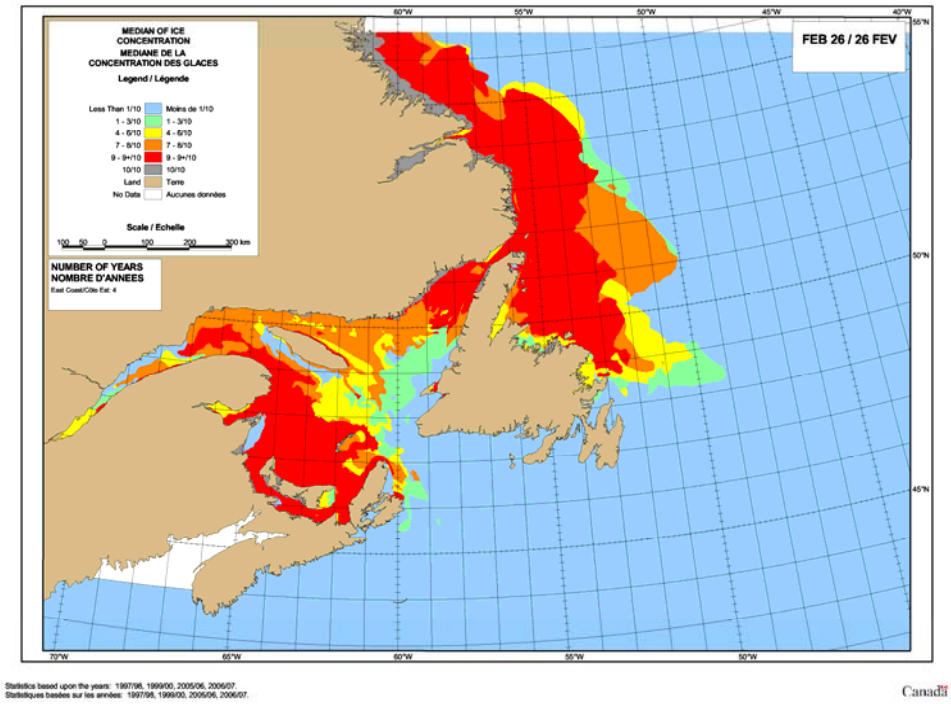


Figure 5: Expected ice conditions – 26 February 2011

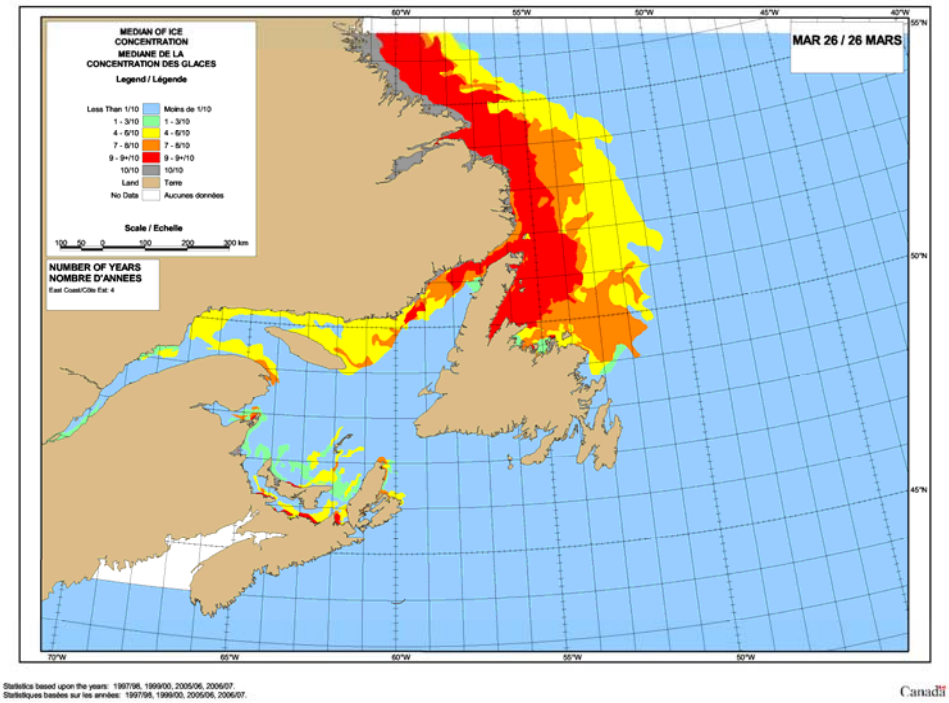


Figure 6: Expected ice conditions – 26 March 2011

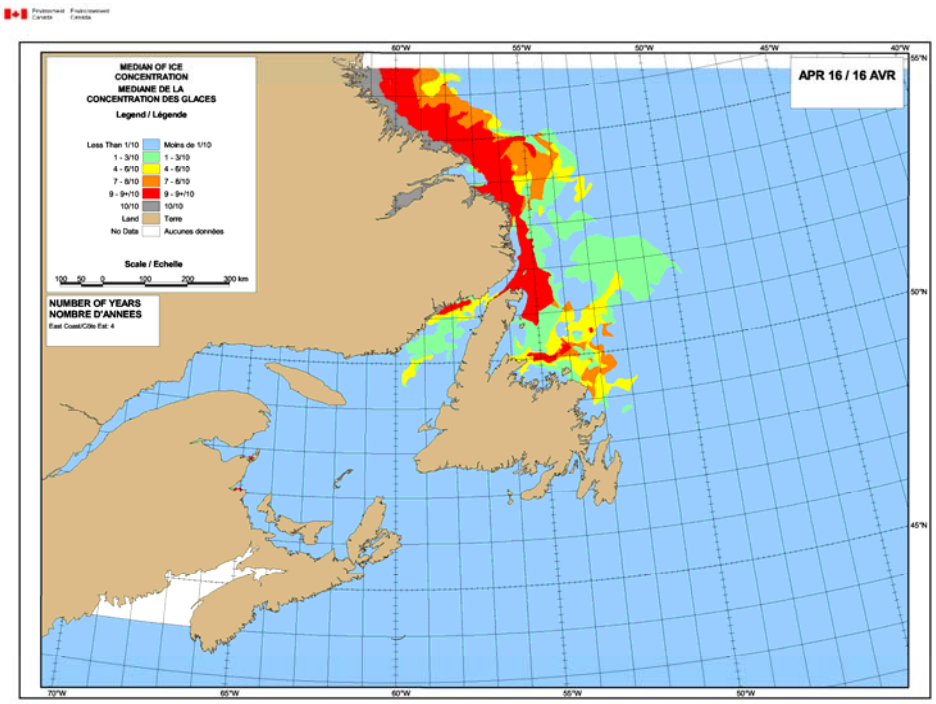


Figure 7: Expected ice conditions – 16 April 2011

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Gulf of St-Lawrence

Near the end of November water temperatures in the Gulf of St Lawrence were above normal. They were near normal in the Estuary (Figure 2). Air temperatures in December will be above normal.

New ice will start to develop in the vicinity of l'Île d'Orléans near mid-December and will gradually spread eastward in the Estuary to reach Pointe-des-Monts around the New Year. New ice will also develop in the western end of Chaleur Bay and in the shallow bays along the New Brunswick coast in the second week of December. Ice will continue to develop and at the end of 2010 Chaleur Bay and Northumberland Strait will report open drift to close pack areas of new and grey ice. In addition a 10 to 15 mile wide band of new and grey ice will be present along the New Brunswick coast during the last week of December. A narrow band of new and grey ice is expected to develop along the Quebec North Shore from Havre-Saint-Pierre eastward to the Strait of Belle Isle just before the end of 2010. The forecast ice extent for January 1st is shown in figure 3.

The forecast for the Gulf of St-Lawrence for the rest of the winter is for near to above normal temperatures. However large fluctuations in temperatures can be expected as low pressure systems track over the Gulf area. Ice thicknesses and extents at the peak of the season will be below normal.

Ice development is expected to be more than a week late compared to normal in the gulf in the first half of January. By mid-month some grey-white ice will be found along the southern shores of the Estuary and in the western section of Honguedo Strait. At that time mostly open water will be found in the northern half of the Estuary. The band of new and grey ice along the Quebec North Shore will extend to 10 to 20 miles offshore by mid-January. Grey ice will spread to the rest of Chaleur Bay and into most of Northumberland Strait early in the second week of January. By mid-month some grey-white ice will be found in Chaleur Bay. In the third week of January grey-white ice will develop in Northumberland Strait and grey and new ice along the New Brunswick coast will extend to about 30 miles offshore. Also in the third week of January grey-white ice will be found along the southern shores of the estuary, along the southern shores of Chaleur Bay and in most of Northumberland Strait. New and grey ice will be found along the Quebec North Shore up to 30 miles offshore. Ice will develop rapidly in the last part of the month. Grey-white ice will come out of the Estuary and around the Gaspésie to extend south-eastward to 70 miles offshore from the Gaspésie. Also at that time, grey Ice will spread to 70 miles off the New Brunswick coast and grey-white ice will cover most of Northumberland Strait. Also towards the end of

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January grey-white ice will be found in the northeast arm. A map of the ice conditions at the end of January is shown in figure 4.

Rapid ice development will continue in the first week of February as the ice pack reaches les Îles de la Madeleine, spreads to most of Honguedo Strait and starts rounding Cape north and drifting into western Cabot Strait. Grey-white ice will predominate inside the main pack. The ice will continue its southward progression along the Newfoundland coast but will remain north of Bay of Islands by mid-month. By the end of the second week of February ice will reach the approaches to Sydney and Scatarie Island. By mid-month, first year ice will be found along the south shore of the estuary, in Chaleur Bay, in Northumberland Strait and in the Northeast Arm and grey-white ice will predominate in the main pack. At that time grey-white ice with some first-year ice will be present in the main shipping route through the central Gulf. At the end of February loose areas of grey-white ice will extend to about 30 miles southeast of Scatarie Island and an open water route will continue to exist to Bay of Islands. Also at the end of the month mostly first year ice will be found in the south-western section of the Gulf and in Northumberland Strait. First year ice will be found in the Northeast Arm, in Chaleur Bay, along the south shore of the estuary and in Honguedo Strait. Conditions in the main shipping route will start improving at the end of February. The forecast ice extent at the end of February is shown in figure 5.

Signs of breakup will be seen as soon as the first week of March in the St Lawrence River and in the north-western section of the Gulf. Ice in Cabot Strait will start retreating in the second week of March. Breakup will proceed faster than normal. Forecast ice conditions for the end of the month of March and the second week of April are shown in figure 6 and figure 7 respectively.

East Newfoundland Waters

Near the end of November water temperatures over the east Newfoundland waters were 1.5C to 2.5C above normal (figure 2). Along the Labrador coast water temperatures were in general above normal. Above normal air temperatures are forecast for the month of December.

New and grey ice will continue to develop and will entirely cover Lake Melville in the second week of December. Grey-white ice will be predominant in Lake Melville at mid-month. In the second and third week of December some new and grey ice will start developing along the coast north of 5330N. In the last week of December some new and grey ice will be found from just north of Belle Isle Strait northward within up to 10 to 20 miles of the Labrador coast. At the end

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of the month, Lake Melville will be covered with consolidated grey-white ice while close to very close pack new and grey ice will reach the approaches to Belle Isle Strait. At that time very open to open drift new and grey ice will be found in the northern half of Belle Isle Strait and some grey-white ice will be present in the pack north of Groswater Bay. A depiction of ice conditions on January 1st is shown in figure 3.

Normal to above normal temperatures are expected over Newfoundland waters and along the Labrador coast in January and February. At the peak of the ice season ice thickness and extent should be below long term averages. The ice will progress southward and reach the Grey Islands around mid-January. At that time the ice will extend about 40 miles east of the Northern Peninsula and about 100 miles off the mid-Labrador coast. Grey-white ice will predominate inside the pack with mostly grey ice south of St Anthony. Also of note is the formation of new and grey ice in Bay of Exploits and around New World Island in the first and second week of January. By the end of January the southern edge of the pack will lie about 20 to 40 miles northeast of the Baie Verte Peninsula. Grey-white and grey ice will predominate inside the pack with mostly first year ice present from Groswater Bay and northward. Some grey and grey-white ice will be found around Fogo Island and in Bay of Exploits. The forecast ice extent for the end of January is shown in figure 4.

New and grey ice will develop along the coast in Notre Dame Bay eastward and in inner Bonavista Bay in the first week of February. At that time the main ice pack will reach Fogo Island. Towards mid-month the ice pack will reach Cape Bonavista and will extend to about 100 miles east of Cape Freels. First year and grey-white ice will predominate inside the pack. In the second half of February the ice pack will continue its southward progression and will be found just north of the approaches to Conception Bay at the end of the month. Onshore winds could occasionally bring very close pack ice into Trinity and Bonavista Bays. First year ice will predominate in the pack with the exception of grey and grey-white ice along the east coast of Newfoundland and along the Northern Peninsula. At that time the pack will extend up to about 150 miles off the east coast of Newfoundland and 180 miles off St Anthony. The forecast ice extent for the end of February is shown in Figure 5.

Little change is expected in the position of the southern ice edge in the first two weeks in March. Ice intrusions in the bays along the east coast of Newfoundland will remain possible. As well strong onshore flow could occasionally produce strong ice pressure along the northeast coast of Newfoundland.

Break up along the southern Labrador coast and in the Newfoundland waters should proceed at a normal to slightly faster than normal pace. Forecast

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ice conditions for the end of March and mid-April are shown in figure 6 and figure 7 respectively.

Appendix

Appendix A - Stages of Development of Sea Ice and Egg Code.

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

http://www.ec.gc.ca/glaces-ice/default.asp?lang=En&n=84F6AA59-1&wsdoc=FE5C2688-21A8-4165-8FFB-5D28B2A1D943

http://www.ec.gc.ca/glaces-ice/default.asp?lang=En&n=D5F7EA14-1

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://www.ec.gc.ca/glaces-ice/default.asp?lang=En&n=D5F7EA14-1&offset=1&toc=show

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 (877) 789-7733, facsimile (613) 947-9160 or e-mail at:

Weather.Info.Meteo@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.