



Environment
Canada

Environnement
Canada

Environmental Stewardship Branch
16th Floor, Queen Square
45 Alderney Drive
Dartmouth, NS B2Y 2N6

28 March 2011

Darren Hicks
Environmental Analyst
Canada-Newfoundland and Labrador Offshore Petroleum Board
140 Water St., 4th Floor
St. John's, NL A1C 6H6

Dear Mr. Hicks:

**RE: Corridor Resources Inc.
Western Newfoundland and Labrador Offshore Area
Exploratory Drilling Program on Old Harry – EL 1105**

EAS 2011-074

As requested in your memorandum dated 24 February 2011, Environment Canada (EC) has reviewed the project description and draft scoping document for the above-noted project to identify the department's interests in accordance with the *Federal Coordination Regulations* under the *Canadian Environmental Assessment Act* (CEAA). It is understood that the Canada-Newfoundland and Labrador Offshore Petroleum Board has confirmed that an environmental assessment under the CEAA is required.

Based on the information provided, it is not likely that EC has any powers, duties or functions in relation to the proposed project that would require an environmental assessment under the *Act*. However, EC has in its possession specialist knowledge and information that should be considered in the environmental assessment. This knowledge stems from EC's responsibility for administering several statutes such as the *Department of Environment Act*, *Fisheries Act* (Section 36), *Canadian Environmental Protection Act*, *Canada Water Act*, *Canada Wildlife Act*, *Species at Risk Act*, and the *Migratory Birds Convention Act*. EC is also the lead federal department in promoting relevant federal policies and programs such as "A Wildlife Policy for Canada"; "Toxic Substances Management Policy"; and, "Pollution Prevention - A federal strategy for action". Accordingly, EC has reviewed the draft scoping document and offers the following for consideration in conducting the environmental assessment.

Wildlife

Section 4.2.5 of the Scoping Document mentions three Important Bird Areas (IBA) in Western Newfoundland which may interact with the project. There is no mention of the Important Bird Areas in the Magdalen Islands (Quebec), within which also is included the *Pointe de l'est* National Wildlife Area and the *Rochers aux Oiseaux* Bird Sanctuary. Nor is there mention of the Important Bird Areas

in Cape Breton (Nova Scotia). All of these IBAs and sensitive areas should be covered in the scope of the Environmental Assessment (EA) of this project. For more information on these IBA's, please refer to following Website: <http://www.ibacanada.com/index.jsp?lang=en>, which contains valuable information on birds and their habitat.

In addition to the Important Bird Areas, it is important to highlight that there are three Black-legged Kittiwake colonies located on the SW part of the Port-Au-Port Peninsula (in the area of Cap St. Georges; Lat: 48.48 to 48.49; Long: -58.59 to -59.26), two of which are significant in size (one is > 500 pairs, and the other is > 1000 pairs). These are the only existing Black-legged Kittiwake colonies on the entire west coast of Newfoundland.

Other than the above points, the scoping document states that issues concerning marine and/or migratory birds and species at risk using the area will be considered in the environmental assessment. The points outlined in the scoping document are satisfactory to address these issues.

EC's Canadian Wildlife Service also provides the following general guidelines for consideration:

Marine and/or migratory birds using the study area:

- spatial and temporal species distributions
- species habitat, feeding, breeding, and migratory characteristics of relevance to the environmental assessment
- exposure to contaminants from accidental spills (e.g., fuel, oils) and operational discharges (e.g., deck drainage, gray water, black water)
- attraction of birds to vessel lighting, flares, potential effects and mitigations
- noise disturbance from equipment including both direct effects (physiological), or indirect effects (foraging behaviour or prey species)
- physical displacement as a result of vessel presence (e.g. disruption of foraging activities)
- attraction of, and increase in, predator species as a result of waste disposal practices (i.e., sanitary and food waste)
- means by which potentially significant effects upon birds may be mitigated through design and/or operational procedures
- procedures for handling birds that may become stranded on drill rigs or support vessels
- means by which bird mortalities associated with Project operations may be documented and assessed
- cumulative effects as a result of other offshore oil and gas activities, and other factors such as hunting, fishing (long line by-catch), shipping, etc.

Species at Risk (SAR):

- provide a description of species at risk as listed in Schedule 1 of the *Species at Risk Act (SARA)*, and those under consideration by COSEWIC in the study area.
- means by which adverse effects upon SAR and their critical habitat may be mitigated through design, scheduling, and/or operational procedures
- monitoring and mitigation, consistent with recovery strategies/action plans (endangered/threatened) and management plans (special concern)
- assessment of effects (adverse and significant) on species and critical habitat, including cumulative effects summary statement stating whether project effects are expected to contravene the prohibitions of SARA (Sections 32 (1), 33, 58(1))

- The **Ivory Gull** has been uplisted to Endangered on SARA's Schedule 1. This species may be found in the project area, and should be considered in the environmental assessment.

Oil

The proponent should ensure that all precautions are taken by the contractors to prevent fuel leaks from equipment, and that a contingency plan in case of oil spills is prepared. Furthermore, the proponent should ensure that contractors are aware that under the *Migratory Birds Regulations*, "no person shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds." Biodegradable alternatives to petroleum-based chainsaw bar oil and hydraulic fluid for heavy machinery are commonly available from major manufacturers. Such biodegradable fluids should be considered for use in place of petroleum products whenever possible, as a standard for best practices. Fuelling and servicing of equipment should not take place within 30 meters of environmentally sensitive areas, including shorelines and wetlands.

Regulations

Migratory birds, their eggs, nests, and young are protected under the *Migratory Birds Convention Act* (MBCA). Migratory birds protected by the MBCA generally include all seabirds except cormorants and pelicans, all waterfowl, all shorebirds, and most landbirds (birds with principally terrestrial life cycles). Most of these birds are specifically named in the Environment Canada (EC) publication, *Birds Protected in Canada under the Migratory Birds Convention Act*, Canadian Wildlife Service Occasional Paper No. 1.

Under Section 6 of the Migratory Birds Regulations (MBR), it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird, or its carcass, skin, nest or egg, except under authority of a permit. It is important to note that under the current MBR, no permits can be issued for the incidental take of migratory birds caused by development projects or other economic activities.

Furthermore, Section 5.1 of the MBCA describes prohibitions related to deposit of substances harmful to migratory birds:

"5.1 (1) No person or vessel shall deposit a substance that is harmful to migratory birds, or permit such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area.

(2) No person or vessel shall deposit a substance or permit a substance to be deposited in any place if the substance, in combination with one or more substances, results in a substance — in waters or an area frequented by migratory birds or in a place from which it may enter such waters or such an area — that is harmful to migratory birds."

It is the responsibility of the proponent to ensure that activities are managed so as to ensure compliance with the MBCA and associated regulations.

The Responsible Authority should be reminded that the Species at Risk Act (SARA) amends the definition of "environmental effect" in subsection 2(1) of the Canadian Environmental Assessment Act (CEAA) to clarify, for greater certainty, that environmental assessments must always consider impacts on a listed wildlife species, its critical habitat or the residences of individuals of that species.

SARA also requires that the person responsible for a federal EA must, without delay, notify the competent minister(s) in writing if the project being assessed is likely to affect a listed wildlife

species or its critical habitat. Notification is required for all effects, including adverse and beneficial effects, and the requirement to notify is independent of the significance of the likely effect. The person must also identify adverse effects of the project on listed species and their critical habitat. And if the project is implemented, the person must ensure that measures are taken to avoid or lessen adverse effects and that effects are monitored. Mitigation measures must be consistent with recovery strategies and action plans for the species.

The complete text of SARA, including prohibitions, is available at www.sararegistry.gc.ca. For guidance on SARA and EA, the proponent may wish to make use of the *Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada* available at: http://www.sararegistry.gc.ca/virtual_sara/files/policies/EA%20Best%20Practices%202004.pdf

Physical Environment

Comments on Scoping Document

- Sec. 5.1 Boundaries - it would be helpful to clarify whether the study area or project area is to include the route to be taken by support helicopters between the drill site and the airports or heliports on land, and the scope of meteorological and sea state information required over this route.
- In the last sentence before Sec. 5.1 Boundaries, the word physiological should probably be replaced by the word physical.
- Physical environment is one of the factors to be considered. Under this heading, the scoping document requires summary descriptions of the meteorological and oceanographic characteristics in the Study area including extremes, and effects of the environment on the Project. It may be helpful to specify important elements to ensure they are covered, such as vessel and drilling platform icing, helicopter icing, turbulence, and cloud ceiling heights if they were not included in recent EAs for the area. Is seismic activity a factor to be considered?

Project Description

Section 1.0 - the figures provided, as well as Sec. 3.5.1 Shorebase Facilities, did not indicate the location of existing or proposed shore-based facilities. Does the list of relevant legislation need to be expanded to include aviation?

Sec. 4.0 Environmental Overview - Please clarify if the overview is to include the routing area of the support helicopters and vessels.

Sec. 4.1 Physical Environment - It would be useful to include a description of the climatology of freezing precipitation and freezing spray contributing to support vessel/drilling platform icing, and cloud ceiling heights and in-cloud icing, and their effects. It would also be useful to increase the data sources considered in earlier EAs to include wind measurements, ceilings, and visibility from selected neighbouring land stations (in addition to the over water information presented), measurements from past short term drilling programs and short term wave measuring programs in the Gulf (available from Fisheries and Oceans), marine measurements of temperature, visibility, wind, waves, and freezing spray archived in ICOADS (International Comprehensive Ocean Atmosphere Dataset).

There should be some description of coastally-enhanced wind fields such as the contribution from downslope winds. Environment Canada has a study project with the Canadian Space Agency

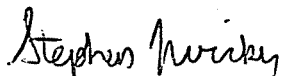
underway involving SAR (Synthetic Aperature Radar, from satellite) winds for high resolution marine winds. See a description here: http://www.asc-csa.gc.ca/eng/programs/grip/archive_101021.asp . Data is available through a portal at: <http://www.ar.cwinds.ca/>. This may be a useful resource to assist with monitoring and forecasting for the proposed project. For example, see high resolution wind features off the west coast of NF at http://www.ar.cwinds.ca/data/sar/RS1_N0604497_SCWA_20101021_214000_HH_SCW_1.jpg

A discussion of the relationship between inter-annual climate variability and variations in the extent and duration of sea ice over the Gulf could be useful.

The Canadian Ice Service was also invited to review the project description and scoping document. The attached comments and figures do not identify any concerns, but may provide information that could be useful in preparing the EA and are offered accordingly.

If you have any questions, please contact me at 902-426-0992 or stephen.zwicker@ec.gc.ca.

Yours truly,



Stephen Zwicker
Environmental Assessment Section
Environmental Protection Operations Directorate- Atlantic

Attachments

cc: G. Troke
J. Mailhiot
B. Thomas
L. Hache

Canadian Ice Service

Impact study on ice of exploratory drilling Old Harry-EL 1105

All the graphics included are based on the **Canadian Ice Service (CIS)** 30 year ice climatology which has just been updated and covers the period 1980 to 2010 (winter 1980/81 to winter 2009/10). The black circle on the attached graphics is the drilling area.

As shown in figure 1, the ice **normally** reaches the **Area Of Interest (AOI)** around February 12th (our normal is based on the median). This means that 50% of the time there is ice in the AOI on February 12th. If we look at the frequencies of the presence of ice we find that ice could reach the AOI as early as January 15th (figure 2). However on this date the probability of finding ice in the AOI is only between 1 and 15% (the yellow shaded area in figure 2 as per the legend). So on that date (on January 15th) there is a 1 to 15% chance that there is ice in the AOI. The probability of seeing ice in the AOI increases rapidly after January 15th. Ice has never been reported in the AOI before January 15th (according to CIS 30 year ice climatology which covers the period 1980-2010).

As for when the ice disappears from the AOI, it can be seen on figure 3 that the ice **normally** clears the area around April 9th. However if we look at the frequencies of presence of sea ice we can see that ice could be present in the AOI as late as April 30th (figure 4). However the probability of seeing ice in the area of interest that late in the season is only in the 1 to 15% range. According to CIS 30 year ice climatology no ice has ever been reported in the AOI after May 07th. So the window for drilling in an ice free situation (no ice at all) would be between May 7th and January 15th. This takes into account extreme cold winters. However in an extreme mild winter, like the winter 2010-11 and the previous one, the ice may never reached the drilling area at all. In fact in CIS 30 year statistics this has happened 6 times, all of them after 1997.

In summary (for the AOI):

- Normally the ice free period extends from April 9th to February 12th the following winter.
- In extreme cold winters the ice free period is shorter and extends only from May 07th to January 15th.
- In a mild winter the ice may not reach the drilling area at all. This has happened 6 times. This has happened more often in recent years with the warming trend that the region has experienced since the late 90's.
- Even if "ice free" seasons are more common, high variability in ice conditions from one season to the next can still be expected and severe ice conditions could still happen in any given year.

- It is not impossible to encounter ice before January 5th or/and after May 7th but it has never been observed based on the CIS 30 year ice climatology.

When the pack ice reaches the AOI the thicknesses are typically in the range of 10 to 30 centimetres. As the winter progresses the ice thickens to the 30 to 70 centimetre range. Ice ridges could occasionally form in the area and resulting thicknesses could be significantly higher than the ranges given above. The ice concentration could vary a lot but is often close to the 80 to 100% range with lower concentration at the beginning of the ice season. Strong ice pressure could occasionally develop because of high winds associated with winter storms which are quite frequent in the Gulf area. Such ice pressure can have significant impacts on shipping activities. Some ships are ice strengthened and can move in ice infested waters more easily than others.

It is difficult to evaluate the potential impacts of the project on ice conditions. However it is not believed that drilling as such will have a significant impact on the overall ice conditions. One thing worth mentioning is that there is a recommended shipping route published on a daily basis by Ice Quebec. It is published during the ice season in the Gulf and the commercial ships are expected to follow that route when transiting in the Gulf of St Lawrence. The recommended route is often right through, or very close to, the drilling area. It is unknown the impacts (if any) of drilling along the recommended shipping route. Figure 5 is an example of a recommended shipping route chart (red line).

Experts have advised that icebergs have been reported in the drilling area but it is a rather rare event. If icebergs are to move within the AOI it is more likely to be in the spring. The icebergs are monitored year-around by CIS (Canadian Ice Service) and/or IIP (International Ice Patrol). If icebergs approach the AOI, they will be monitored on a daily basis by CIS. The iceberg charts are available on the CIS web site. Figure 6 is an example of what an iceberg chart looks like. The numbers indicate how many icebergs there are per degree square.

Further ice information is available on the CIS web site at the following address:

<http://www.ice.ec.gc.ca/>

CIS monitor ice conditions in the Gulf on a daily basis. An example of an ice chart can be seen in figure 5.

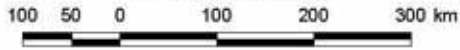
60°W 55°W 50°W 45°W

MEDIAN OF ICE CONCENTRATION MÉDIANE DE LA CONCENTRATION DES GLACES

Legend / Légende

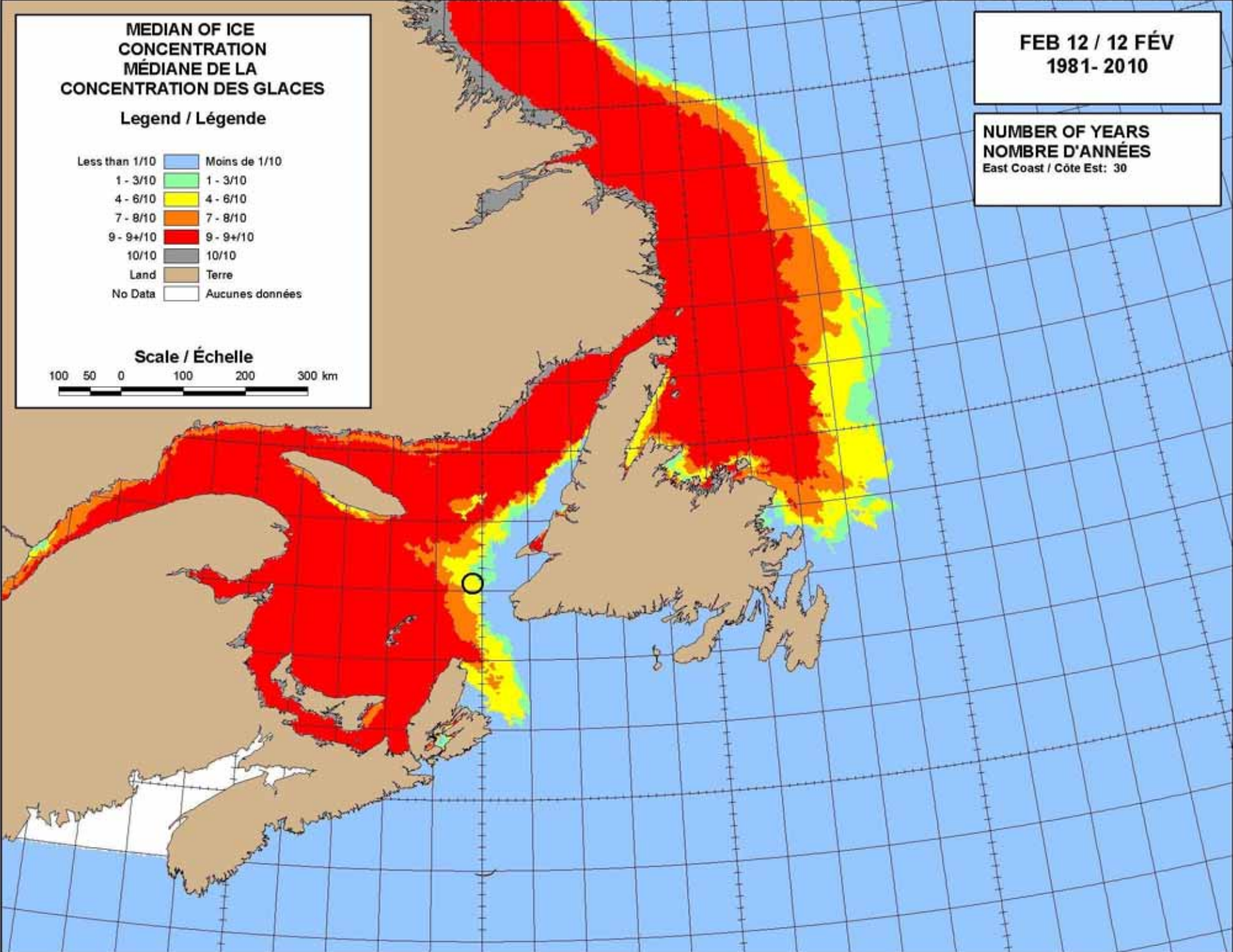
- | | |
|----------------|-----------------|
| Less than 1/10 | Moins de 1/10 |
| 1 - 3/10 | 1 - 3/10 |
| 4 - 6/10 | 4 - 6/10 |
| 7 - 8/10 | 7 - 8/10 |
| 9 - 9+/10 | 9 - 9+/10 |
| 10/10 | 10/10 |
| Land | Terre |
| No Data | Aucunes données |

Scale / Échelle



FEB 12 / 12 FÉV
1981- 2010

**NUMBER OF YEARS
NOMBRE D'ANNÉES**
East Coast / Côte Est: 30



65°W 60°W 55°W 50°W

50°N

45°N

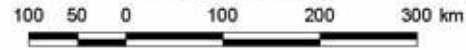
60°W 55°W 50°W 45°W

FREQUENCY OF PRESENCE OF SEA ICE (%)
FRÉQUENCE DE PRÉSENCE DE GLACE DE MER (%)

Legend / Légende

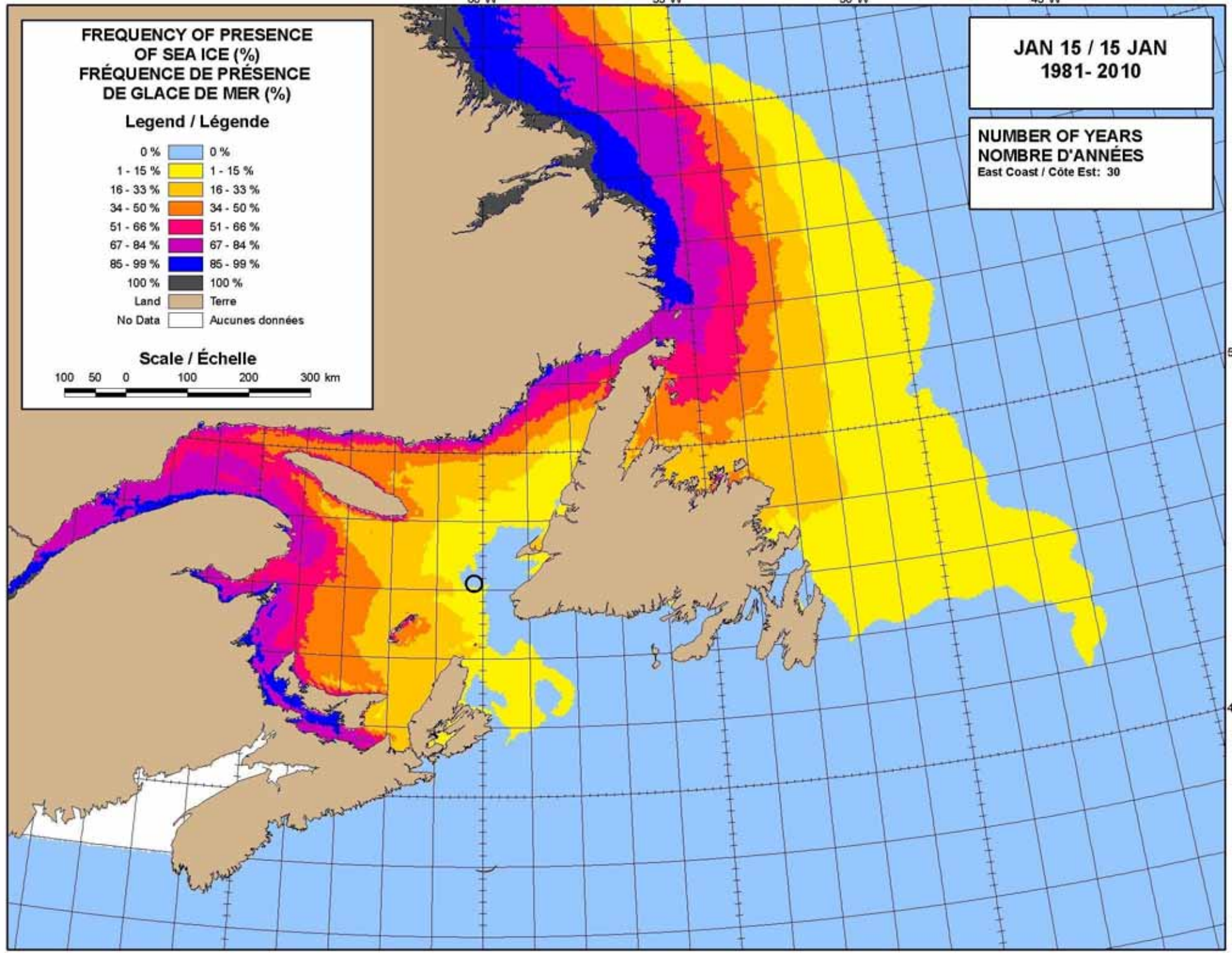
- 0 % 0 %
- 1 - 15 % 1 - 15 %
- 16 - 33 % 16 - 33 %
- 34 - 50 % 34 - 50 %
- 51 - 66 % 51 - 66 %
- 67 - 84 % 67 - 84 %
- 85 - 99 % 85 - 99 %
- 100 % 100 %
- Land Terre
- No Data Aucune données

Scale / Échelle



JAN 15 / 15 JAN
1981- 2010

NUMBER OF YEARS
NOMBRE D'ANNÉES
East Coast / Côte Est: 30



65°W 60°W 55°W 50°W

50°N

45°N

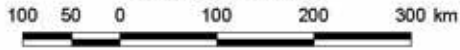
60°W 55°W 50°W 45°W

MEDIAN OF ICE CONCENTRATION MÉDIANE DE LA CONCENTRATION DES GLACES

Legend / Légende

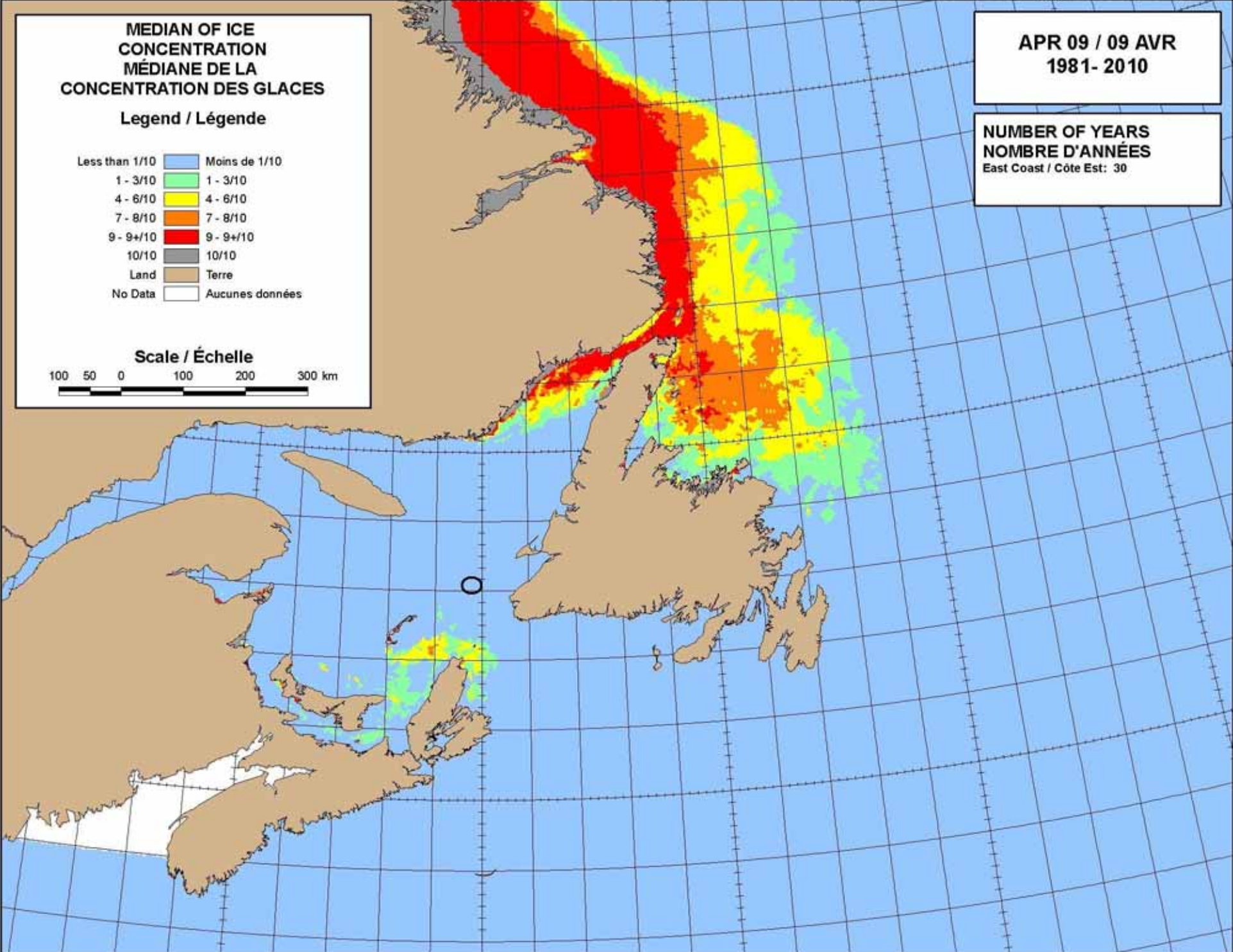
- | | |
|----------------|-----------------|
| Less than 1/10 | Moins de 1/10 |
| 1 - 3/10 | 1 - 3/10 |
| 4 - 6/10 | 4 - 6/10 |
| 7 - 8/10 | 7 - 8/10 |
| 9 - 9+/10 | 9 - 9+/10 |
| 10/10 | 10/10 |
| Land | Terre |
| No Data | Aucunes données |

Scale / Échelle



APR 09 / 09 AVR
1981- 2010

**NUMBER OF YEARS
NOMBRE D'ANNÉES**
East Coast / Côte Est: 30



65°W 60°W 55°W 50°W

50°N
45°N

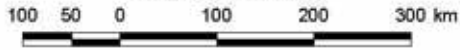
60°W 55°W 50°W 45°W

FREQUENCY OF PRESENCE OF SEA ICE (%)
FRÉQUENCE DE PRÉSENCE DE GLACE DE MER (%)

Legend / Légende

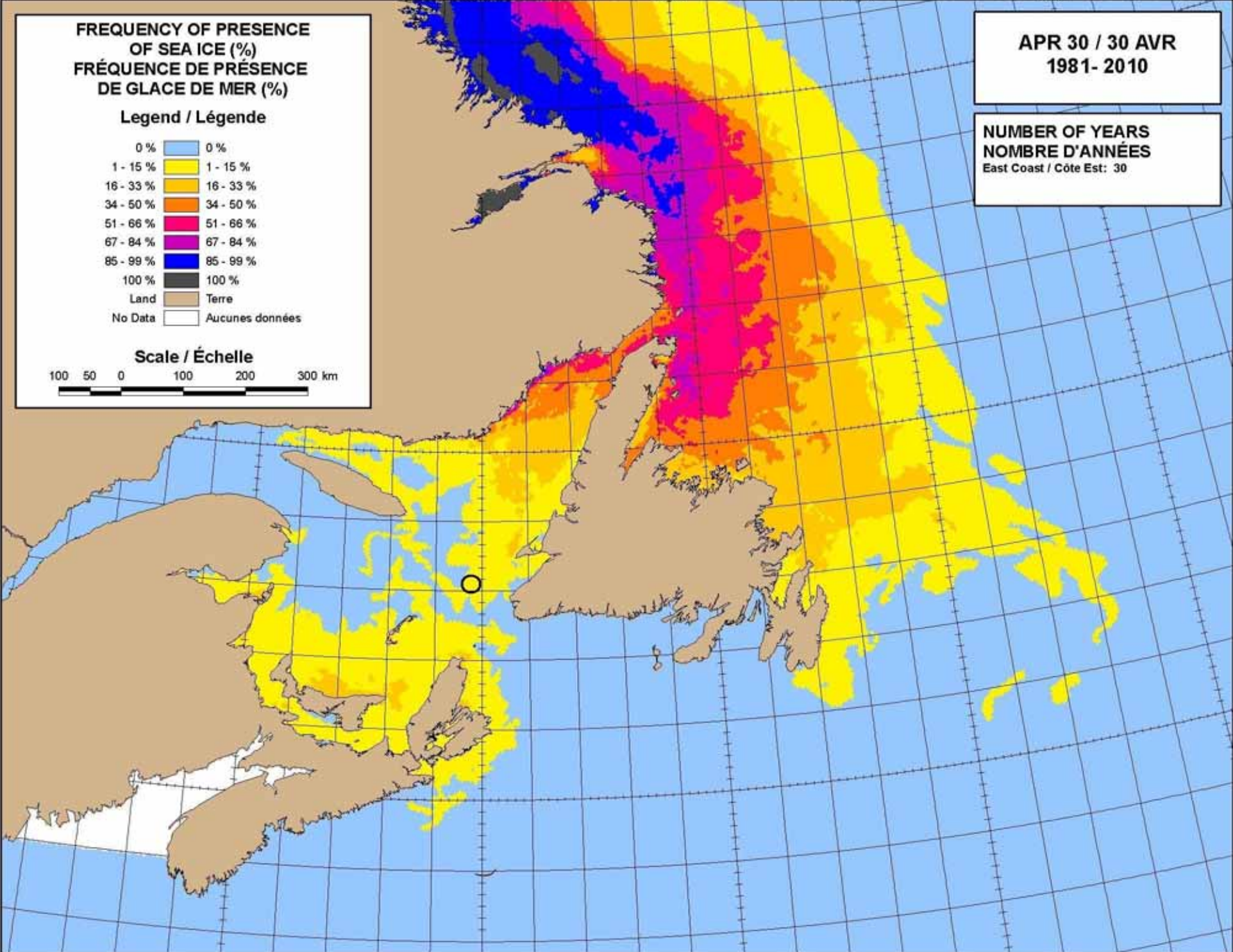
- 0 % 0 %
- 1 - 15 % 1 - 15 %
- 16 - 33 % 16 - 33 %
- 34 - 50 % 34 - 50 %
- 51 - 66 % 51 - 66 %
- 67 - 84 % 67 - 84 %
- 85 - 99 % 85 - 99 %
- 100 % 100 %
- Land Terre
- No Data Aucune données

Scale / Échelle



APR 30 / 30 AVR
1981- 2010

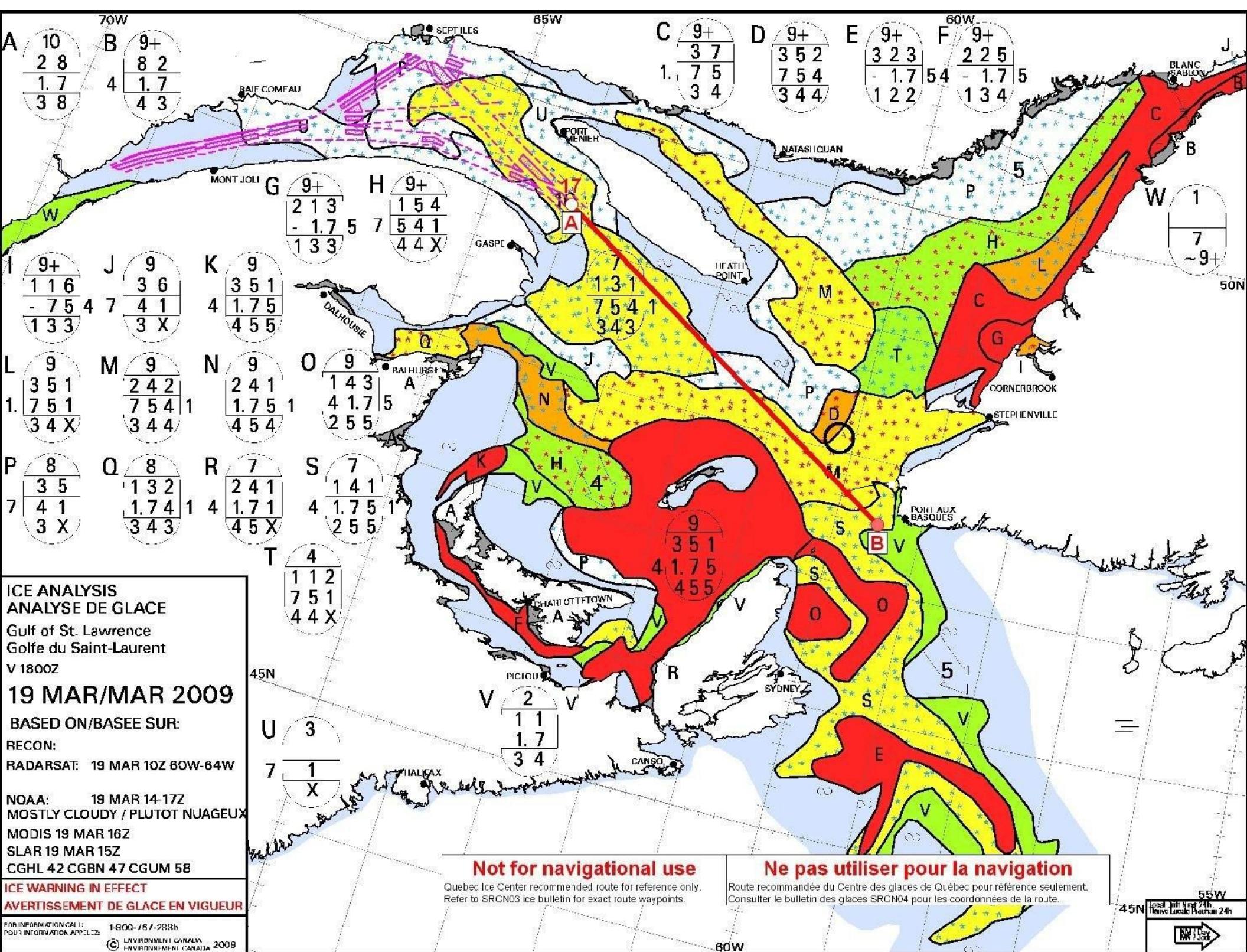
NUMBER OF YEARS
NOMBRE D'ANNÉES
East Coast / Côte Est: 30



65°W 60°W 55°W 50°W

50°N

45°N



ICE ANALYSIS
ANALYSE DE GLACE
 Gulf of St. Lawrence
 Golfe du Saint-Laurent
 V 1800Z
19 MAR/MAR 2009
 BASED ON/BASEE SUR:
 RECON:
 RADARSAT: 19 MAR 10Z 60W-64W
 NOAA: 19 MAR 14-17Z
 MOSTLY CLOUDY / PLUTOT NUAGEUX
 MODIS 19 MAR 16Z
 SLAR 19 MAR 15Z
 CGHL 42 CGBN 47 CGUM 58

ICE WARNING IN EFFECT
AVERTISSEMENT DE GLACE EN VIGUEUR

FOR INFORMATION CALL: 1-800-767-2835
 POUR INFORMATION APPELEZ: 1-800-767-2835
 ENVIRONNEMENT CANADA / ENVIRONNEMENT CANADA 2009

Not for navigational use
 Quebec Ice Center recommended route for reference only.
 Refer to SRCN03 ice bulletin for exact route waypoints.

Ne pas utiliser pour la navigation
 Route recommandée du Centre des glaces de Québec pour référence seulement.
 Consulter le bulletin des glaces SRCN04 pour les coordonnées de la route.

55W
 45N
 Local Time 24h
 Heure Locale Precision 24h

© 2004

Environment / Environnement Canada

- N** ICEBERGS PER DEGREE SQUARE
ICEBERGS PAR DEGRE CARRE
- ▲** ICEBERG LIMIT/ LIMITE DES ICEBERGS
-** SEA ICE LIMIT / LIMITE DES GLACES
- KNOWN DATA LIMIT /
LIMITE DES DONNES CONNUES

NOTE: EMPTY SQUARES INSIDE THE ICEBERG LIMIT MAY CONTAIN BERG BIT OR GROWLERS

NOTE: LES CARRES VIDES A L'INTERIEUR DE LA LIMITE DES ICEBERGS PEUVENT CONTENIR DES FRAGMENTS D'ICEBERG OU DES BOURGUIGNONS.

