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Figure 1.1
General location plan



Figure 1.2
Location of sites under consideration along the Estuary of the St. Lawrence River, from Quebec to Tadoussac

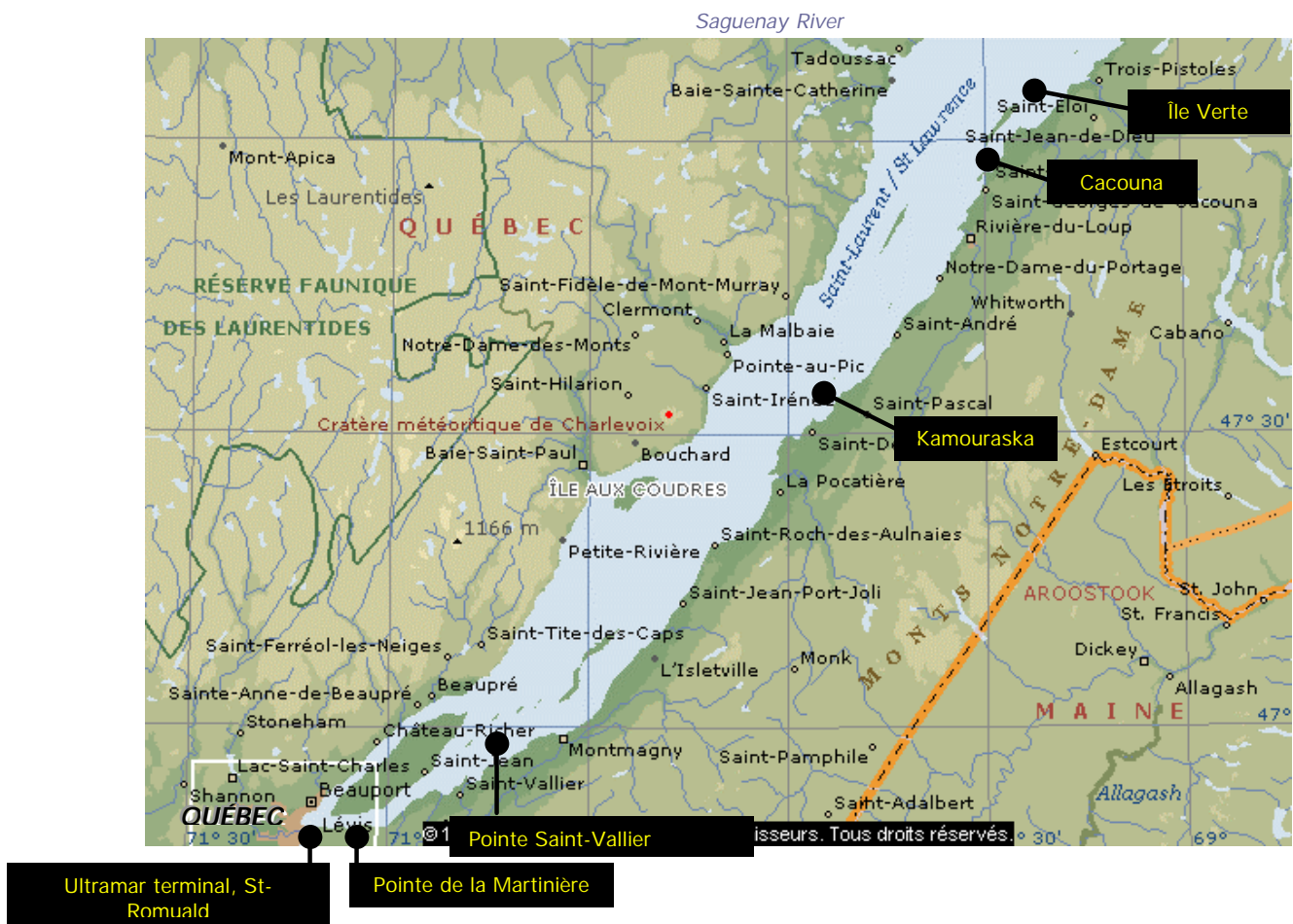


Figure 3.1
 Sample of a Regional Ice Chart for Eastern Canada (January 19, 1973)

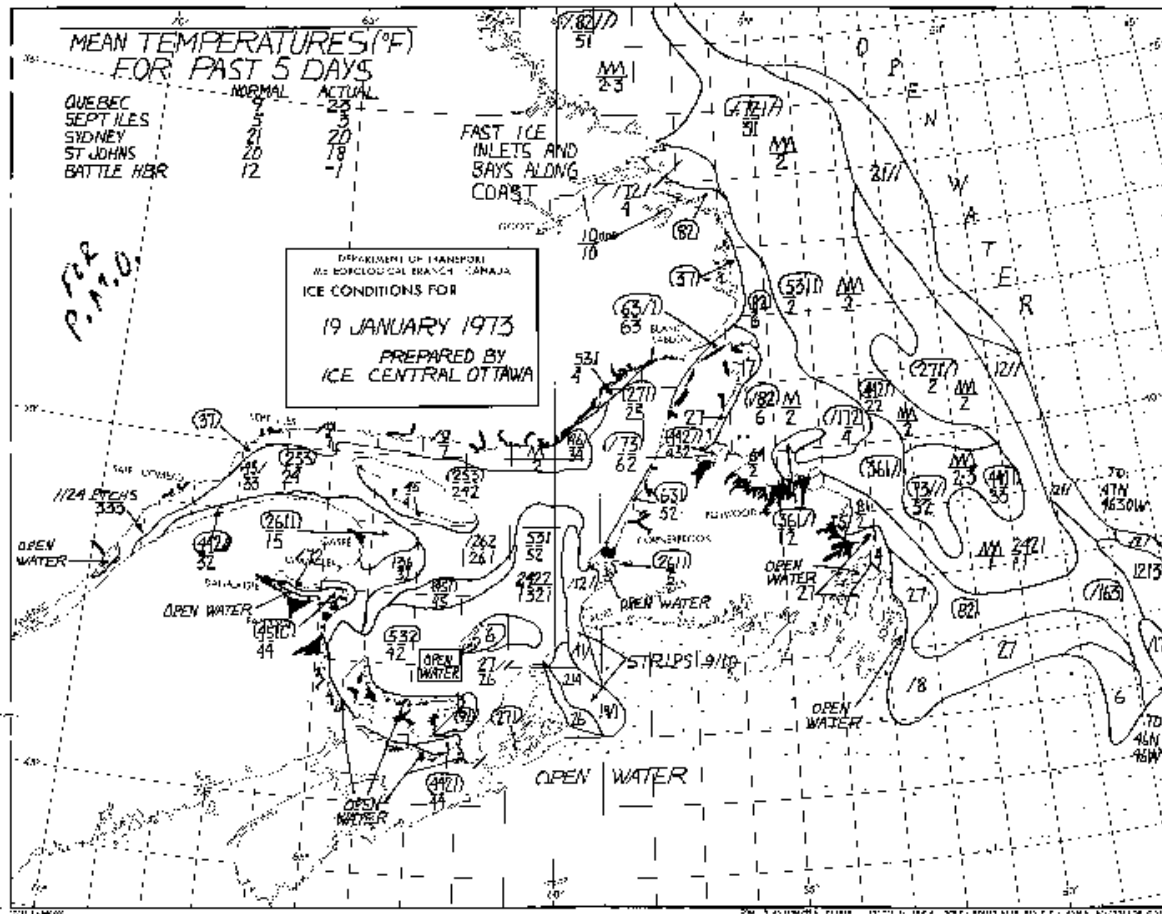


Figure 3.2
 St. Lawrence River Ice Chart WIS 91, dated February 2, 2003

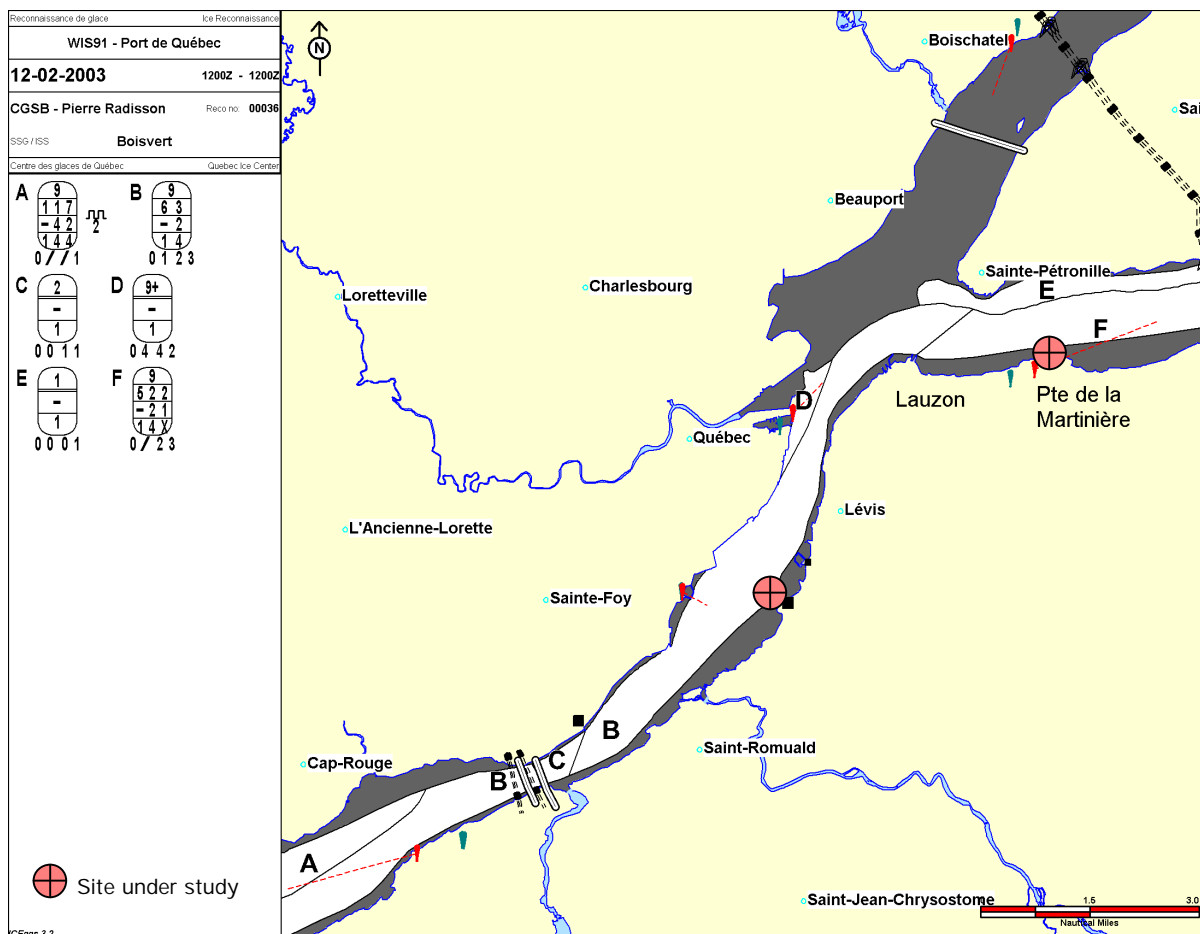


Figure 3.3
 St. Lawrence River Ice Chart WIS 92, dated February 25, 2003

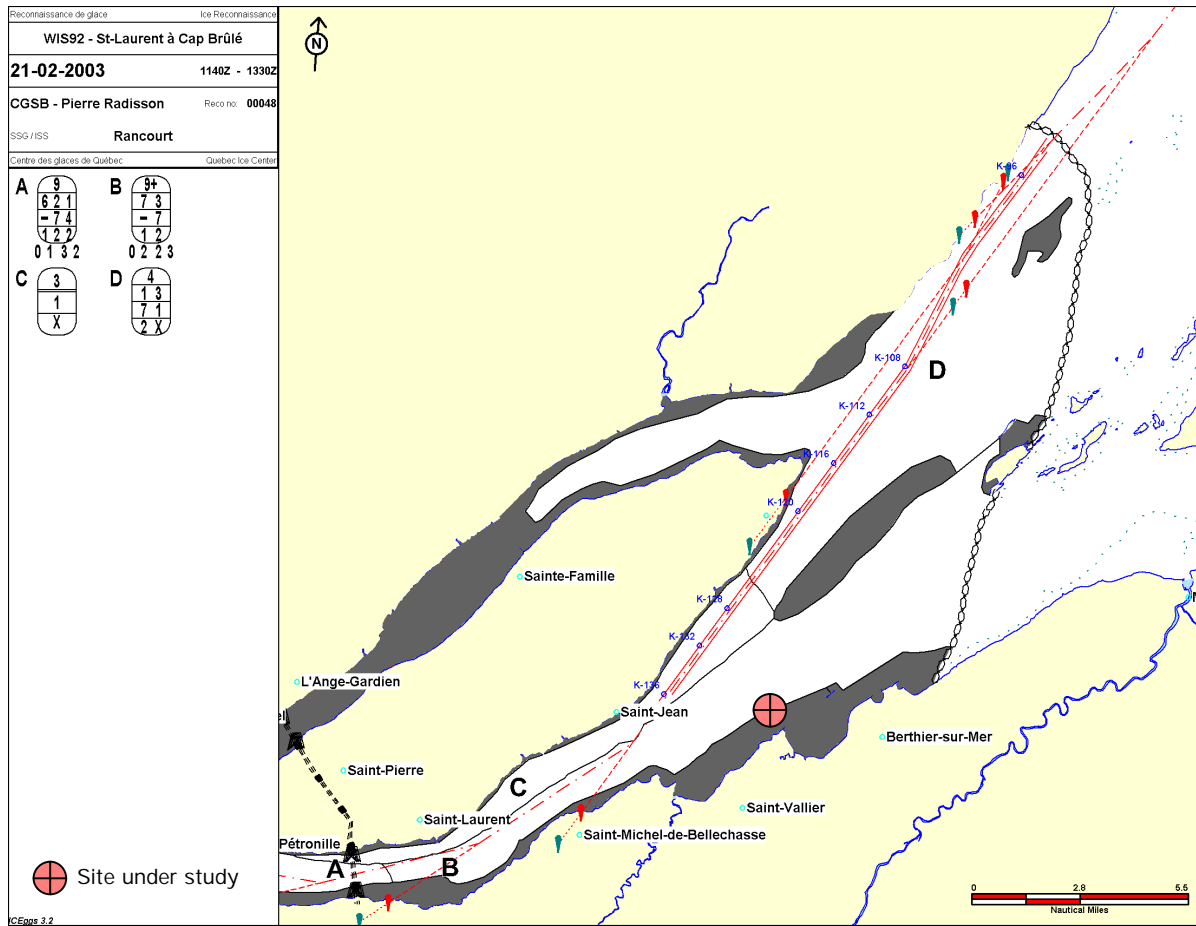


Figure 3.4
St. Lawrence River Ice Chart WIS 93, dated March 13, 1993

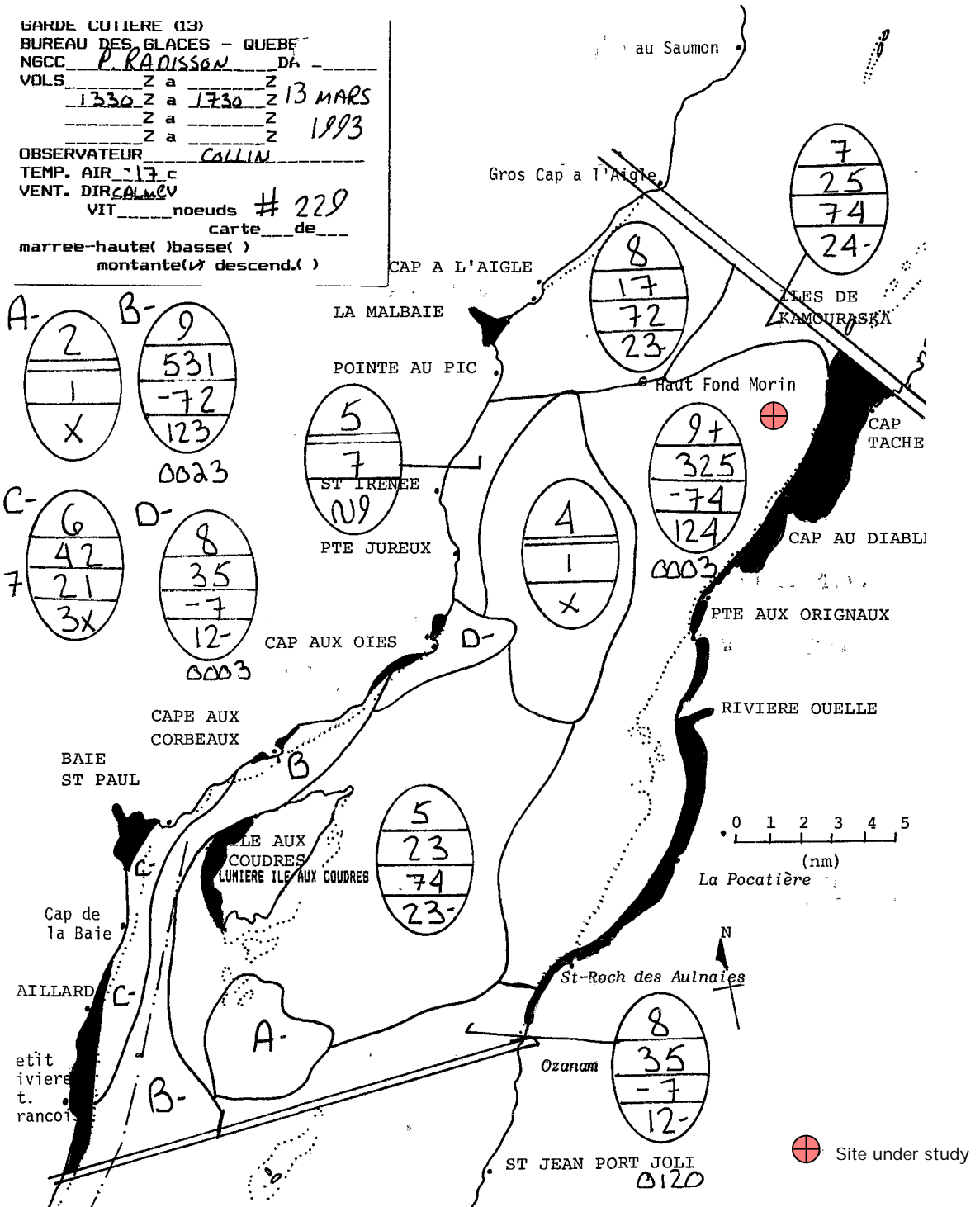


Figure 3.5
St. Lawrence River Ice Chart WIS 94, dated January 18, 1993

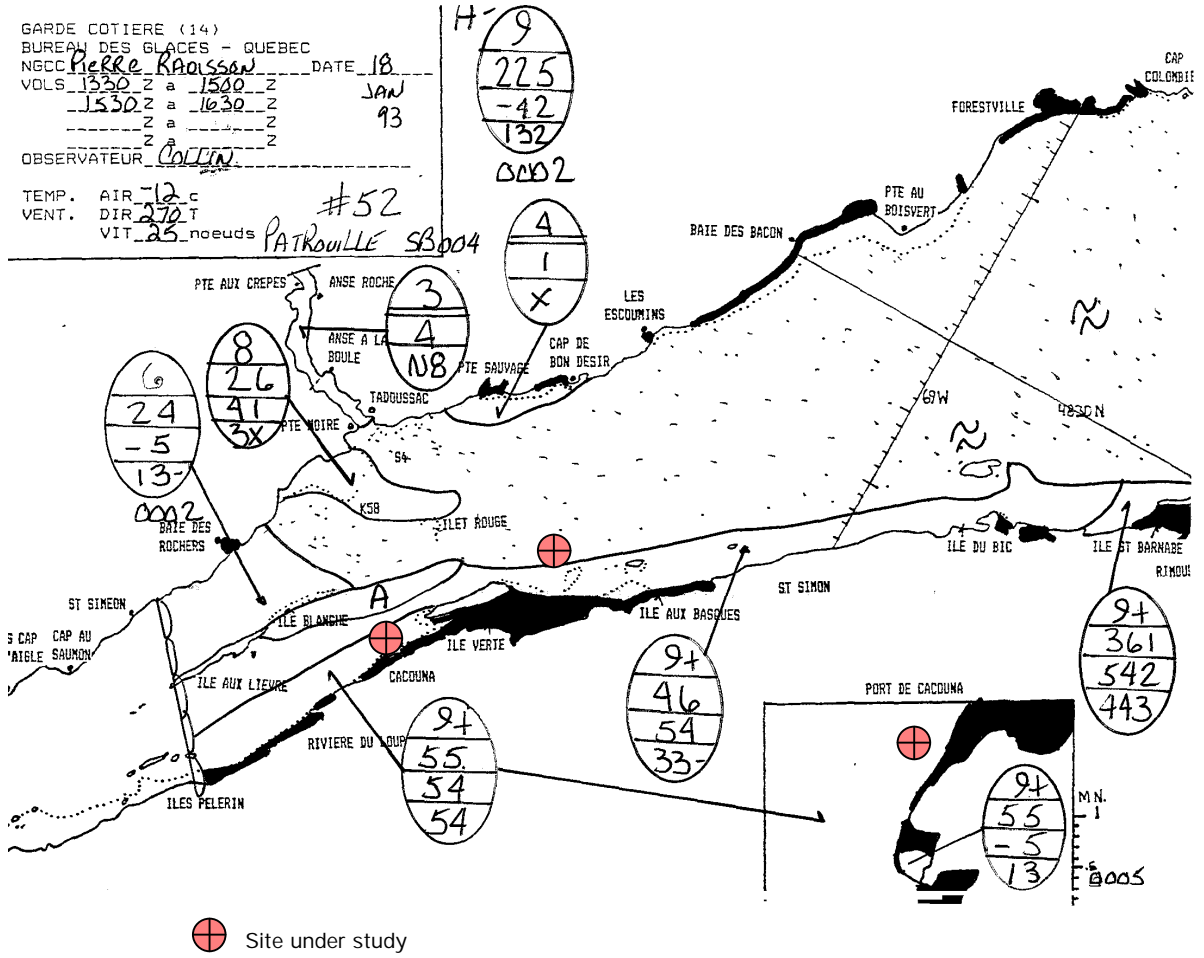



Figure 3.6
Identification of ice using the "egg" code



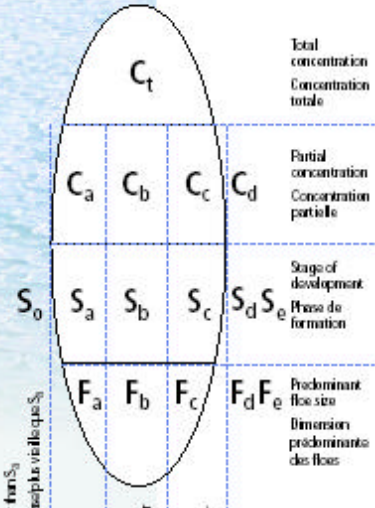
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SEA ICE SYMBOLS

SYMBOLES DE LA GLACE DE MER




Total concentration: the ice coverage of an area determined by its concentration and expressed in tenths. In this example, 9/10.
Concentration totale : l'étendue de la couverture de glace, exprimée en dixièmes de la superficie du secteur (dans cet exemple, 9/10).


Partial concentration: the break-down of the total ice coverage expressed in tenths and graded by thickness. The thickest starting from the left and in this example, 1/10 is the thickest.
Concentration partielle : les concentrations respectives, exprimées en dixièmes, des glaces de différente épaisseur, par ordre décroissant. La plus épaisse commence à la gauche du diagramme, c'est-à-dire, 1/10 est la plus épaisse.

Stage of development: the type of ice in each of the grades, determined by its age, that is 1/10 is medium first-year ice (1-), 6/10 is grey-white ice (5) and 2/10 is new ice (1). Trace of old ice is represented on the left-hand side (outside the egg) by the number 7.
Phase de formation : le type de glace de chacune des catégories déterminé par son âge, c'est-à-dire, 1/10 est de la glace moyenne de première année (1-), 6/10 est de la glace blanchâtre (5), et 2/10 est de la nouvelle glace (1). Une trace de vieille glace est représentée à gauche (à l'extérieur de l'œuf) par le chiffre 7.


Floe size: the form of the ice determined by its floe size for each section. In this example, big floes (5) for medium first-year ice (1-); small floes (3) for grey-white ice (5) and undetermined, unknown or no form floes (x) for new ice (1).
Taille des floes : la forme de la glace, déterminée par la taille des floes dominants de chaque section. Dans cet exemple, grands floes (5) pour la glace moyenne de première année (1-); petits floes (3) pour la glace blanchâtre (5) et floes indéterminés, inconnus ou sans forme (x) pour la nouvelle glace (1).




SEA ICE SYMBOLS/SYMBOLS DE LA GLACE DE MER




Open Water
Eau libre




Ice Free
Libre de glace



Bergy Water
Eau bergée



Fast Ice
Banquise côtière



Ice Drift / Derive de la glace
(NM: Nautical miles / Miles marins)

Stage of Development/Phase de formation (S₀S_aS_bS_cS_dS_e)

Description/Élément	Thickness/Épaisseur	Code
New Ice/Nouvelle glace	<10 cm	1
Nilas; Ice rind/Nilas glace, vitrée	<10 cm	2
Young Ice/Jeune glace	10-30 cm	3
Grey Ice/Glace grise	10-15 cm	4
Grey-white Ice/Glace blanchâtre	15-30 cm	5
First-year Ice/Glace de première année	≥30 cm	6
Thin first-year Ice/Glace mince de première année	30-70 cm	7
Medium first-year Glace moyenne de première année	70-120 cm	1-
Thick first-year Ice/Glace épaisse de première année	>120 cm	4-
Old Ice/Vieille glace		7-
Second-year/Glace de deuxième année		8-
Multi-year/Glace de plusieurs années		9-
Ice of land origin/Glace d'origine terrestre		▲-
Undetermined, unknown or no form/ Indéterminée, inconnue ou sans forme		X

Floe Size/Grandeur des floes (F_aF_bF_c)

Description/Élément	Width/Extension	Code
Pancake Ice/Glace en crêpes		0
Small Ice cake, brash Ice/Petit glaçon, sarasin	<2 m	1
Ice cake/Glaçons	2-20 m	2
Small floe/Petits floes	20-100 m	3
Medium floe/Floes moyens	100-500 m	4
Big floe/Grands floes	500-2000 m	5
Vast floe/Floes immenses	2-10 km	6
Giant floe/Floes géants	>10 km	7
Fast ice, growlers or floebergs Banquise côtière, bourguignons ou floebergs		8
Icebergs		9
Undetermined, unknown or no form/ Indéterminée, inconnue ou sans forme		X
Strips (concentration = C) Glace en cordons (concentration = C)		☞ C



Canadian Ice Service/Service canadien des glaces (CIS/SCG)
Client Services/Service à la clientèle
373 promenade Sussex Drive, E-3
Ottawa, Ontario
K1A 0H3

Tel./Tel: 1 800 767 2885 (Canada) and/et (613) 996-1550
Fax: (613) 947-9160
Email/Courriel: cis-scg.client@ec.gc.ca
Web site/Site web: http://ice-glaces.ec.gc.ca





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Gaz Métropolitain
Ice study – St-Lawrence River
June 2003

Figure 3.7
Frequencies of total ice concentrations by month
Average for 6 sites

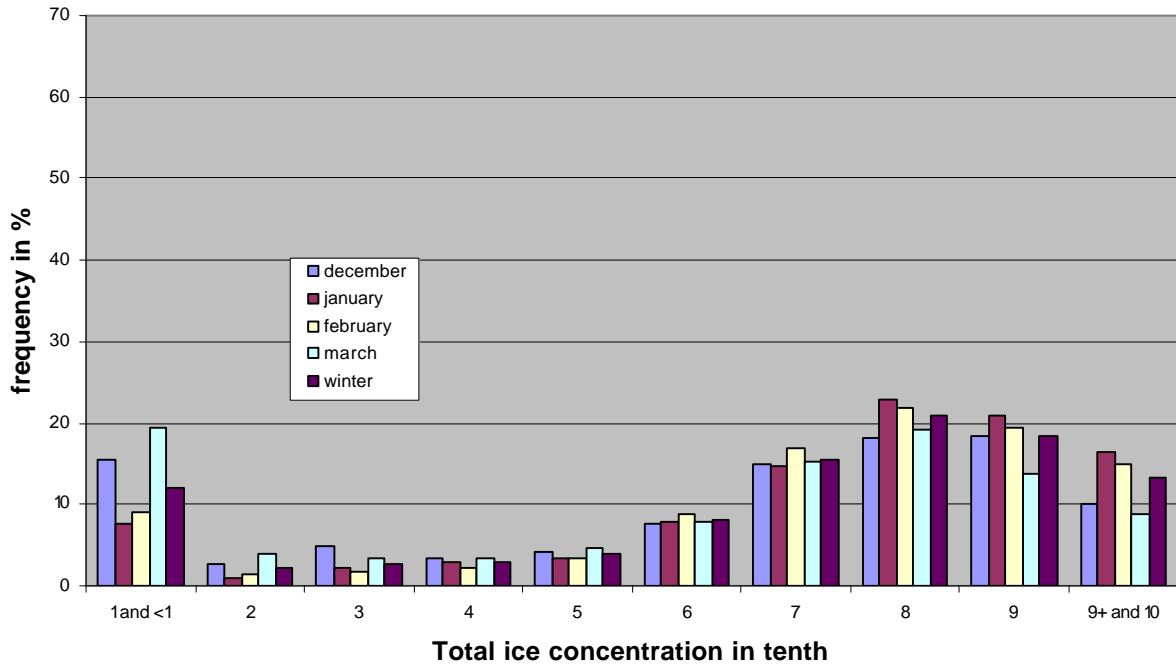


Figure 3.8
Frequencies of total ice concentrations by month - Ultramar

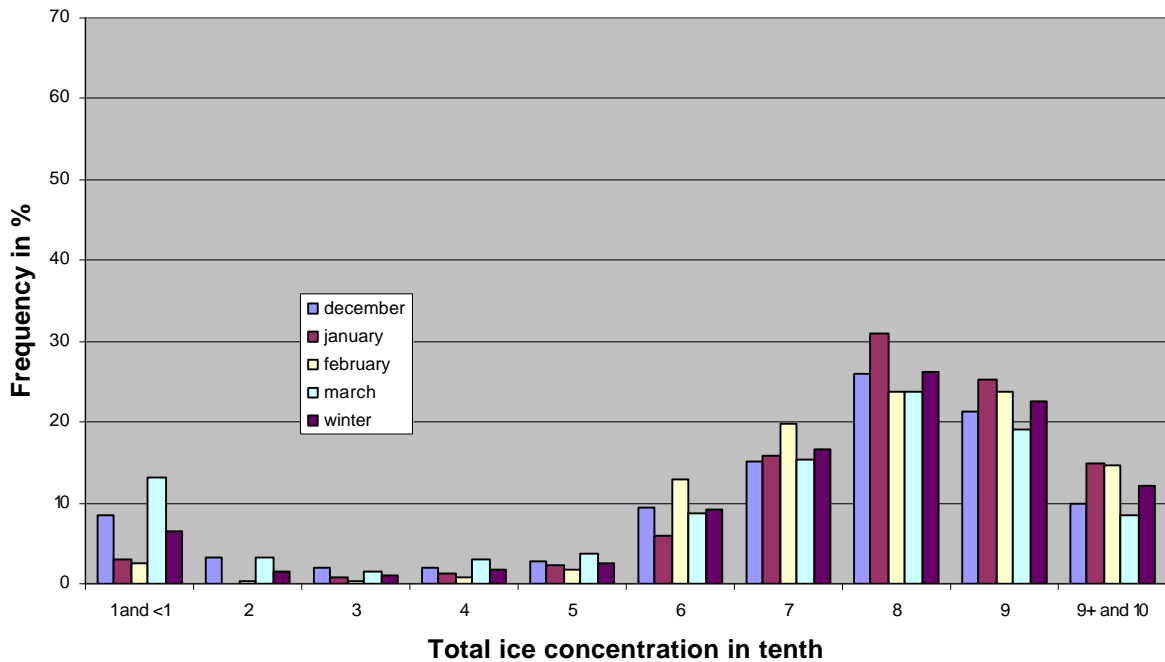


Figure 3.9
Frequencies of total ice concentrations by month – Pointe-de-la-Martinière

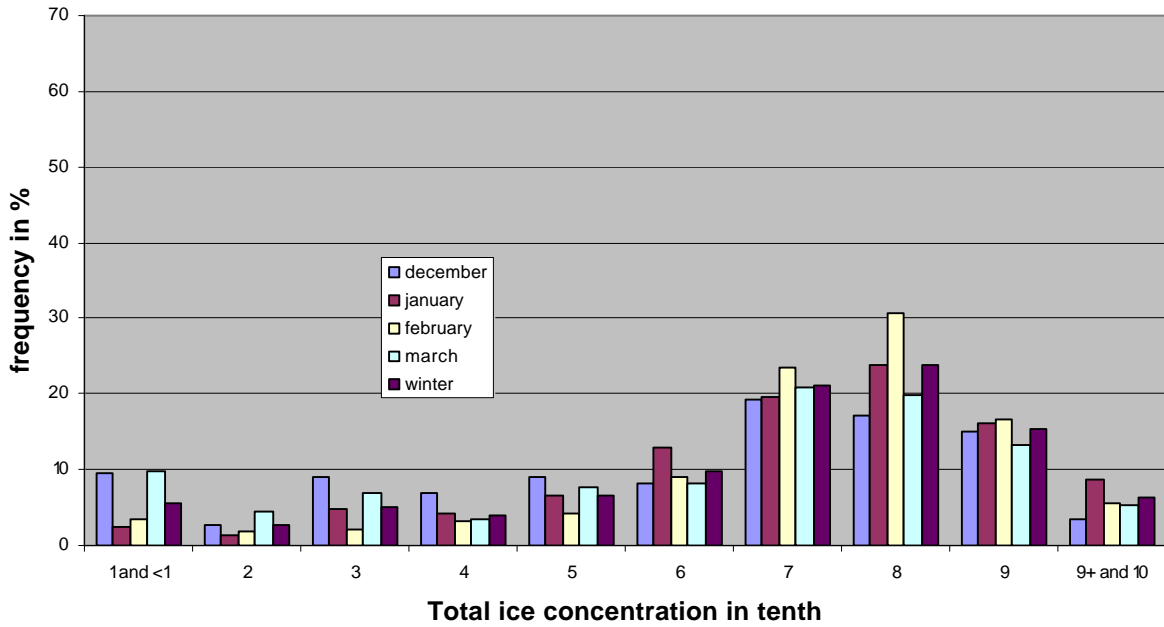


Figure 3.10
Frequencies of total ice concentrations by month – Pointe- Saint-Vallier

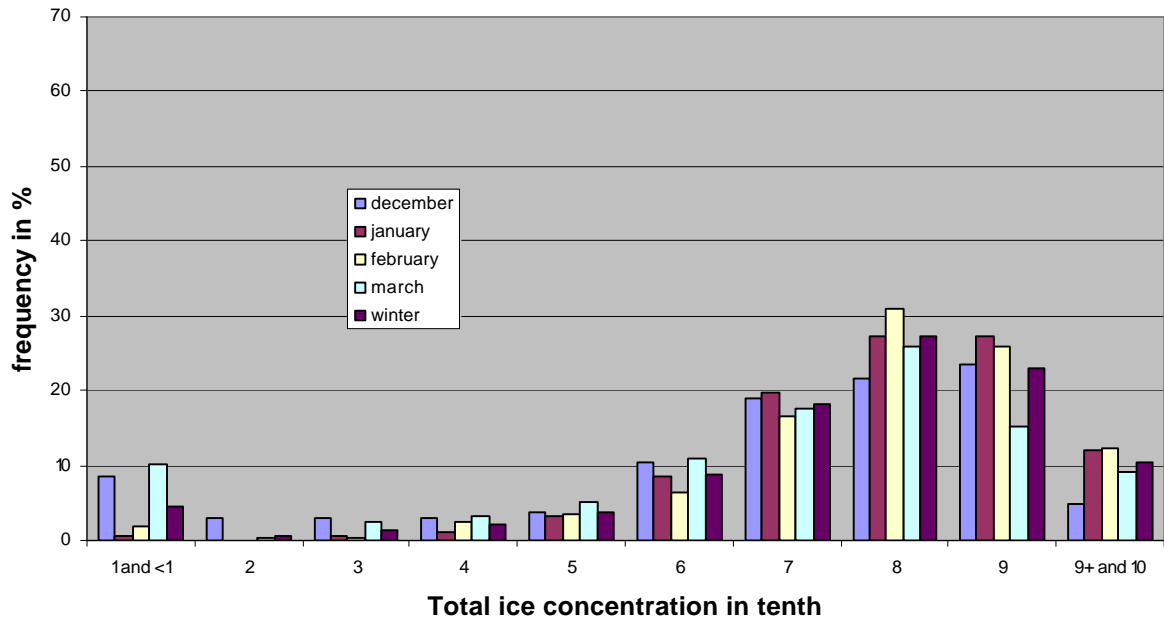


Figure 3.11
Frequencies of total ice concentrations by month - Kamouraska

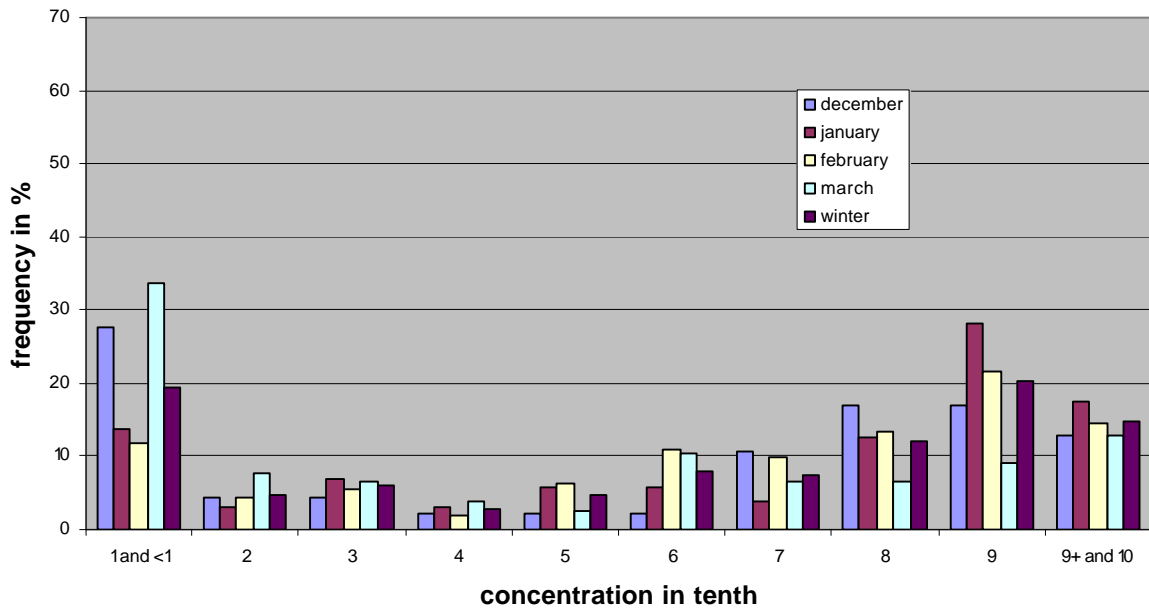


Figure 3.12
Frequencies of total ice concentrations by month - Cacouna

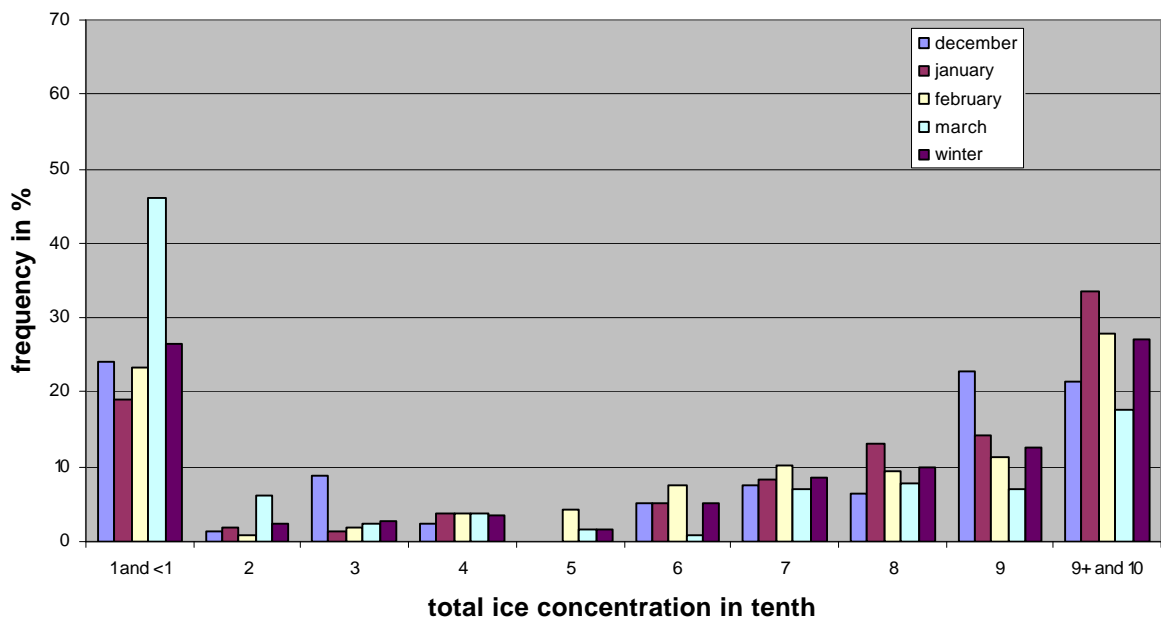


Figure 3.13
Frequencies of total ice concentrations by month – Ile Verte

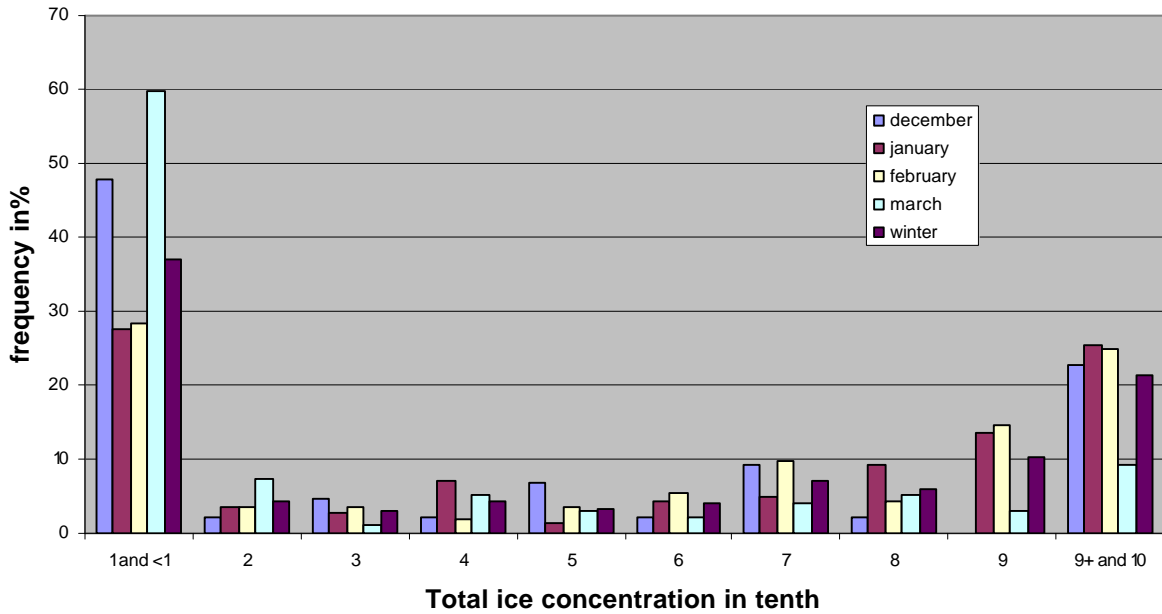


Figure 3.14
Frequencies of total average ice concentrations by site

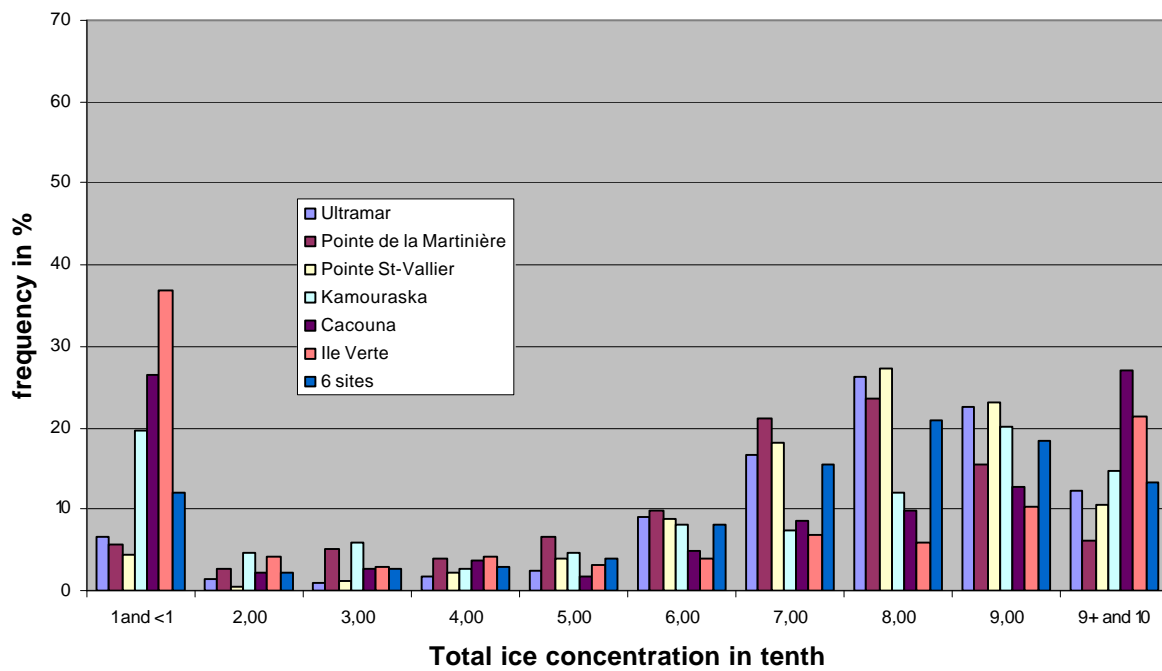


Figure 3.15
Frequencies of maximum ice thickness by month – Ultramar

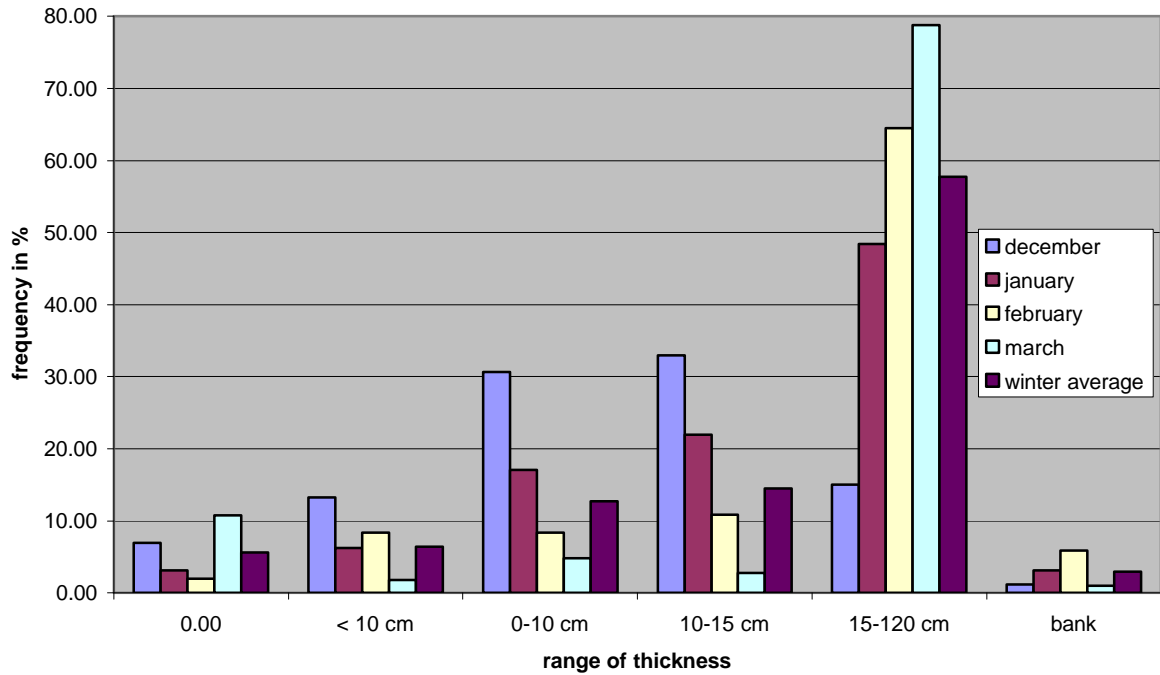


Figure 3.16
Frequencies of maximum ice thickness by month – Pointe-de-la-Martinière

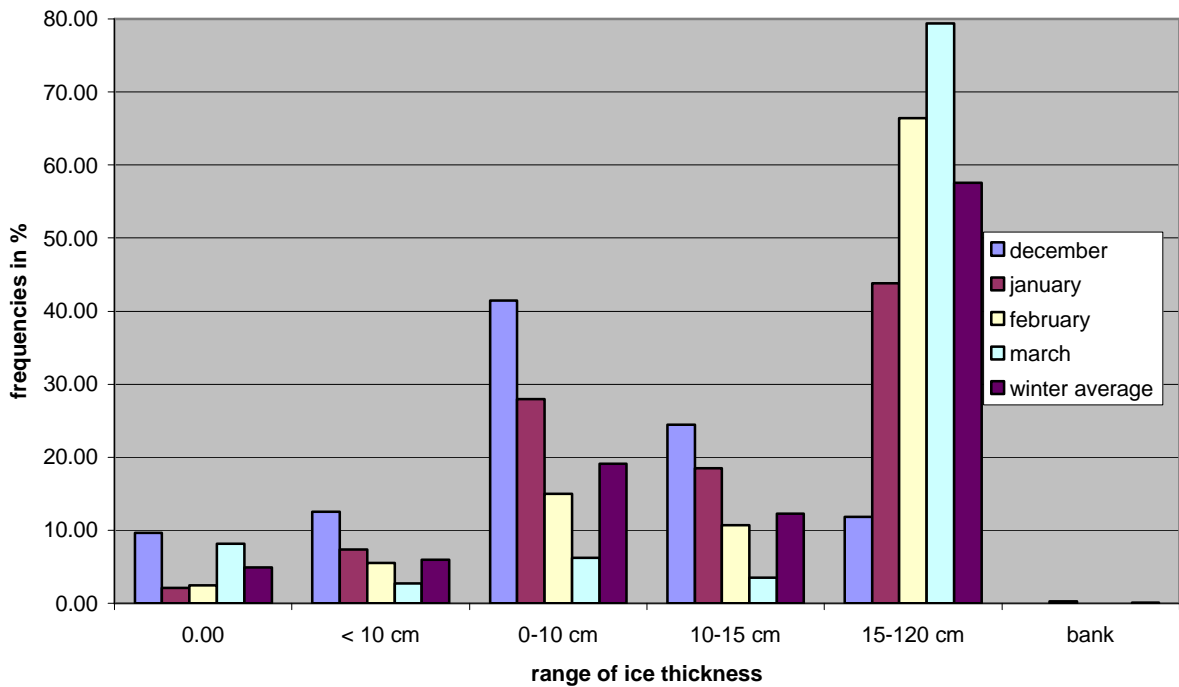


Figure 3.17
Frequencies of maximum ice thickness by month – Pointe Saint-Vallier

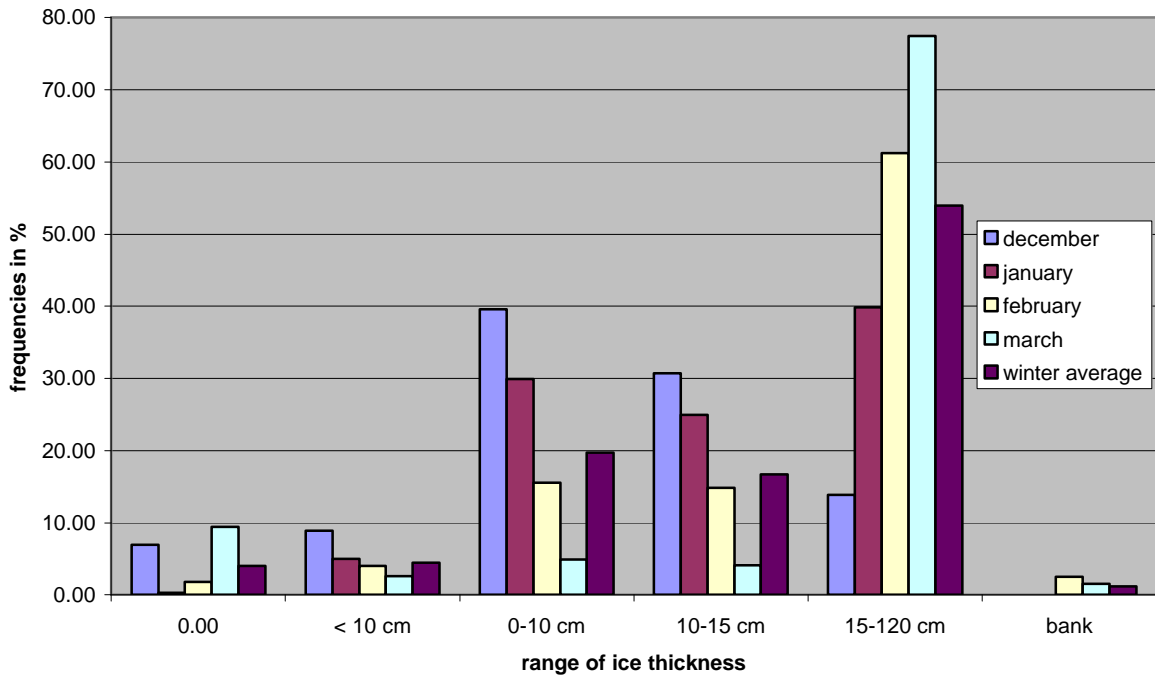


Figure 3.18
Frequencies of maximum ice thickness by month - Kamouraska

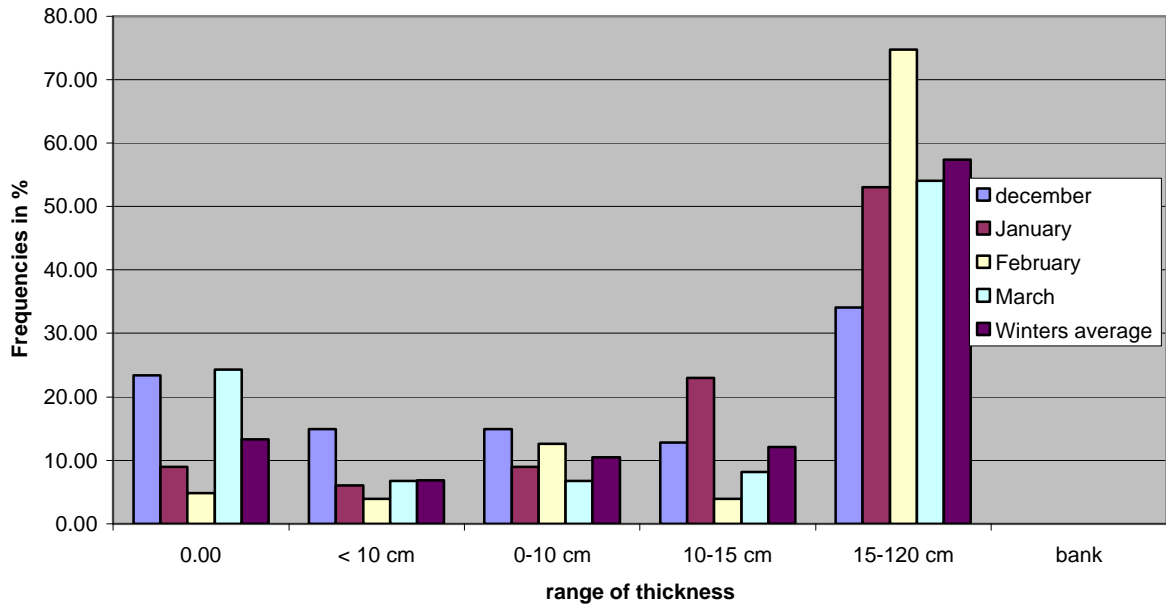


Figure 3.19
Frequencies of maximum ice thickness by month - Cacouna

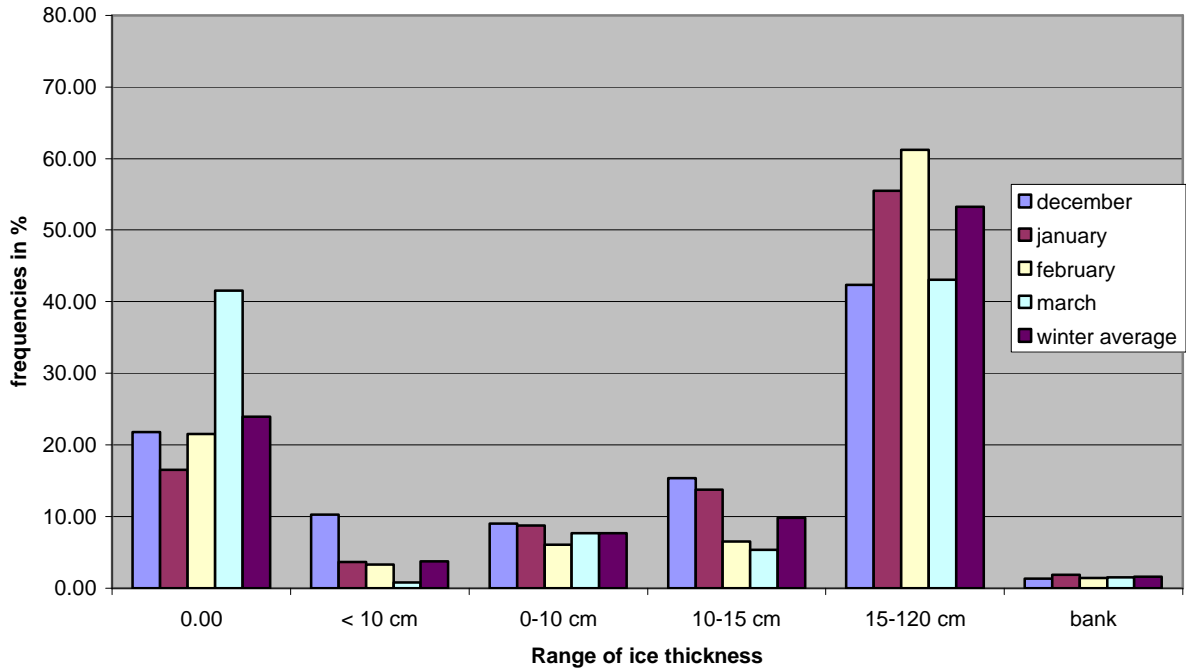


Figure 3.20
Frequencies of maximum ice thickness by month – Ile Verte

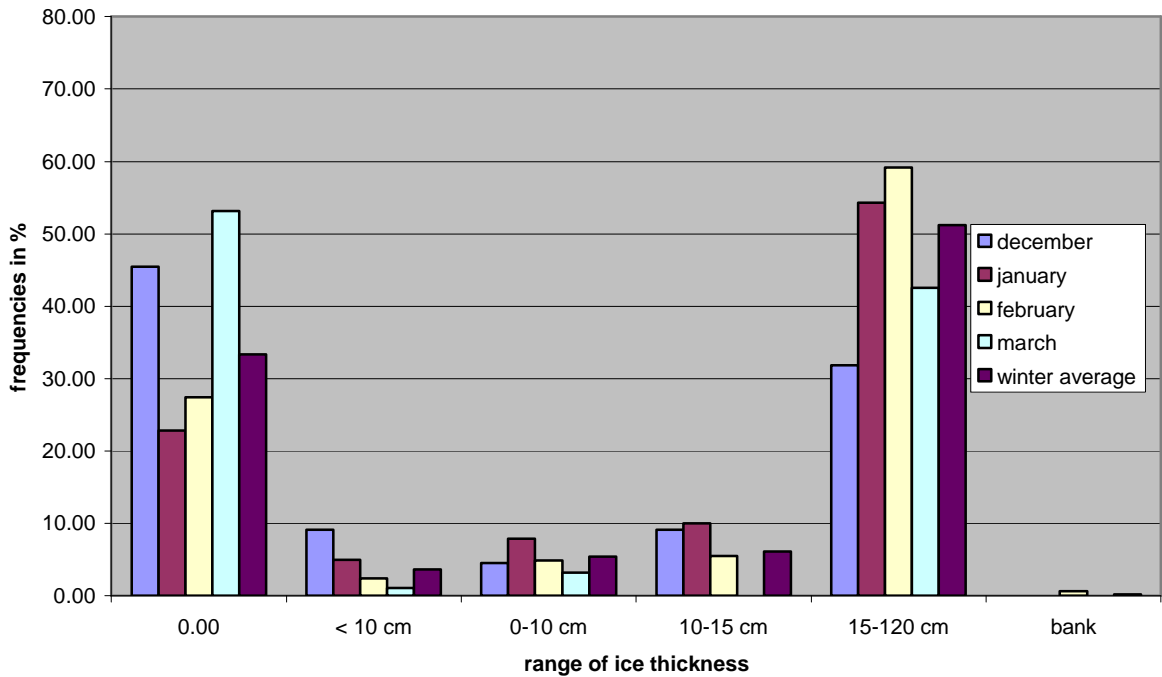


Figure 3.21
Frequencies of maximum ice thickness by month – 6 sites

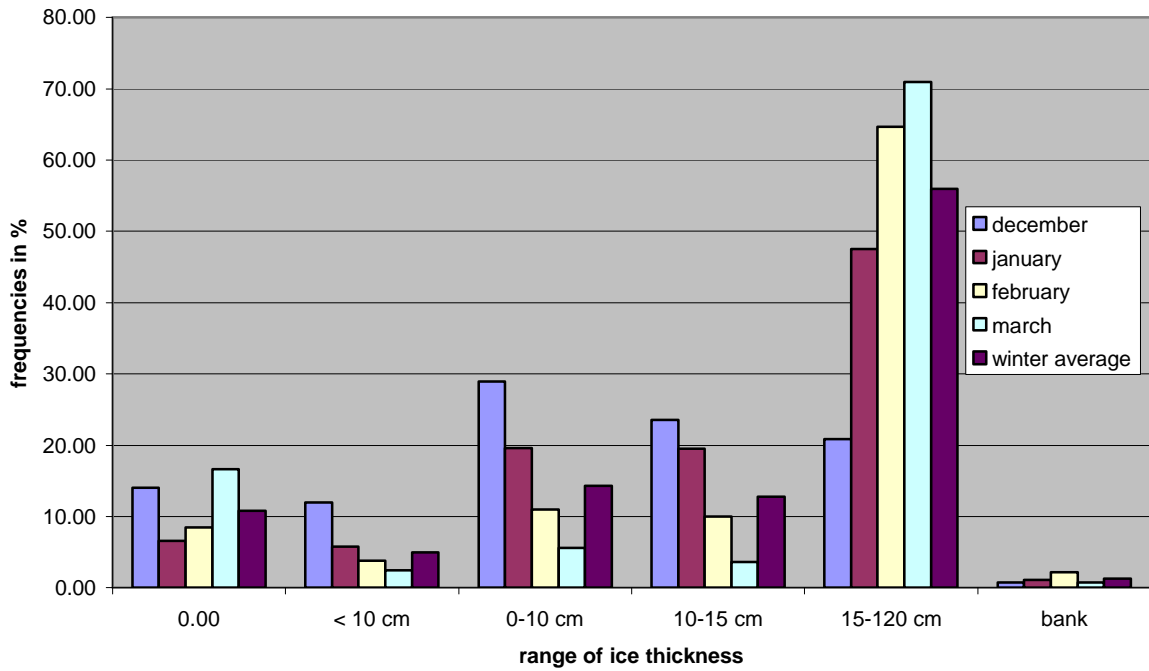


Figure 3.22
Frequencies of maximum average ice thickness by site

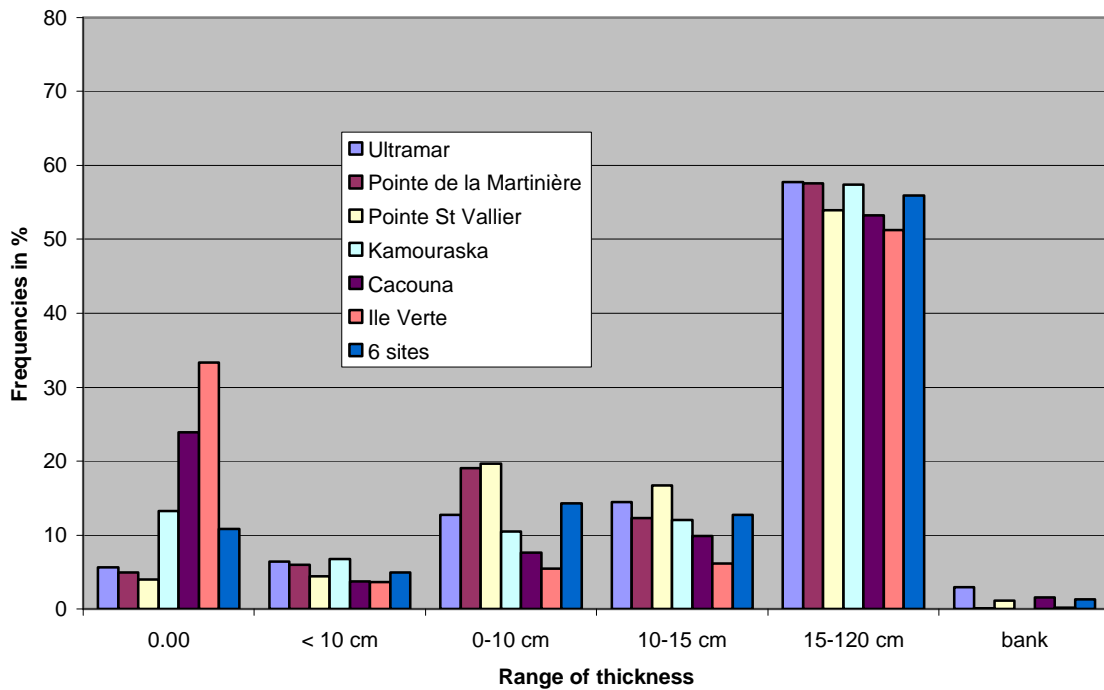


Figure 3.23
Frequencies of maximum floe size by month – Ultramar

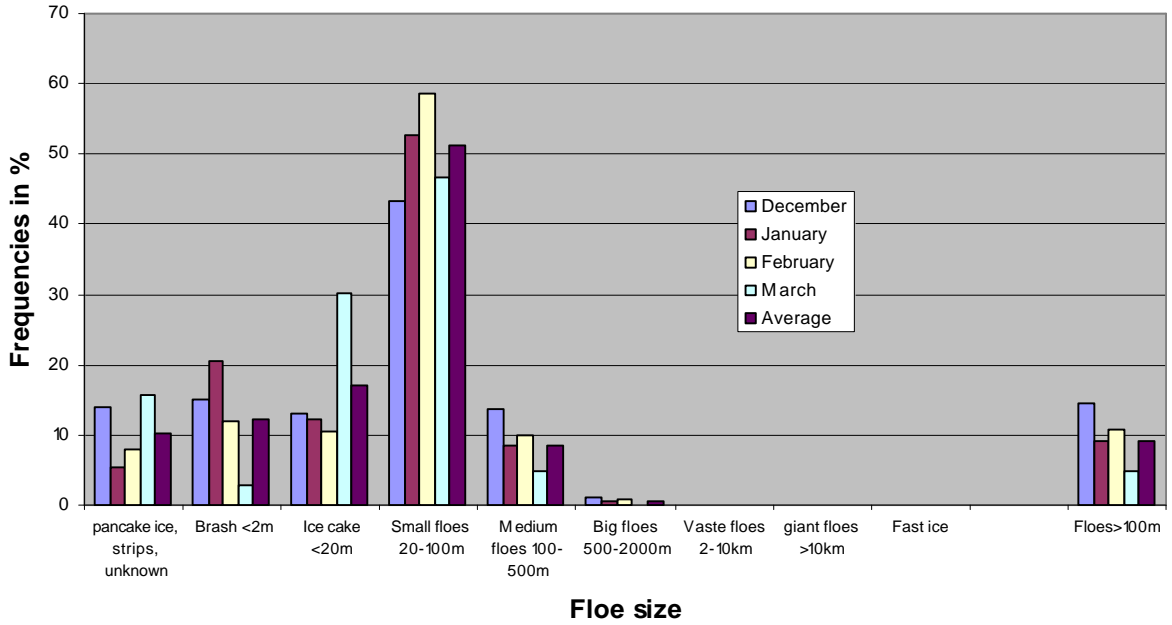


Figure 3.24
Frequencies of maximum floe size by month – Pointe-de-la-Martinière

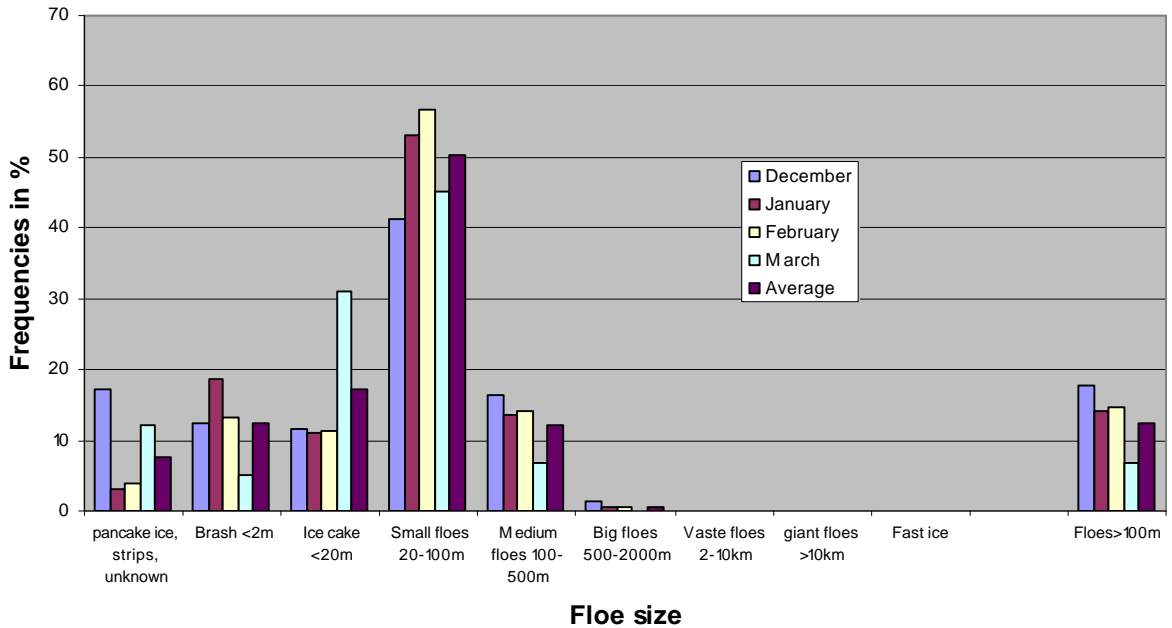


Figure 3.25
Frequencies of maximum floe size by month – Pointe Saint-Vallier

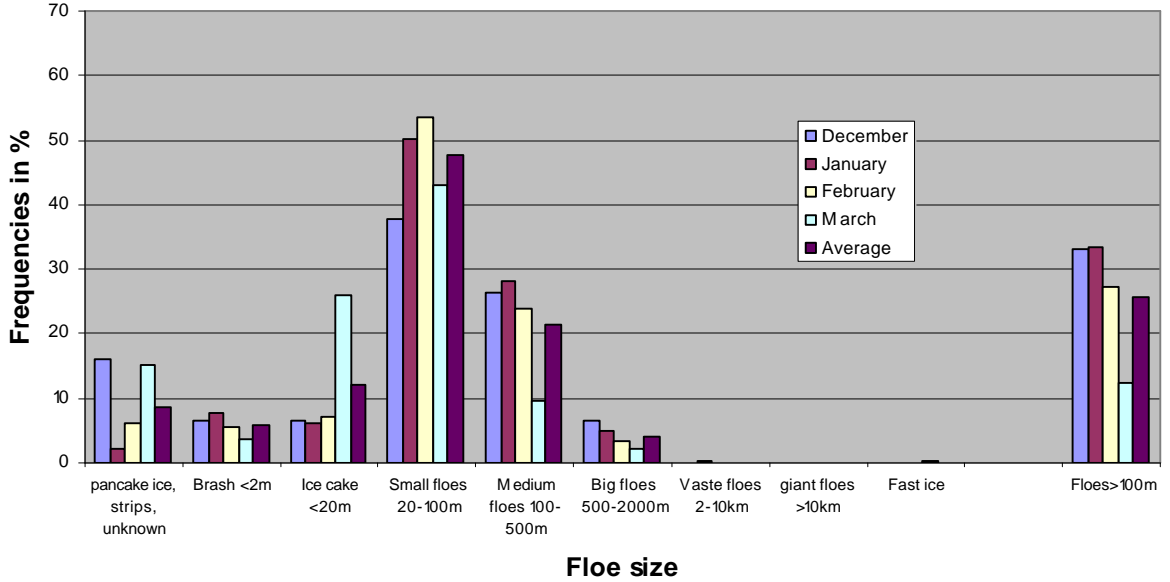


Figure 3.26
Frequencies of maximum floe size by month - Kamouraska

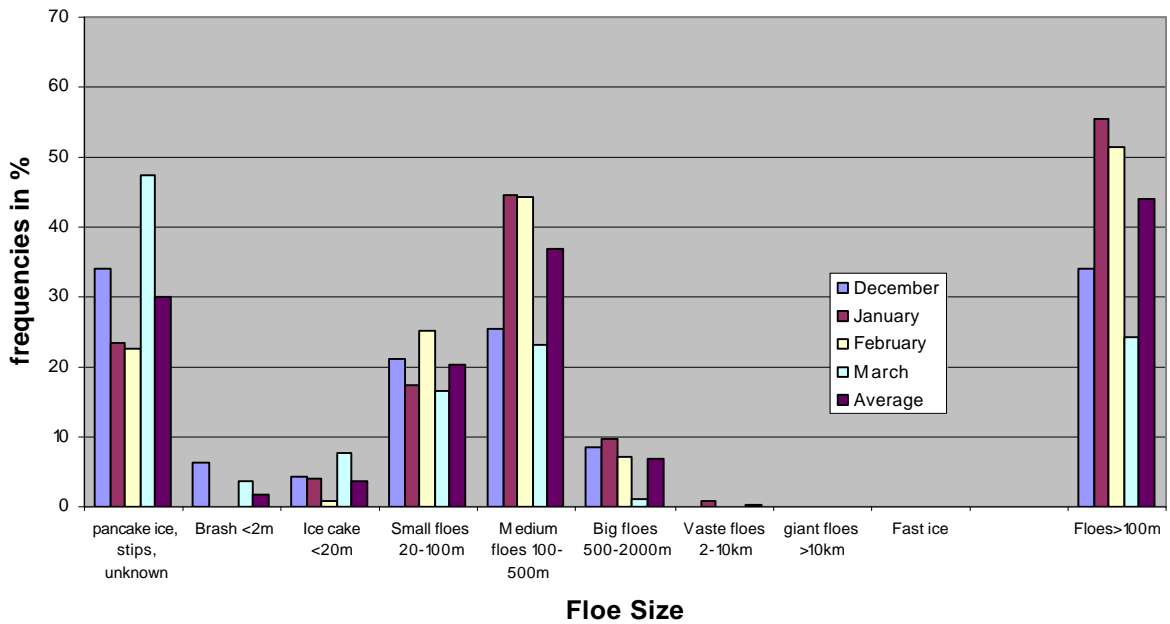


Figure 3.27
Frequencies of maximum floe size by month - Cacouna

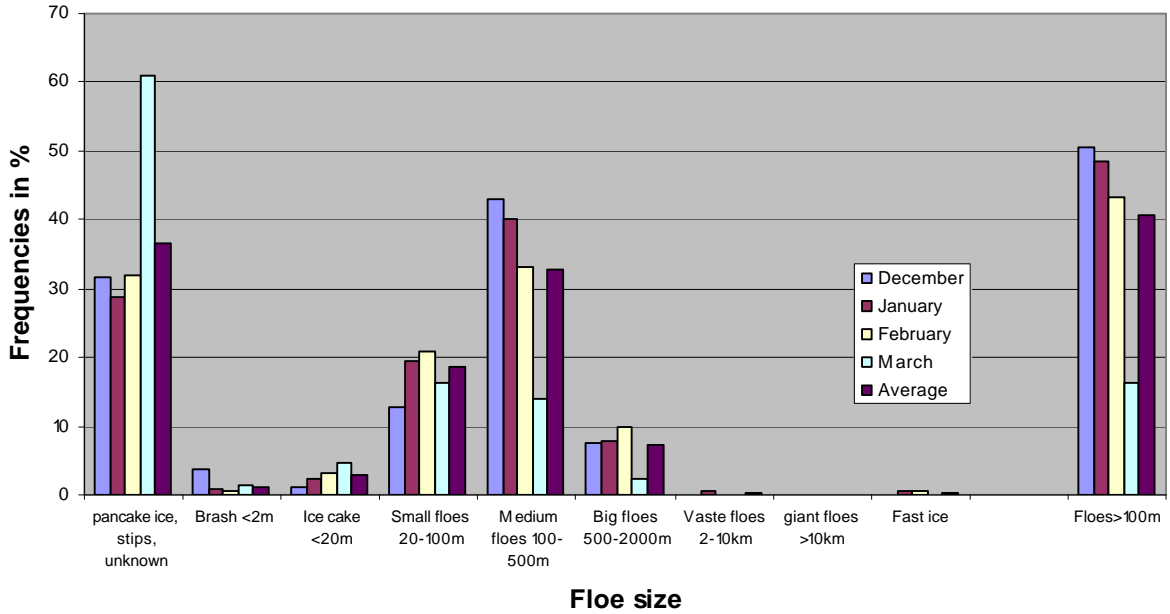


Figure 3.28
Frequencies of maximum floe size by month – Ile Verte

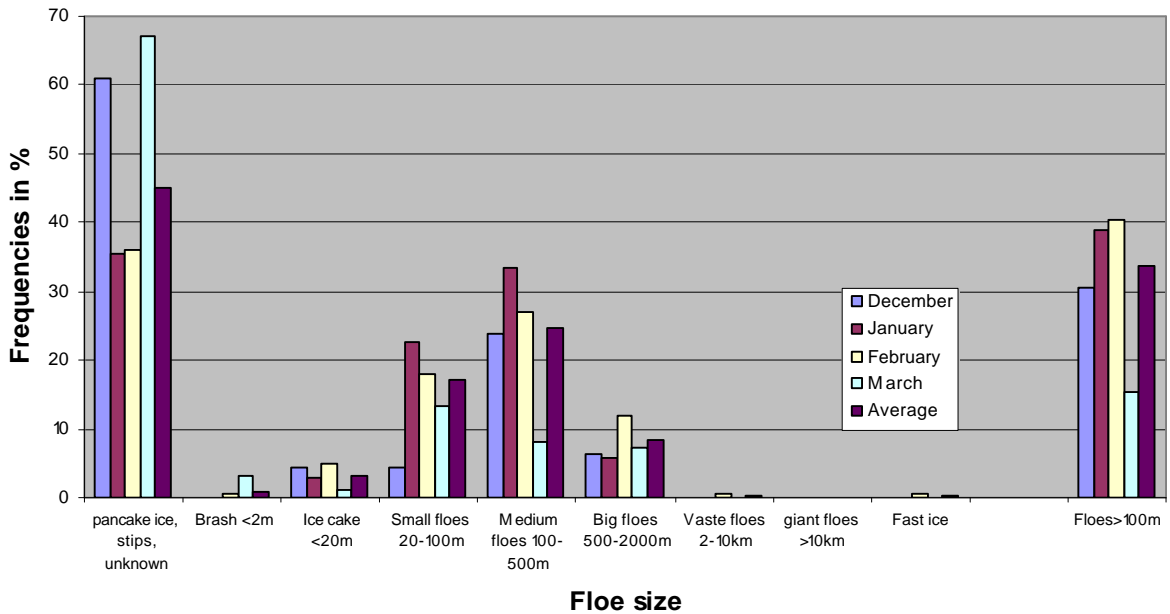


Figure 3.29
Frequencies of maximum floe size by month– 6 sites

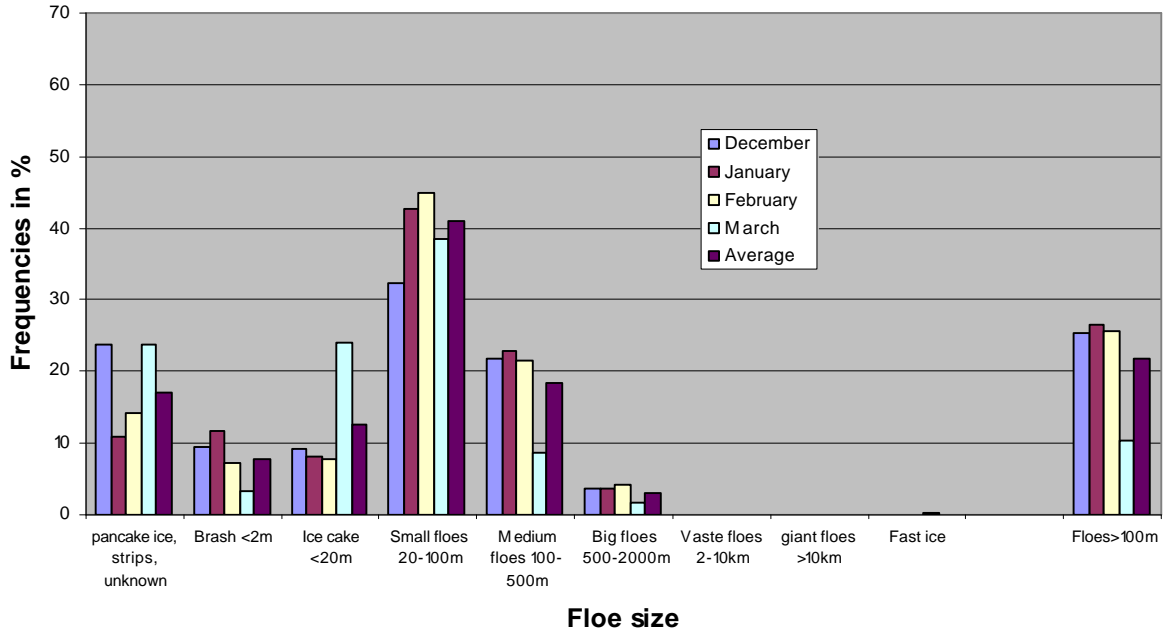


Figure 3.30
Frequencies of maximum average floe size by site

