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# Products and Services at the Canadian Ice Service



**Sea Ice Forecasting Workshop  
Anchorage Alaska  
Darlene Langlois  
Environment Canada –  
Canadian Ice Service  
Sept 19 2011**

# Contents

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- Canadian Ice Service
- Monitoring
- Data sources
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- Forecasts
- Briefings
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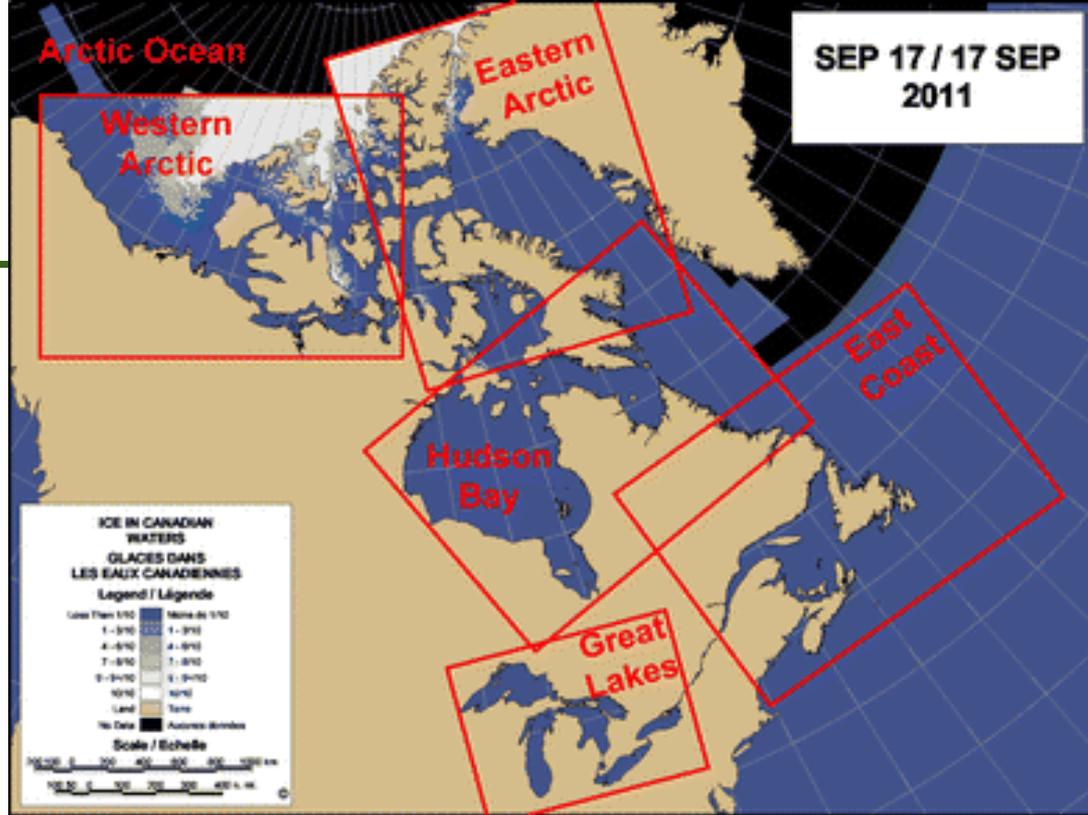


# What the CIS does

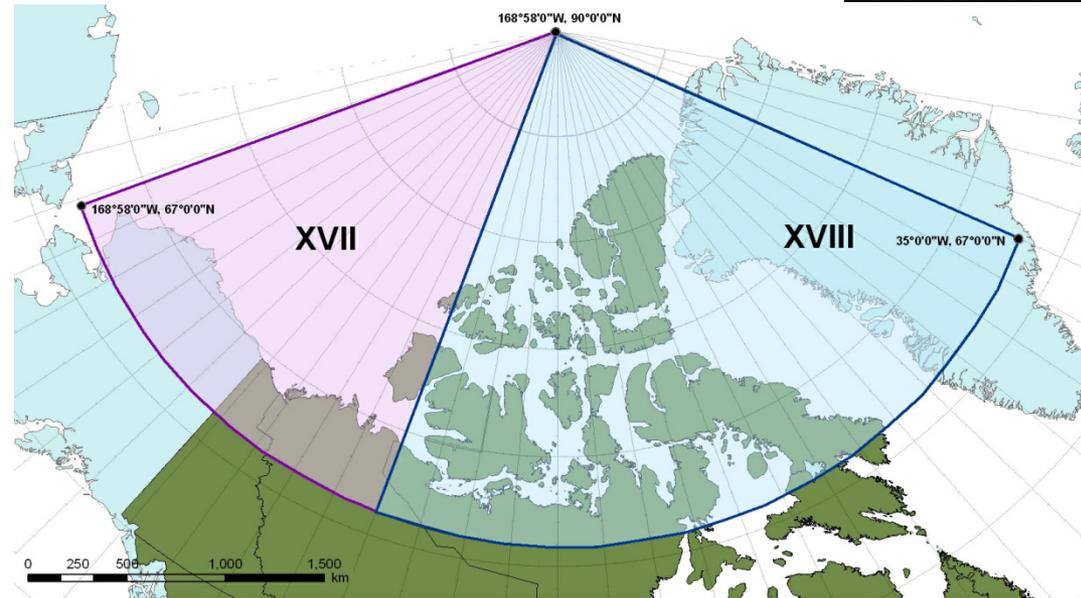
- Mandate/Mission
  - Warn of hazardous ice conditions
  - Maintain a historic knowledge of ice conditions and ice climatology
- Ice information for:
  - Ship routing
  - Icebreaking operations
  - Climate monitoring
  - Weather forecasting



# Area of Responsibility



## METAREAS



2011

# Canadian Ice Service (CIS)

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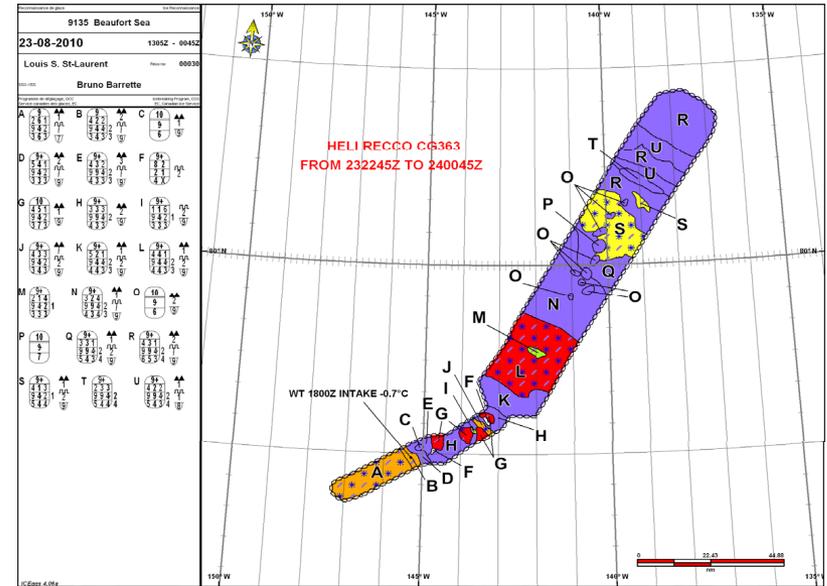
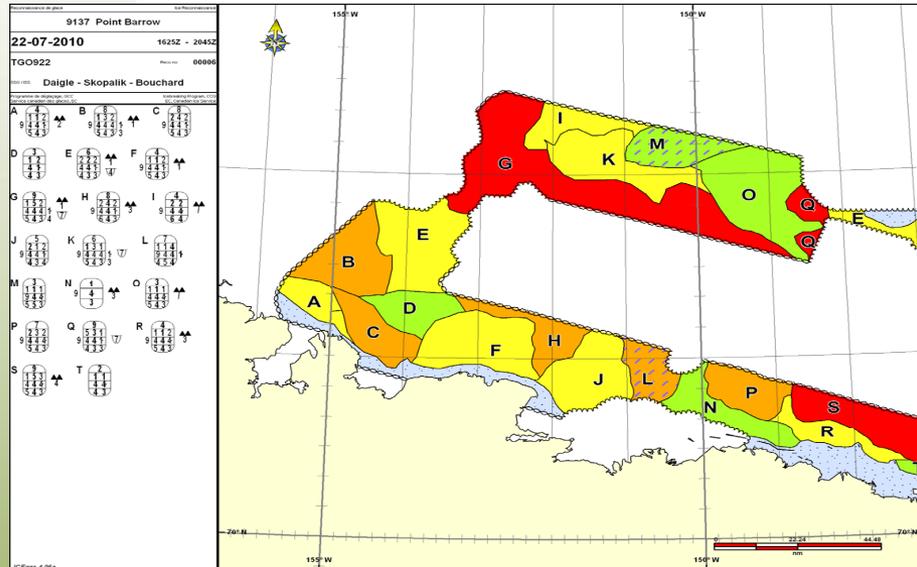
- CIS provides: Reconnaissance, analyses, forecasts, ice and iceberg models, briefings, ice archive and climatology.
  - Monitor and report on ice, iceberg and oil pollution using ships, helicopters, aircraft and satellite
  - Forecast charts and bulletins - hours to several months.
  - Operational sea ice and iceberg forecast models and data assimilation systems developed at CIS.
  - Detailed ice and meteorological briefings.
  - Ice Climate information (30 year)
  - Historical ice information is available through our web site

# Monitoring

- Satellite and visual monitoring
  - Sea ice
  - Icebergs
  - Oil spills
  - Ship positions
  - Lake ice
- Day and night coverage



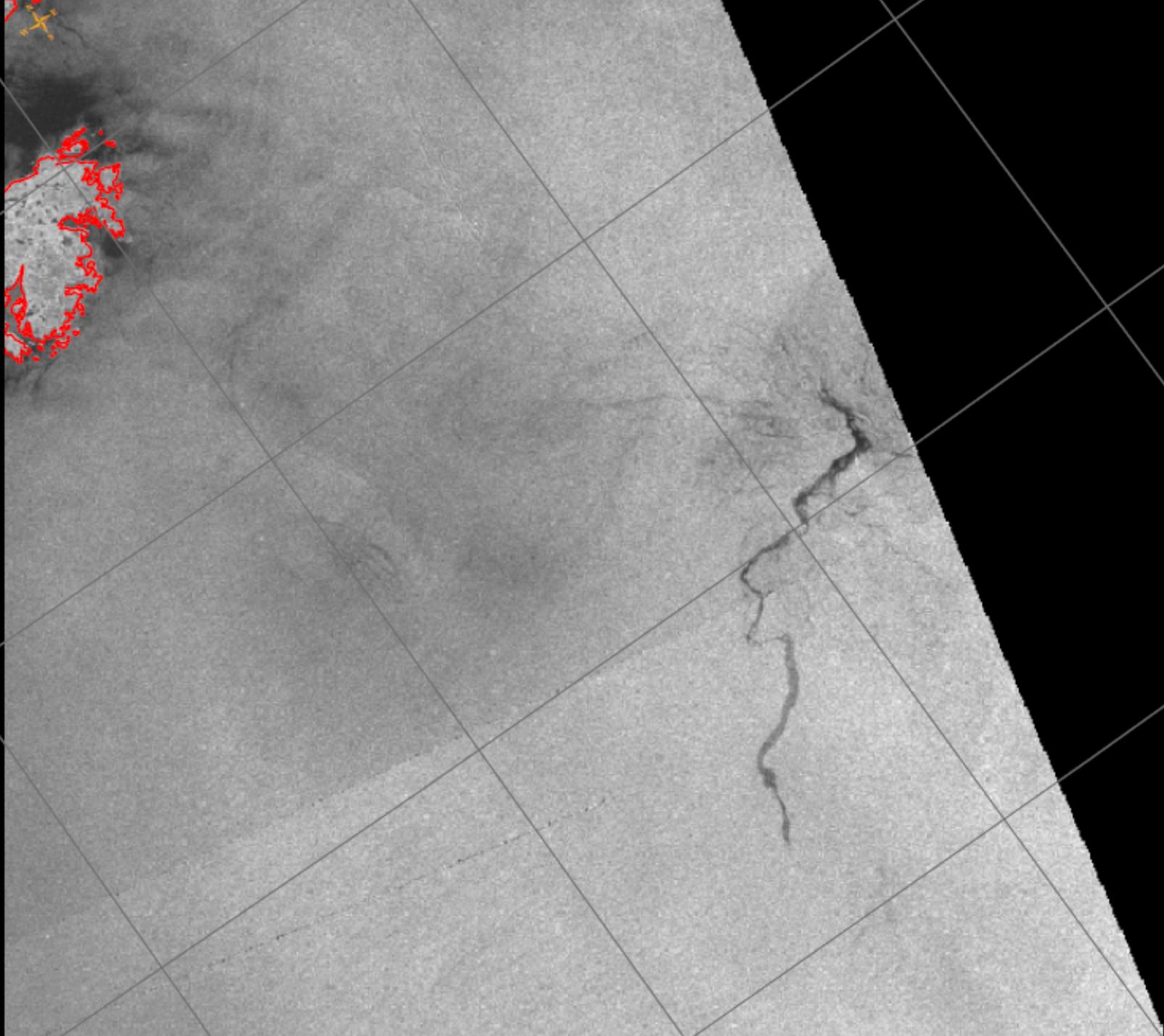
# Monitoring Reports



CFR Maritime Surveillance DASH-7



CCG Louis St-Laurent

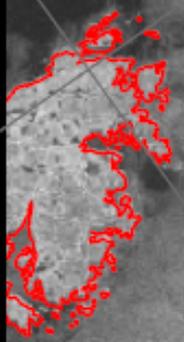


5°20'N

45°N

44°40'N

44°20'N



# ISTOP Reports

## ISTOP Anomaly Report SIPPS Rapport d'anomalie



Report Date: 2011-02-05  
Date du Rapport: 2011-02-05  
Analyst: G Leger  
Analyste:

## ISTOP Preliminary Anomaly Report SIPPS Rapport préliminaire d'anomalie

Report Date: 2011-02-05  
Date du Rapport: 2011-02-05  
Analyst: G Leger  
Analyste:

### Data Source / Source des données:

Scene ID Scène: 7443965  
Platform/plateforme: RSAT\_IJT  
Instrument: SNI  
Time Acq Temps: 2011-02-06 14:59:33(Z)  
Time Proc Temps: 2011-02-06 15:58:23(Z)  
Crib # Cible: 79634

### Image Coverage / Couverture de l'image:

UL Lat/lon: 50°32'17"N, 128°23'28"W  
UR Lat/lon: 51°09'50"N, 133°13'12"W  
LL Lat/lon: 53°22'41"N, 127°14'31"W  
LR Lat/lon: 54°01'12"N, 132°23'10"W  
Wind/Vent: SE 10KTS

ID	Category/ Catégorie*	Latitude	Longitude	Area/Aire(m <sup>2</sup> )	Area/Aire(NM <sup>2</sup> )	Comments/Commentaires
A1	3	53°11'29"N	130°36'44"W	4,019,787.3	1.17	4.7 km long, End 1 - 53°11'06"N / 130°39'00"W, End 2 - 53°10'43"N / 130°34'46"W, Target 19.4 km ENE of anomaly @ 53°15'17"N / 130°20'41"W.

### \* Anomaly Category Legend / Légende des catégories d'anomalies

1B - slick with target in area / nappe de pétrole et cible radar aux environs  
2 - slick without source / nappe de pétrole d'origine inconnue  
3 - possible oil / présence de pétrole possible

### Canadian Ice Service / Service canadien des glaces

Contact(s): oil.istop@ec.gc.ca 613-992-0812

# 20110205145853\_ISTOP\_PANOC

1 of 1

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### Notes:

Time Acq Temps: 2011-02-06 14:59:33(Z)  
Time Proc Temps: 2011-02-06 16:25:30(Z)  
Crib # Cible: 79634  
UL Lat/lon: 50°32'17"N, 128°23'28"W  
UR Lat/lon: 51°09'50"N, 133°13'12"W  
LL Lat/lon: 53°22'41"N, 127°14'31"W  
LR Lat/lon: 54°01'12"N, 132°23'10"W  
Wind/Vent: SE 10KTS

### Image Coverage / Couverture de l'image:

Centre	Longitude	Area/Aire(m <sup>2</sup> )	Area/Aire(NM <sup>2</sup> )	Comments/Commentaires
130°36'44"W	4,019,787.3	1.17	4.7 km long, End 1 - 53°11'06"N / 130°39'00"W, End 2 - 53°10'43"N / 130°34'46"W, ROC note at 15.57z. Aircraft on maintenance.	

des catégories d'anomalies  
1B - slick with target in area / nappe de pétrole et cible radar aux environs  
2 - slick without source / nappe de pétrole d'origine inconnue  
3 - possible oil / présence de pétrole possible

### Canadian Ice Service / Service canadien des glaces

Contact(s): oil.istop@ec.gc.ca 613-992-0812

# 20110205145853\_ISTOP\_PANOC

1 of 1

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Environnement Canada

## ISTOP Target Report SIPPS Rapport de cible

Report Date: 2011-02-05  
Date du Rapport: 2011-02-05  
Analyst: G Leger  
Analyste:

### Data Source / Source des données:

Scene ID Scène: 7443965  
Platform/plateforme: RSAT\_IJT  
Instrument: SNI  
Time Acq Temps: 2011-02-06 14:59:33(Z)  
Time Proc Temps: 2011-02-06 16:25:30(Z)  
Crib # Cible: 79634

### Image Coverage / Couverture de l'image:

UL Lat/lon: 50°32'17"N, 128°23'28"W  
UR Lat/lon: 51°09'50"N, 133°13'12"W  
LL Lat/lon: 53°22'41"N, 127°14'31"W  
LR Lat/lon: 54°01'12"N, 132°23'10"W  
Wind/Vent: SE 10KTS

Target ID Cible	Latitude	Longitude	Confidence/Confiance*	Comments/Commentaires
T1	53°15'18"N	130°20'41"W	2	19.4KM ENE of anomaly
T2	53°23'27"N	130°28'37"W	2	24KM NNE of anomaly
T3	53°24'02"N	130°28'57"W	2	25KM NNE of anomaly
T4	53°24'38"N	130°28'04"W	2	25KM NNE of anomaly
T5	52°44'18"N	130°31'29"W	2	50KM S of anomaly
T6	53°11'42"N	129°34'33"W	2	
T7	53°25'28"N	129°52'45"W	2	
T8	53°20'20"N	129°13'32"W	2	

### \* Target Confidence Level Legend / Légende du niveau de confiance de la cible

1 - target with visible wake / cible avec sillage apparent  
2 - probable target / cible radar probable  
3 - possible target / cible radar possible  
4 - probable platform / plateforme probable

### Canadian Ice Service / Service canadien des glaces

Contact(s): oil.istop@ec.gc.ca 613-992-0812

# 20110205145853\_ISTOTOWC

1 of 2

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## ISTOP / SIPPS

### Overview Chart

### Carte d'ensemble

Report Date: 2011-02-05

Rapport: 2011-02-05

Analyst: G Leger

Analyste: G Leger

Platform/Plateforme: RSAT\_IJT

Instrument: SNI

Time Acq Temps: 2011-02-05 14:59 (Z)

### Legend / Légende:

Anomaly/Anomalie

Target/Cible

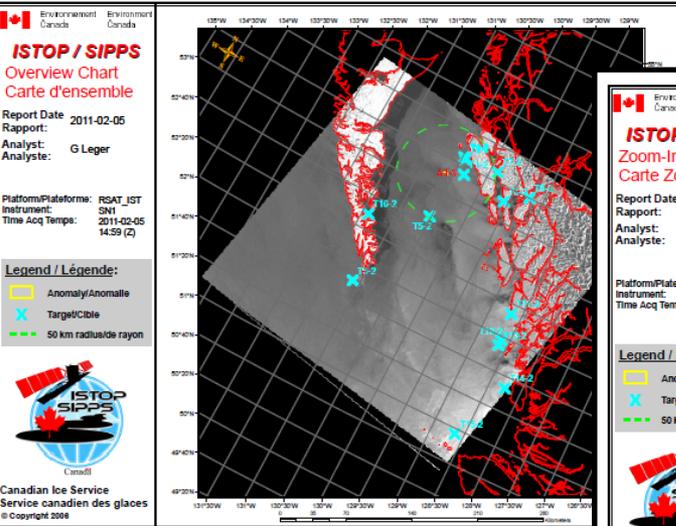
50 km radius/de rayon



Canadian Ice Service

Service canadien des glaces

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## ISTOP / SIPPS

### Zoom-In Chart

### Carte Zoom-In

Report Date: 2011-02-05

Rapport: 2011-02-05

Analyst: G Leger

Analyste: G Leger

Platform/Plateforme: RSAT\_IJT

Instrument: SNI

Time Acq Temps: 2011-02-05 14:59 (Z)

### Legend / Légende:

Anomaly/Anomalie

Target/Cible

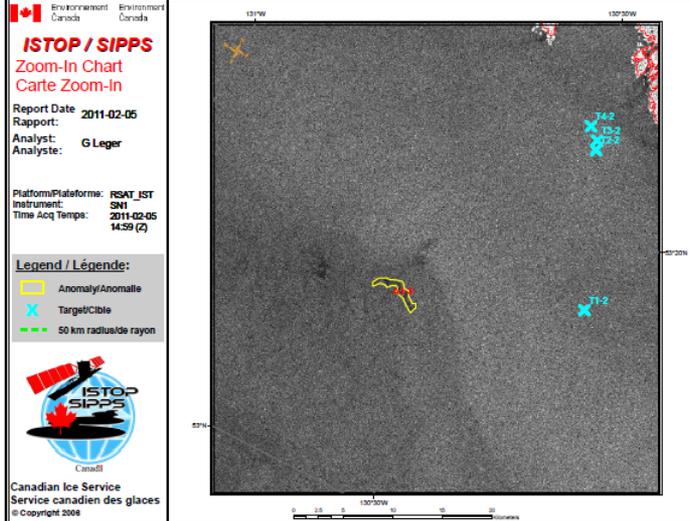
50 km radius/de rayon



Canadian Ice Service

Service canadien des glaces

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## ISTOP / SIPPS

### Zoom-In Chart

### Carte Zoom-In

Report Date: 2011-02-05

Rapport: 2011-02-05

Analyst: G Leger

Analyste: G Leger

Platform/Plateforme: RSAT\_IJT

Instrument: SNI

Time Acq Temps: 2011-02-05 14:59 (Z)

### Legend / Légende:

Anomaly/Anomalie

Target/Cible

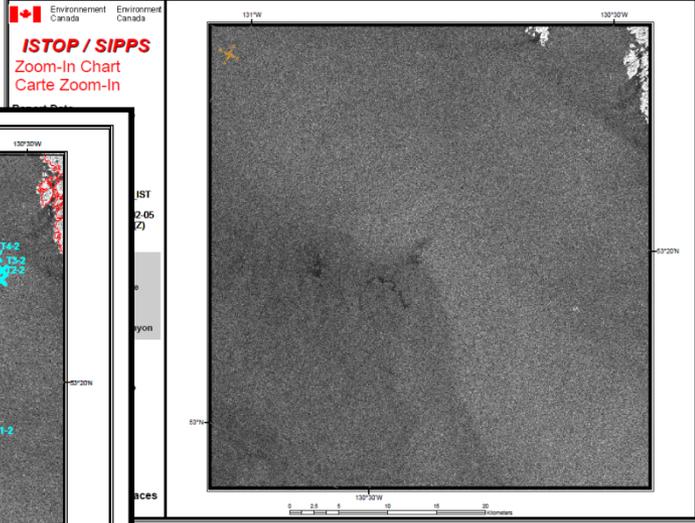
50 km radius/de rayon



Canadian Ice Service

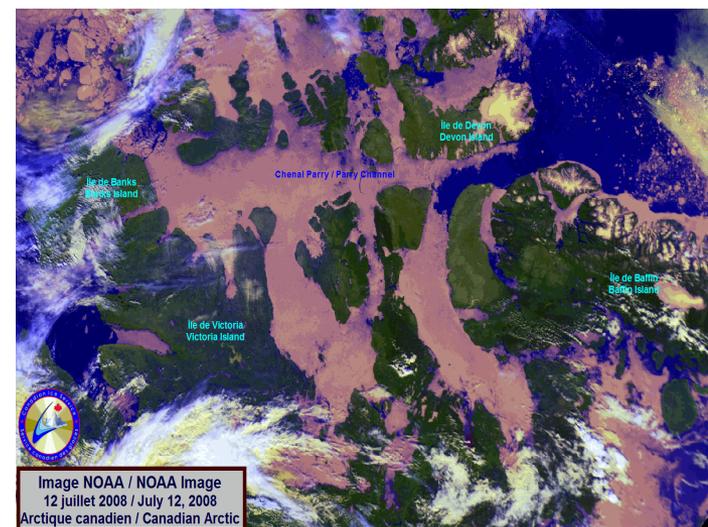
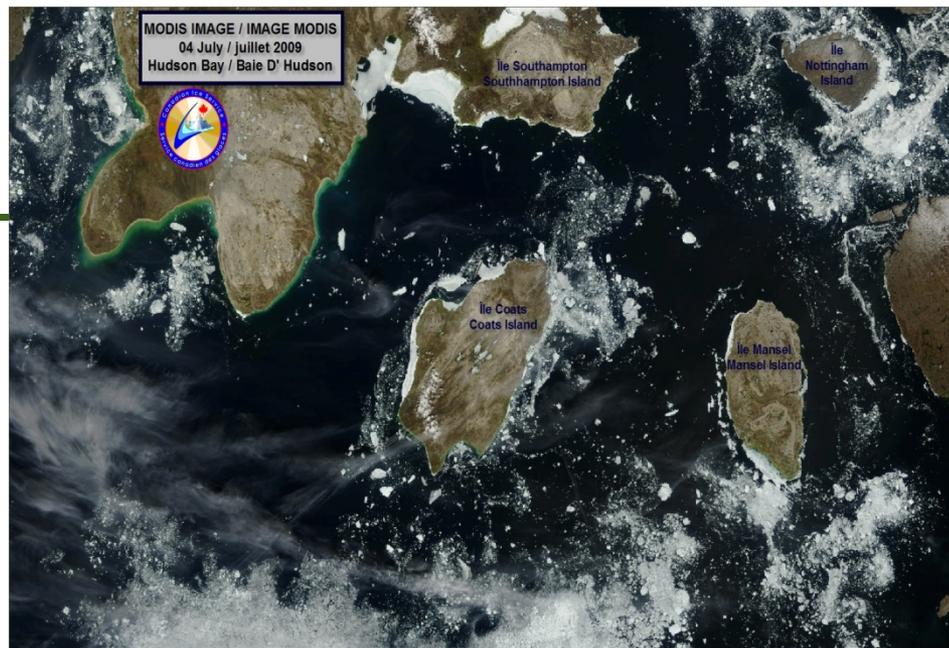
Service canadien des glaces

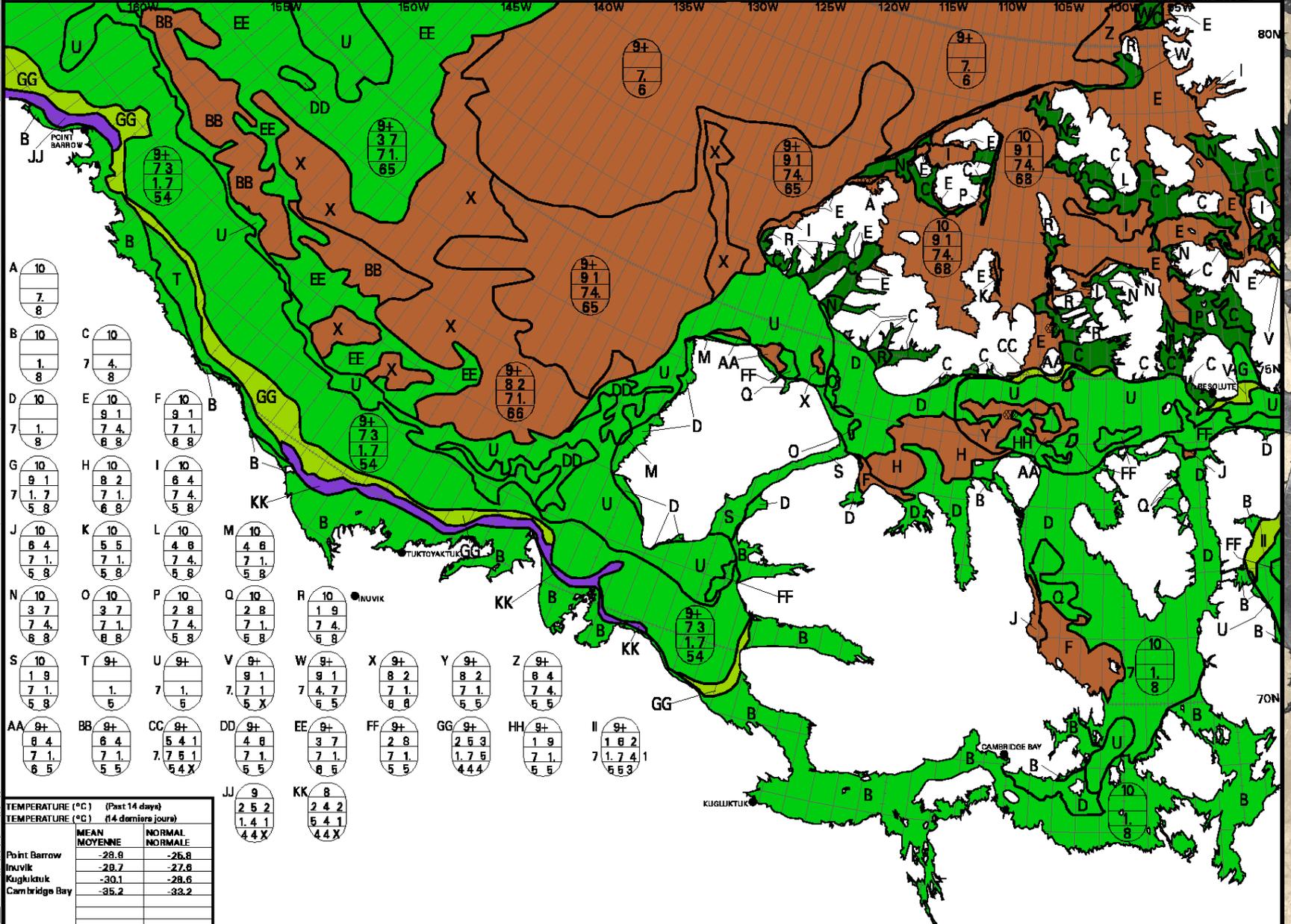
© Copyright 2008



# Data Sources

- RADARSAT-1, 2
- Envisat
- Modis
- NOAA AVHRR
- AMSR
- GOES
- Ship reports
- Aircraft reconnaissance reports
- Weather info – winds, temperature





A	10 7 8	B	10 1 8	C	10 7 4 8	D	10 7 1 8	E	10 9 7 4 6 8	F	10 9 7 1 6 8	G	10 9 7 1 5 8	H	10 8 7 1 6 8	I	10 6 4 7 4 5 8	J	10 8 7 1 5 8	K	10 5 5 7 1 5 8	L	10 4 8 7 4 5 8	M	10 4 8 7 1 5 8	N	10 3 7 7 4 6 8	O	10 3 7 7 1 6 8	P	10 2 8 7 4 5 8	Q	10 2 8 7 1 5 8	R	10 1 9 7 4 5 8	S	10 1 9 7 1 5 8	T	9+ 1 5	U	9+ 7 1 5	V	9+ 9 7 1 5 X	W	9+ 9 1 4 7 5 5	X	9+ 8 2 7 1 6 6	Y	9+ 8 2 7 1 5 5	Z	9+ 8 4 7 4 5 5	AA	9+ 8 4 7 1 6 5	BB	9+ 6 4 7 1 5 5	CC	9+ 5 4 1 7 5 1 5 4 X	DD	9+ 4 8 7 1 5 5	EE	9+ 3 7 7 1 6 5	FF	9+ 2 8 7 1 5 5	GG	9+ 2 5 3 1 7 5 4 4 4	HH	9+ 1 9 7 1 5 5	II	9+ 1 8 2 1 7 4 5 5 3	JJ	9 2 5 2 1 4 1 4 4 X	KK	8 2 4 2 5 4 1 4 4 X
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TEMPERATURE (°C) (Past 14 days)  
TEMPERATURE (°C) (14 derniers jours)

	MEAN MOYENNE	NORMAL NORMALE
Point Barrow	-29.8	-26.8
Inuvik	-28.7	-27.6
Tuktoyaktuk	-30.1	-28.6
Cambridge Bay	-35.2	-33.2

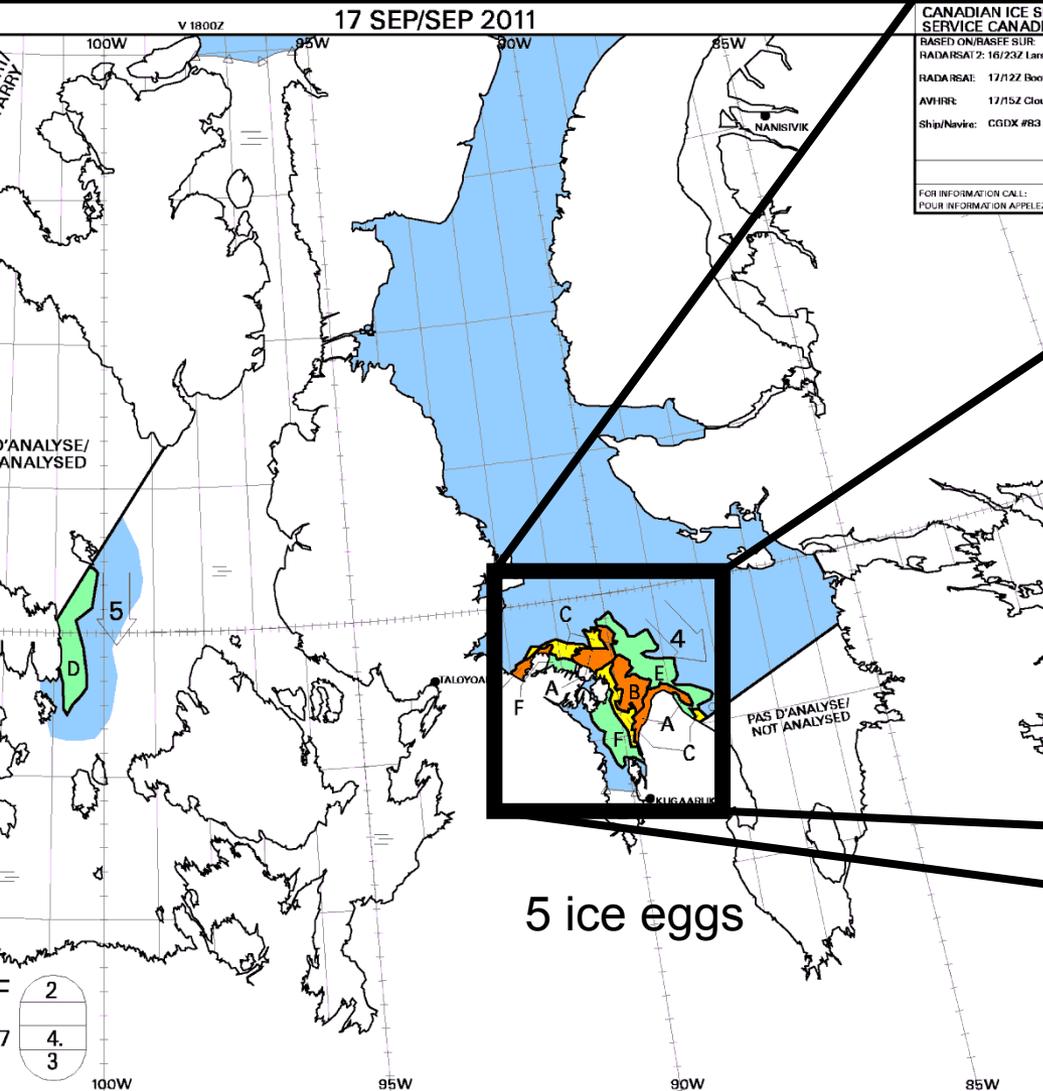
WMO Colour Code - Stage of Development

Code de couleurs de l'OMM - Stade de formation

Ice Free Libre de glace	Open Water Eau Libre	Icebergs	New Nouvelle	Grey Gris	Grey-white Blanchâtre	First-year Première année	Thin First-year Mince de première année	Medium First-year Moyenne de première année	Thick First-year Épaisse de première année	Old Ice Vieille glace	Second-year Deuxième année	Multi-year Plusieurs années	Undefined Fast Ice Indéfini Banquise côtière	Ice Shelf Plateau de glace	Undefined Indéfini
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# Visual Charts – Helicopter



CANADIAN ICE SERVICE SERVICE CANADIEN

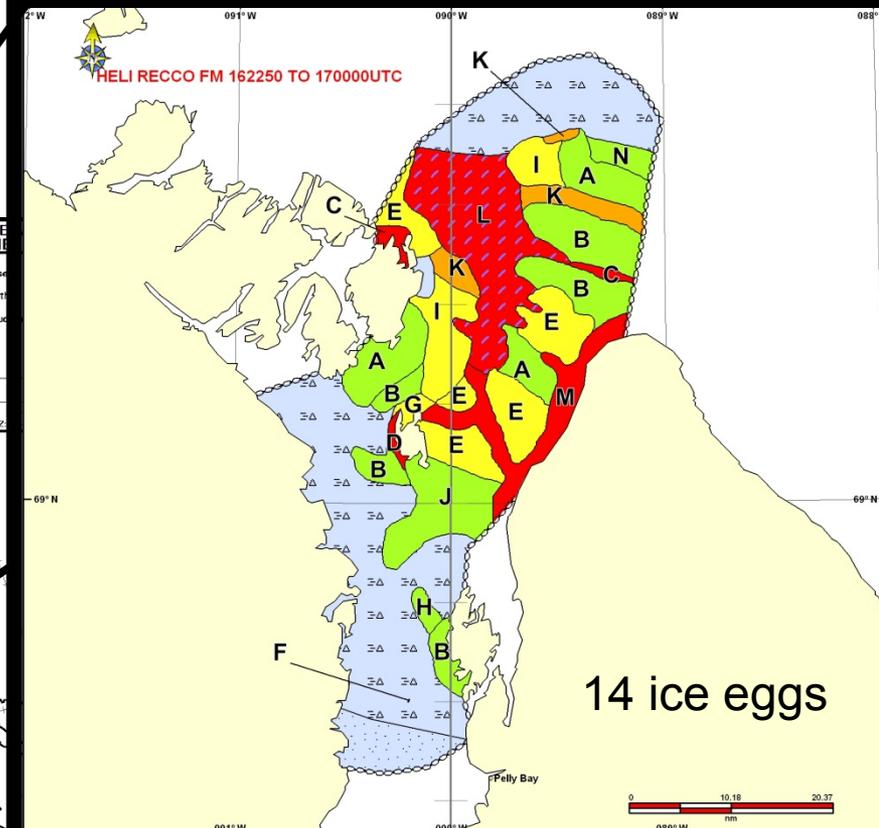
BASED ON/RASÉÉ SUR: RADARSAT 2: 16/232 Larsen

RADARSAT: 17/122 Booth

AVHRR: 17/152 Cloud

Ship/Navire: CGDX #83

FOR INFORMATION CALL: POUR INFORMATION APPELEZ



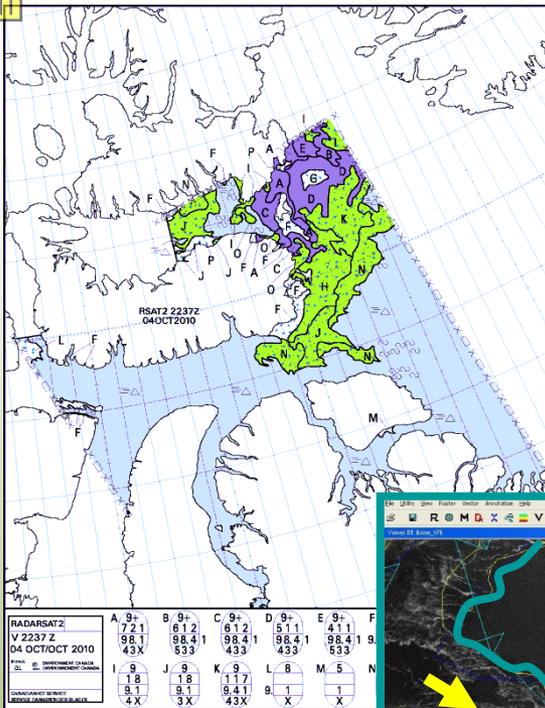
9146 Pelly Bay	A	B	C	D	E	F	
16-09-2011	2250Z - 0000Z	3 2 1 4 4 3 2	2 1 1 4 4 3 2	9 5 4 4 4 3 3	9 3 6 4 4 3 3	6 3 3 4 4 3 2	10 4 4
Des Grosseillers	Reco: 00083	G	H	I	J	K	L
99 / 155	Bruno Barrette	5 3 2 4 4 3 2	2 4 00 8 3 5 4 4 3 2	4 2 2 4 4 3 2	3 1 1 4 4 4 3	7 4 3 4 4 3 2	9+ 1 1 4 6 4 4 3 4 2
		M	N				
		9+ 5 5 4 4 3 2	1 4 3				

MO Colour Code - Concentration

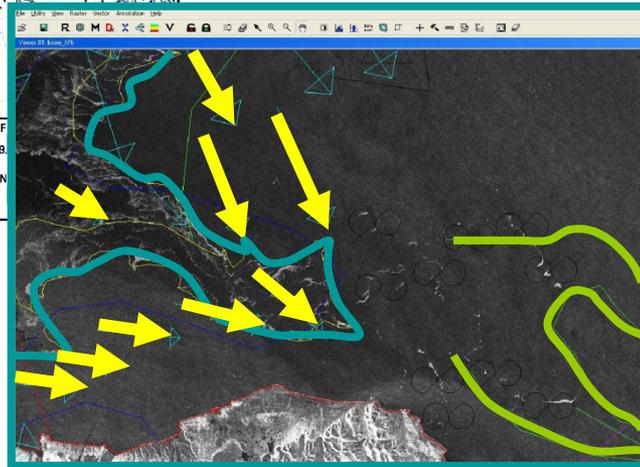
1-3/10	7-8/10	Fast Ice Banquise côtière	New Ice Nouvelle glace
4-6/10	9-10/10	Undefined Indéterminée	Nilas/Grey Ice Nilas/glace grise



# Production of Daily ice chart

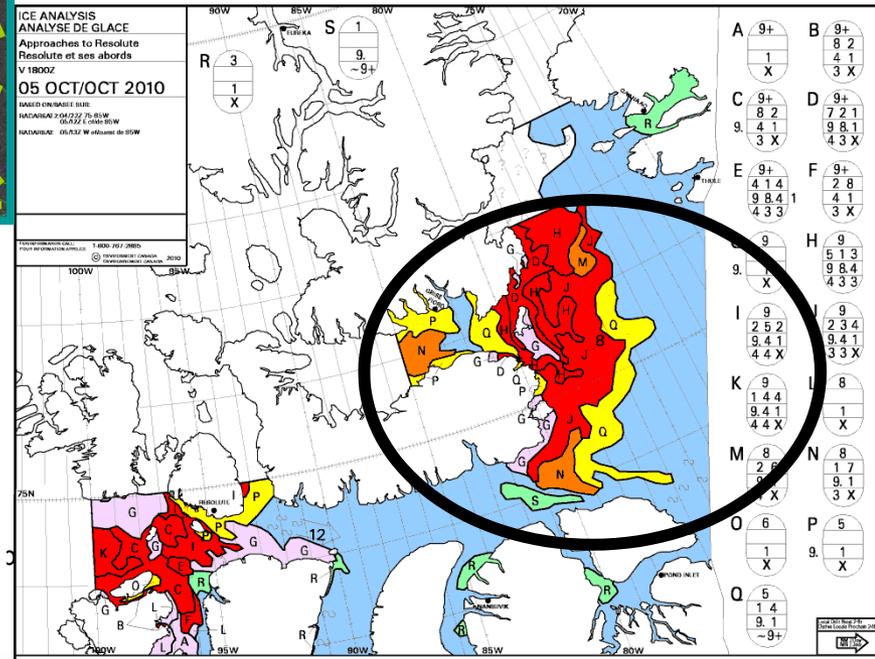


Valid 22 UTC  
Oct 4, 2010



Models used for Daily charts:

- to drift the ice to a particular valid time
- when no recent observations are available.



Valid 18 UTC  
Oct 5, 2010

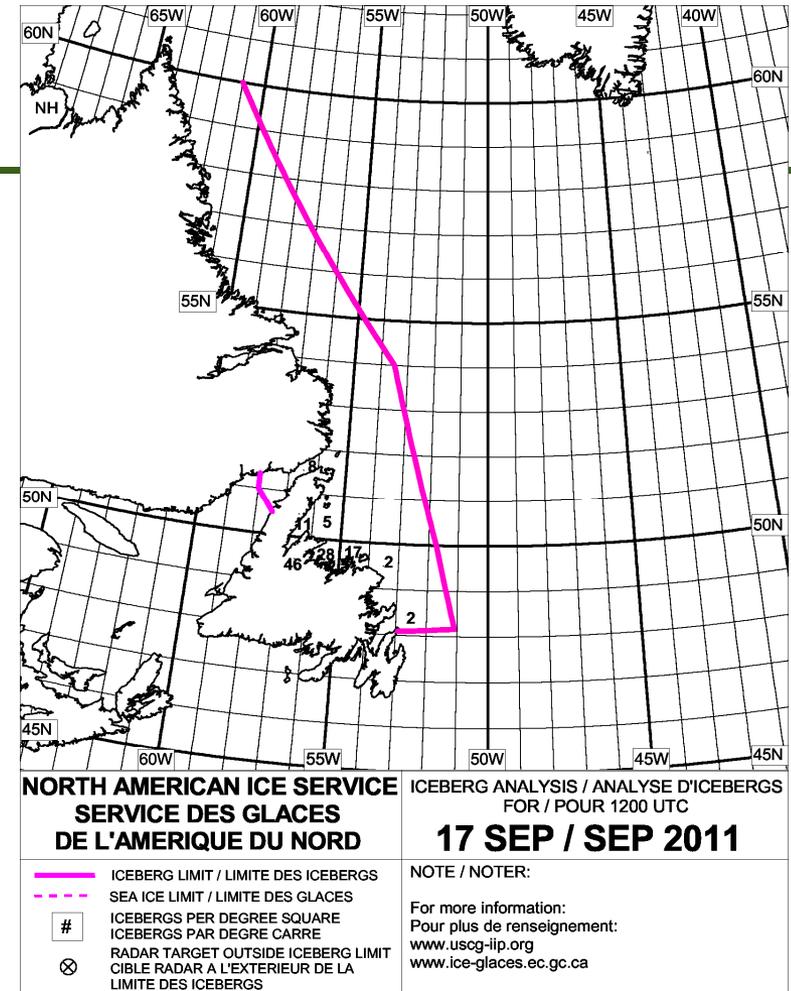


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# Forecasts

- Iceberg – positions of icebergs; iceberg limit
- Sea ice – graphical and text format
- Lake ice – graphical and text format
- Ice forecasts – detailed in the short term, general up to 1 year in advance



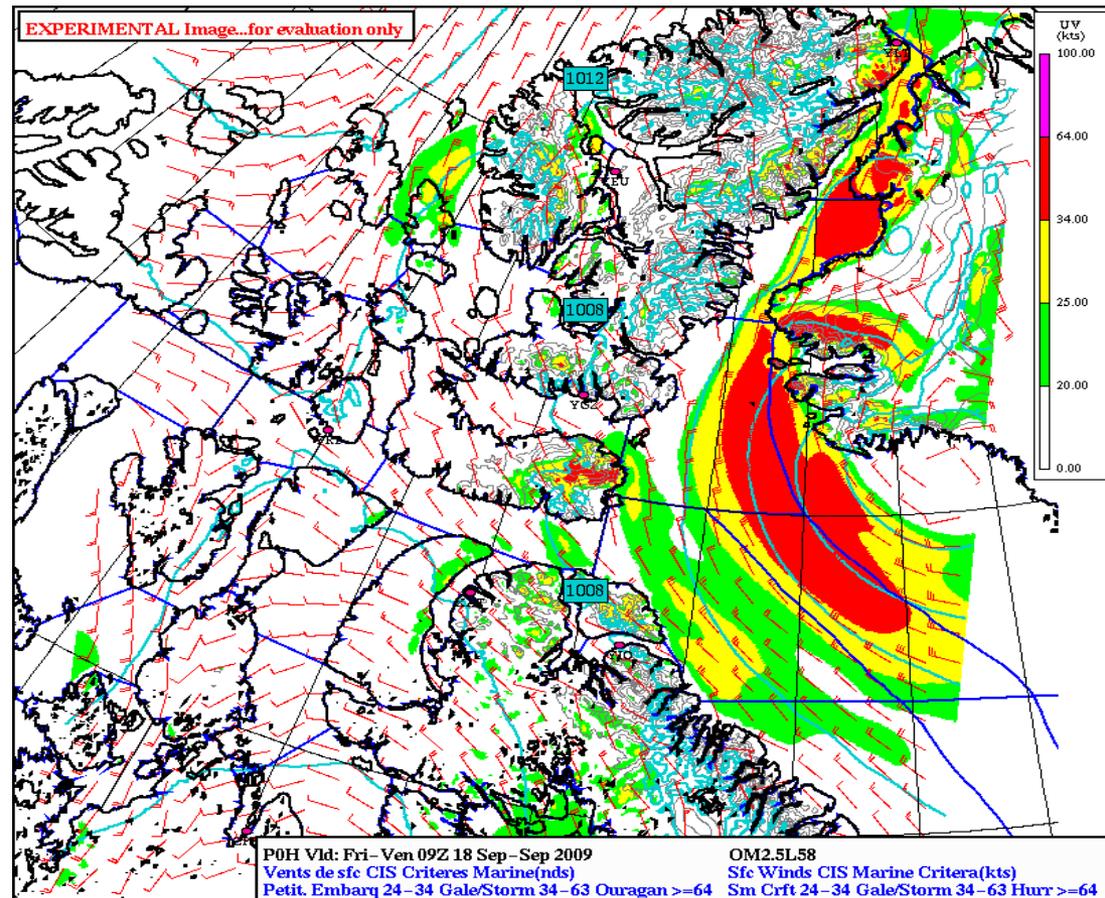
# Ice Bulletins and Warnings

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- Ice edge – first instance where ship coming from open ocean would encounter sea ice
- Total ice concentration; predominant ice type; and including concentration of oldest ice type
- Warnings
  - Rapid closing of coastal lead
  - Ice pressure
  - Special ice warning

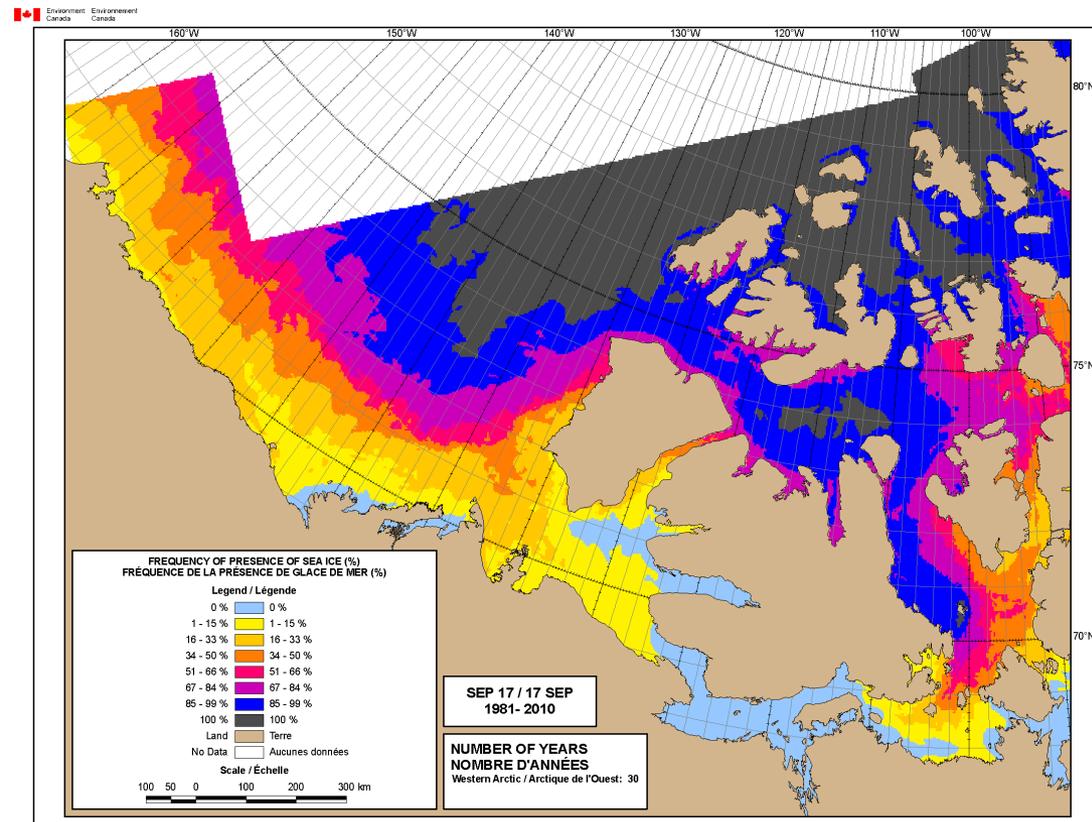
# Consultations and Briefings

- Interpretation of ice and weather products
- Climatology
- Average conditions
- Forecasts



# Ice Climatology and Archive

- Daily and weekly charts (current and historical) available on-line
- Climatology 30 year (1981-2010)



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A wide-angle landscape photograph of a fjord. In the foreground, several icebergs of various shapes and sizes float in the dark, calm water. The middle ground features dark, rugged mountains with patches of snow on their peaks and slopes. The background shows a vast, overcast sky with soft, diffused light. The overall mood is serene and majestic.

**Thank You**