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# Annual Arctic Ice Atlas

Winter 2008

By



Canadian Ice Service  
Le service canadien des glaces

Canada

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# Freeze-up and Winter Ice Regime

## Hudson Bay and Approaches

Air temperatures were near normal for most of Hudson Bay during freeze-up. Below normal air temperatures over west coast sections during the last week of October led to a 1-week earlier-than-normal freeze-up there. Elsewhere, freeze-up was delayed by 1 week over most of the bay and by 2 weeks to the east of the Belcher Islands. In Hudson Strait, freeze-up was 1 week early along the western shores of Ungava Bay, 1 week late over the extreme western part of Hudson Strait and southeast of Baffin Island, but near normal elsewhere. Measured ice thicknesses at Coral Harbour were normal at the beginning of December and slightly greater than normal at the end of January.

*November:* Ice growth began early along the west and south coasts of Hudson Bay, then slowed significantly by mid-November. New ice started to form along the shores of Southampton Island, in Roes Welcome Sound and along the western shore of Hudson Bay during the last week in October. By mid-November, new ice also extended along the southern shore of Hudson Bay and had formed along the western shores of Ungava Bay. By the end of November, greywhite ice dominated Roes Welcome Sound and extended south of Southampton Island. Greywhite ice in western Davis Strait reached south of Cumberland Sound, which was filled with grey ice. New and grey ice lay along all the shores of Hudson Bay and James Bay except southeast of the Belcher Islands. New and grey ice filled the southern halves of Hudson Strait and Ungava Bay.

*December:* Ice growth was slightly slower-than-normal in December. By the end of the month, Hudson Bay, Hudson Strait, Davis Strait, and the Labrador Coast were completely ice covered, and concentrations were everywhere near-normal. However, ice thicknesses in southeastern Hudson Bay and in Hudson Strait were less-than-normal, with greywhite as opposed to first year ice predominating in these areas.

*January:* By the end of January, Hudson Bay and Davis Strait were covered with thin to medium first year ice. Hudson Strait and the Labrador Coast were covered with thin first-year ice. The ice extent was near normal over all areas except much greater than normal along the northern Labrador Coast and in Davis Strait. The trace of old ice lay just east of Cape Chidley at this time. Higher-than-normal concentrations of old ice were present in Davis Strait and extending south of Cape Dyer.

## Eastern Arctic

Temperatures were above normal over most of the area until the end of October. They were below normal over sections south and west of Jones Sound during the first 3 weeks of November, and below normal in southern Baffin Bay and Davis Strait in the last week of November. Temperatures were again above normal everywhere through most of December. Freeze-up was 1-2 weeks early in the very extreme northwest of Baffin Bay, but delayed by a week over Jones Sound and Baffin Bay / Davis Strait and delayed by 3-4 weeks in Lancaster Sound, Prince Regent Inlet, and the Gulf of Boothia. By the end of January, measured ice thicknesses in Resolute Bay and Eureka were greater than normal due to patchy colder-than-normal January temperatures, although calculated ice thicknesses predicted normal conditions in these areas. End-of-January measured ice thicknesses in Hall Beach were normal.

By the end of the summer of 2007, the old ice concentration was greater than normal along the east coasts of Ellesmere and Devon Islands, in Nansen and Eureka Sounds, and in Norwegian Bay. At the same time, old ice amounts in the Gulf of Boothia and Committee Bay were drastically reduced.

*September:* By mid-September, new ice started forming in Nansen and Eureka Sounds and in northwestern Norwegian Bay. By the end of September it was forming in Jones Sound and northwestern Baffin Bay.

*October:* By mid-October, ice had not yet formed in Lancaster Sound, Prince Regent Inlet or the Gulf of Boothia. Ice in these areas did finally form by the end of October, later than normal. By the end of October, ice in the Gulf of Boothia, Lancaster and Jones Sounds, and Northern Baffin Bay had thickened to grey and greywhite ice, while ice in Norwegian Bay and northwards had thickened to thin first year ice. Nansen and Eureka Sounds consolidated near mid-October, both areas 1 week later than normal.

*November:* By mid-November, Pelly Bay, McDougall Sound, Admiralty Inlet (up to Nanisivik), Eclipse Sound and Navy Board Inlet had consolidated. Ice extents were near normal everywhere except along the leading edge of the ice in mid-Baffin Bay, in Cumberland Sound and along the west Greenland coast. At this time the ice in Davis Strait / Baffin Bay extended eastward to 60°W, and southward from 75°N along the western Greenland Coast to 65°N near the entrance to Cumberland Sound. Freeze-up in most of Baffin Bay was about 1 week later than normal. There was patchy two-tenths of old ice in western Baffin Bay. Most of Foxe Basin was covered with greywhite to thin first-year ice.

*December:* By the end of December, Barrow Strait west of Resolute Bay had become consolidated. Baffin Bay was covered with medium first year ice with areas of 3-tenths of old ice in western sections. The bergy water lead along the west Greenland Coast had closed down to near 67°N.



*January:* By the end of January, the ice extent was normal everywhere except greater than normal along the Greenland Coast. Barrow Strait had entirely consolidated with Lancaster Sound and Prince Regent Inlet remaining mobile. Ice in Nares Strait remained mobile, allowing old ice to continue flowing from the Lincoln Sea into Baffin Bay. As a result, there was a long line of three- to five-tenths of old ice in the main ice pack in Baffin Bay. The bergy water along the west Greenland Coast was restricted to a much narrower-than-normal strip, barely reaching north of 67°N.

## **Western Arctic**

Temperatures were above normal everywhere until the end of October. As a result, freeze-up was delayed by one to two weeks over all areas. Two periods of below-normal temperatures occurred: 1) in early November, east of Amundsen Gulf and M'Clure Strait; and 2) beginning in late December along the Alaskan coast, then spreading across the entire Beaufort Sea in early January. As a result, by the end of January, measured ice thicknesses were close to normal at Cambridge Bay, although calculated ice thicknesses were less than normal. Measured and calculated ice thicknesses were less than normal at Inuvik and Tuktoyaktuk as a result of persistent warmer than normal sea surface temperatures in the southern Beaufort Sea.

At the end of summer 2007 (at the beginning of freeze-up), the old ice extent was considerably less than normal in the Beaufort Sea, M'Clure Strait, Viscount Melville Sound and M'Clintock Channel. Although areas of greater than normal concentrations of old ice could be found in narrow straits and bays, the Northwest Passage was open from end to end. The Ayles Ice Island had entered Sverdrup Channel, where it had fractured into two pieces. There was open water from Larsen Sound through Dease Strait into the Amundsen Gulf and over the southern Beaufort Sea up to 75°N, except for a section of the pack between 130-150°W which reached down to 72°N. The main pack of old ice had disappeared north of the Alaskan Coast.

*September/October:* New ice growth started in mid-September in M'Clure Strait and Viscount Melville Sound, thickening to grey ice by the end of September in these areas. Elsewhere, new ice formation did not occur until the second and third weeks of October, 1-2 weeks later than normal.

*October:* By the end of October, new and grey ice covered most of the southern Beaufort Sea and the southern route of the Northwest Passage. The old ice pack remained well north, concentrated in the central Beaufort Sea, and greywhite ice surrounded the edges of the pack. Areas of open water still existed in Coronation Gulf, between the shore and pack ice north of the Alaskan coast, and west of Point Barrow. Thin first year ice filled M'Clure Strait, M'Clintock Channel and Peel Sound, and Larsen Sound was covered with predominantly greywhite ice. Portions of the Tuktoyaktuk Peninsula coast and Mackenzie Bay had become consolidated. By the end of October, ice had consolidated in Prince Gustaf Adolf Sea and in Sverdrup and Peary Channels. The two fragments of the Ayles Ice Island had become trapped in the fast ice, one on either side of Amund Ringnes Island.

*November:* By mid-November, Larsen Sound was covered in thin first year ice and the southern route of the Northwest Passage, from Rae Strait to Amundsen Gulf was covered in greywhite ice. By the end of November, Rae Strait to Amundsen Gulf was also covered in thin first year ice, and thin first year ice also surrounded the old ice pack in the central Beaufort Sea, which remained north of 73°N. Ice had consolidated in M'Clure Strait and Viscount Melville Sound as well as from Peel Sound to Coronation Gulf, although not in M'Clintock Channel. Ice had also consolidated around Cape Parry and along the Alaskan coast east of Point Barrow. West of Amundsen Gulf, between the mainland coast and 71.5°N, ice continued to be composed mainly of new and grey ice, and significant areas of open water persisted. Normally, by the end of November, this area would be entirely covered with thin first year ice and the old ice edge would extend southwards to 71.5°N.

*December:* By mid-December, ice in and to the east of M'Clure Strait and Dolphin and Union Strait had thickened to medium first year ice. Ice had consolidated in Dolphin and Union Strait. The old ice pack in the central Beaufort Sea had skewed eastward and lay close to the Banks Island coast. Thin first year ice mostly covered the southern Beaufort Sea except in the vicinity of Point Barrow and westward, which was covered in greywhite ice. By the end of December, the old ice pack in the Beaufort Sea showed significant fragmentation and was interspersed with areas of grey, greywhite, and medium first year ice. The ice in M'Clintock Channel had finally consolidated, one month later than normal.

*January:* During the first week of January, the consolidated ice in M'Clure Strait fractured in an unusual event. A large lead also opened between the consolidated ice in Dolphin and Union Strait and the mobile first year ice in Amundsen Gulf. Large leads of grey and greywhite ice could be seen in the old ice pack in the Beaufort Sea. By mid-January, the ice in the leads in the old ice pack had thickened to predominantly thin first year ice, while the lead or polynia in Amundsen Gulf remained predominantly covered in greywhite ice. By the end of January, all consolidated ice within the archipelago and along the mainland Canadian and Alaskan coasts had thickened to thick first year ice. Elsewhere, except for the old ice pack, the ice cover was primarily composed of medium first year ice. The old ice pack had pushed southwards to 70.5°N, but remained extremely fragmented and narrow, not reaching further west than 150°W.

# International Polar Year Regions

Summary of freeze-up and winter states for the ten IPY-regions.

Ct = total concentration.

S = stage of development (ice thickness).

"+" indicates above/greater/thicker than normal.

"-" indicates below/less than/thinner than normal.

Region	Freeze-up		Winter		
Hudson Bay and Approaches	Air Temp. (+/-)	Freeze-up / Consolidation	Air Temp. (+/-)	Ct (+/-)	S (+/-)
1. West Hudson Bay	-	1 week early	+	normal	+
2. Hudson Strait	normal	normal	normal	normal	normal
3. Labrador Coast	-	1 week early	-	+	-
Eastern Arctic	Air Temp. (+/-)	Freeze-up / Consolidation	Air Temp. (+/-)	Ct (+/-)	S (+/-)
4. Canadian Ice Shelves	+	1 week late	-	normal	normal
5. Nares Strait	+	late	normal	-	-
6. Jones and Lancaster Sounds	+	late	normal	normal	normal
7. West Baffin/Davis	normal	1 week late	+	normal	normal
8. Fury and Hecla Strait	+	late	+	normal	normal
Western Arctic	Air Temp. (+/-)	Freeze-up / Consolidation	Air Temp. (+/-)	Ct (+/-)	S (+/-)
9. Cape Bathurst Polynia	+/-normal	1 week late	normal	normal	-
10. Northwest Passage	+/-normal	1 week late	+	normal	normal



## Canadian Ice Service, 2008



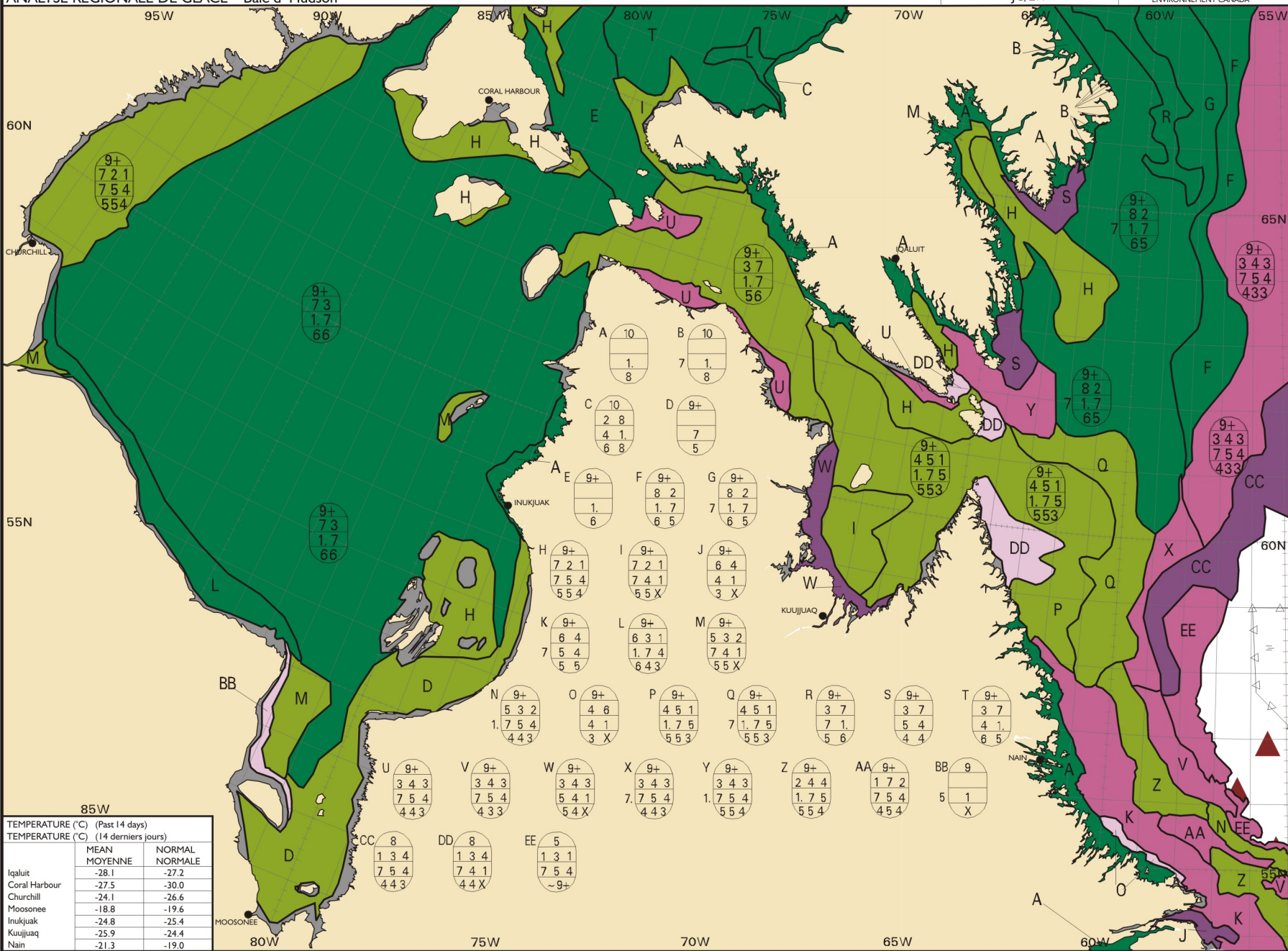


WMO Colour Code - Concentration

Code de couleurs de l'OMM - Concentration

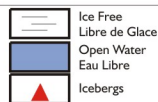






WMO Colour Code - Stage of Development

Code de couleurs de l' OMM - Stade de formation






 New  
Nouvelle

 Grey  
Grise

 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 IndéfiniBanquise côtière
	Undefined Indéterminée





WMO Colour Code - Concentration

Code de couleurs de l'OMM - Concentration

Ice Free  
Libre de glace

1-3/10

7-8/10

New Ice  
Nouvelle glaceFast Ice  
Banquise côtière

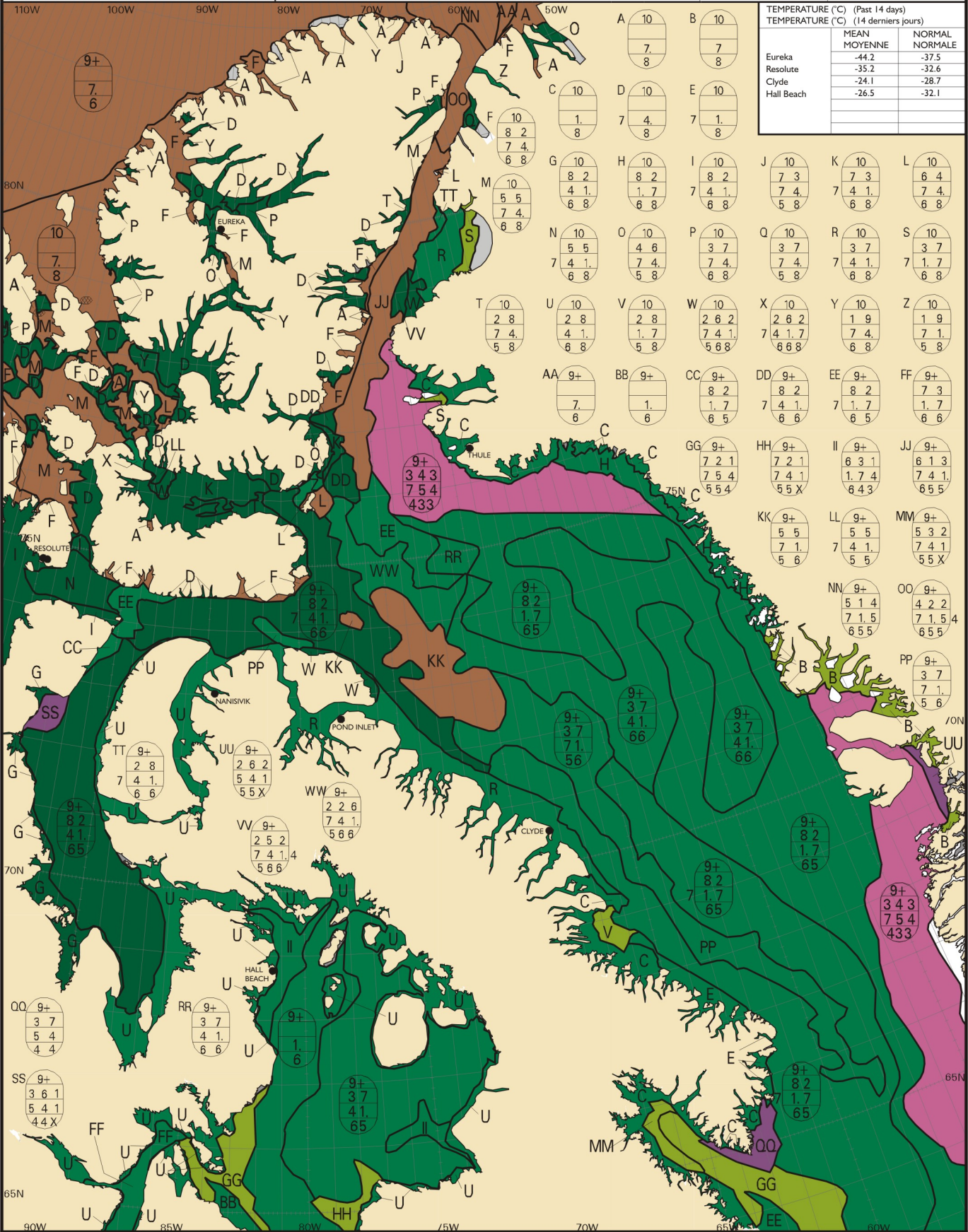
&lt;1/10

4-6/10

9-10/10

Nilas/Grey Ice  
Nilas/glace griseIce Shelf  
Plateau de glaceUndefined  
Indéterminée





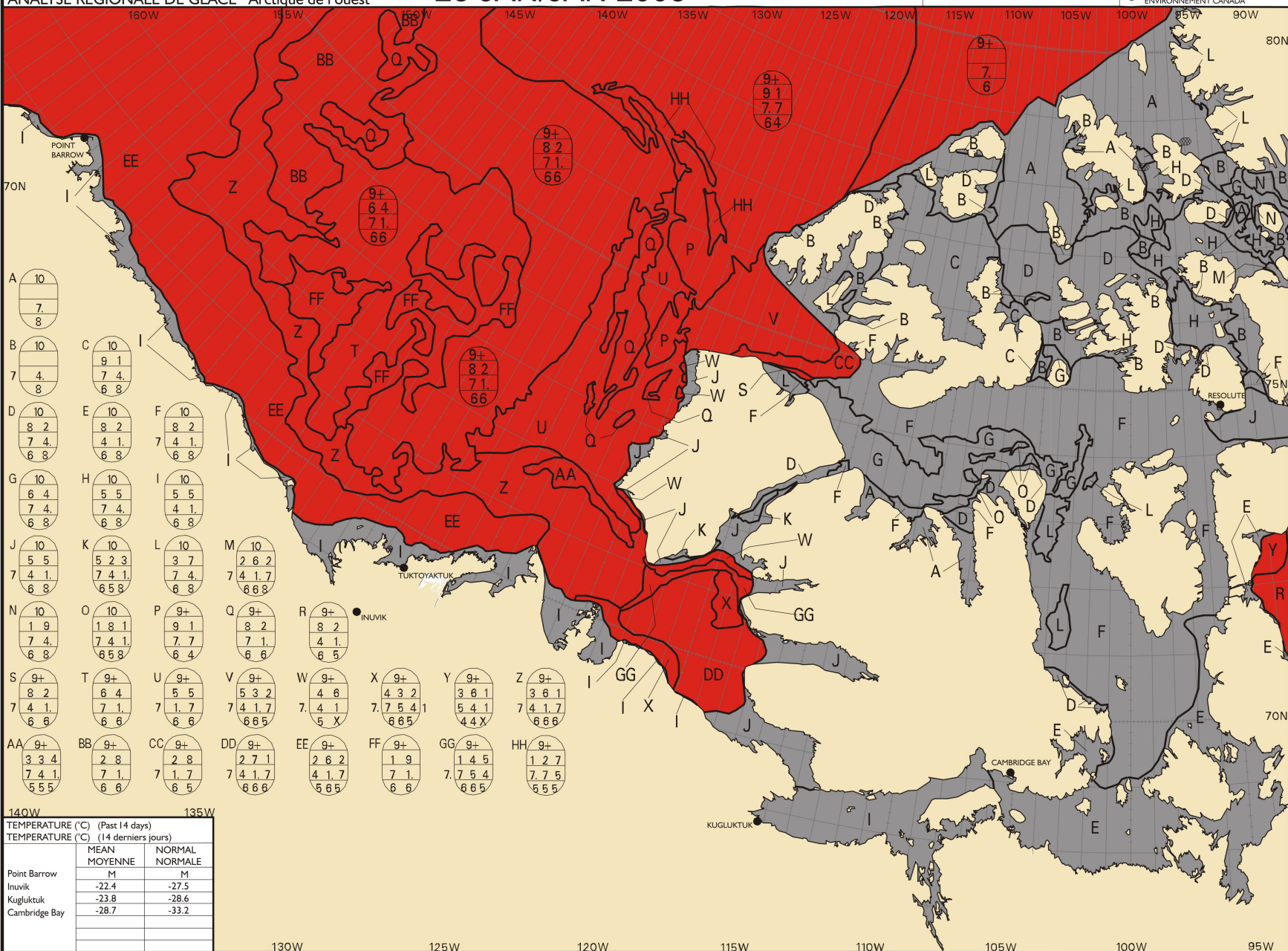
TEMPERATURE (°C) (Past 14 days)		
TEMPERATURE (°C) (14 derniers jours)		
	MEAN MOYENNE	NORMAL NORMALE
Eureka	-44.2	-37.5
Resolute	-35.2	-32.6
Clyde	-24.1	-28.7
Hall Beach	-26.5	-32.1

WMO Color Code - Stage of Development

Code de couleurs de l'OMM - Stade de formation

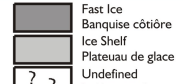
	Ice Free		New		Grey-white		Thin First-year		Old Ice		Undefined Fast Ice
	Libre de Glace		Nouvelle		Blanchâtre		Mince de première année		Vieille glace		Indéfini Banquise côtière
	Open Water		Grey		First-year		Moyenne de première année		Du deuxième année		Ice Shelf
	Eau Libre		Grise		Prémière année		Épaisse de première année		Plusieurs années		Plateau de glace
	Icebergs										Undefined
											Indéterminée

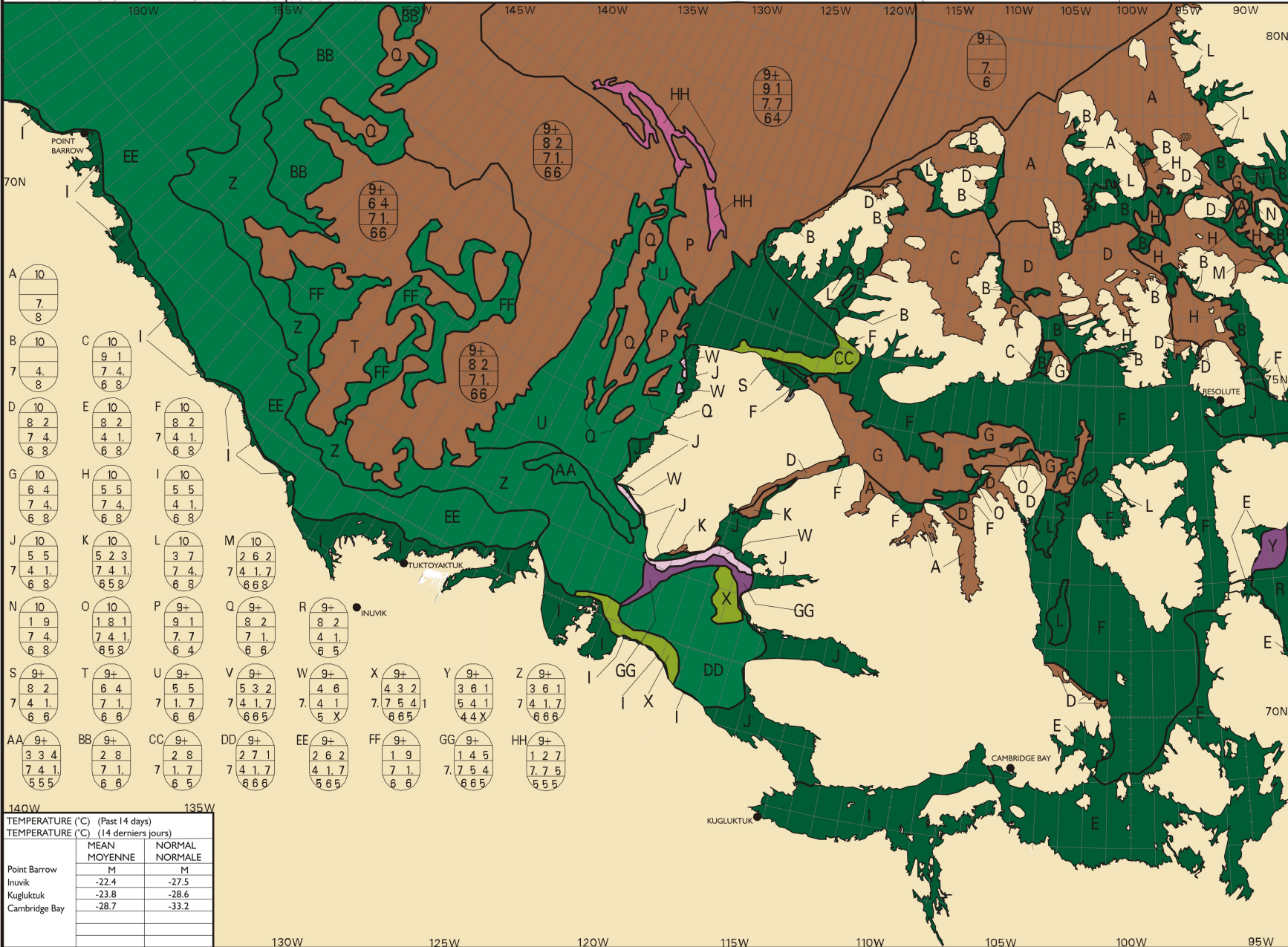




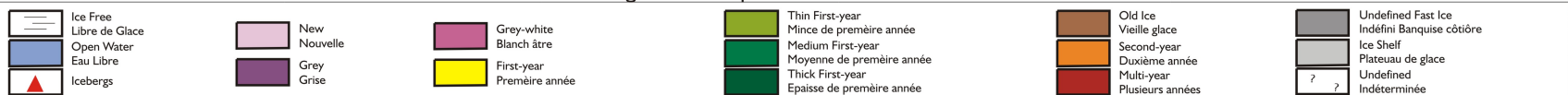
WMO Colour Code - Concentration

Code de couleurs de l'OMM - Concentration

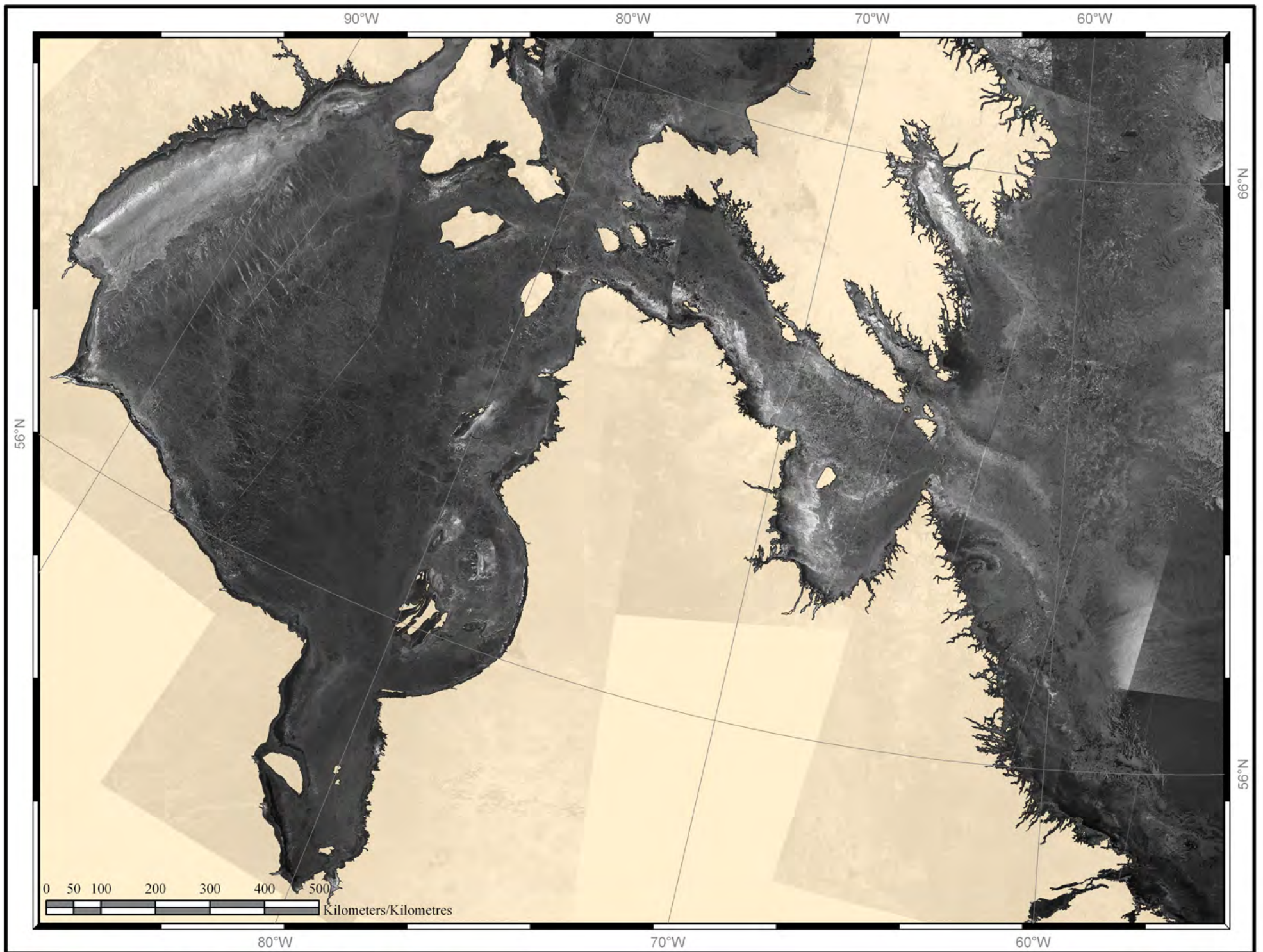




Code de couleurs de l'OMM - Stade de formation



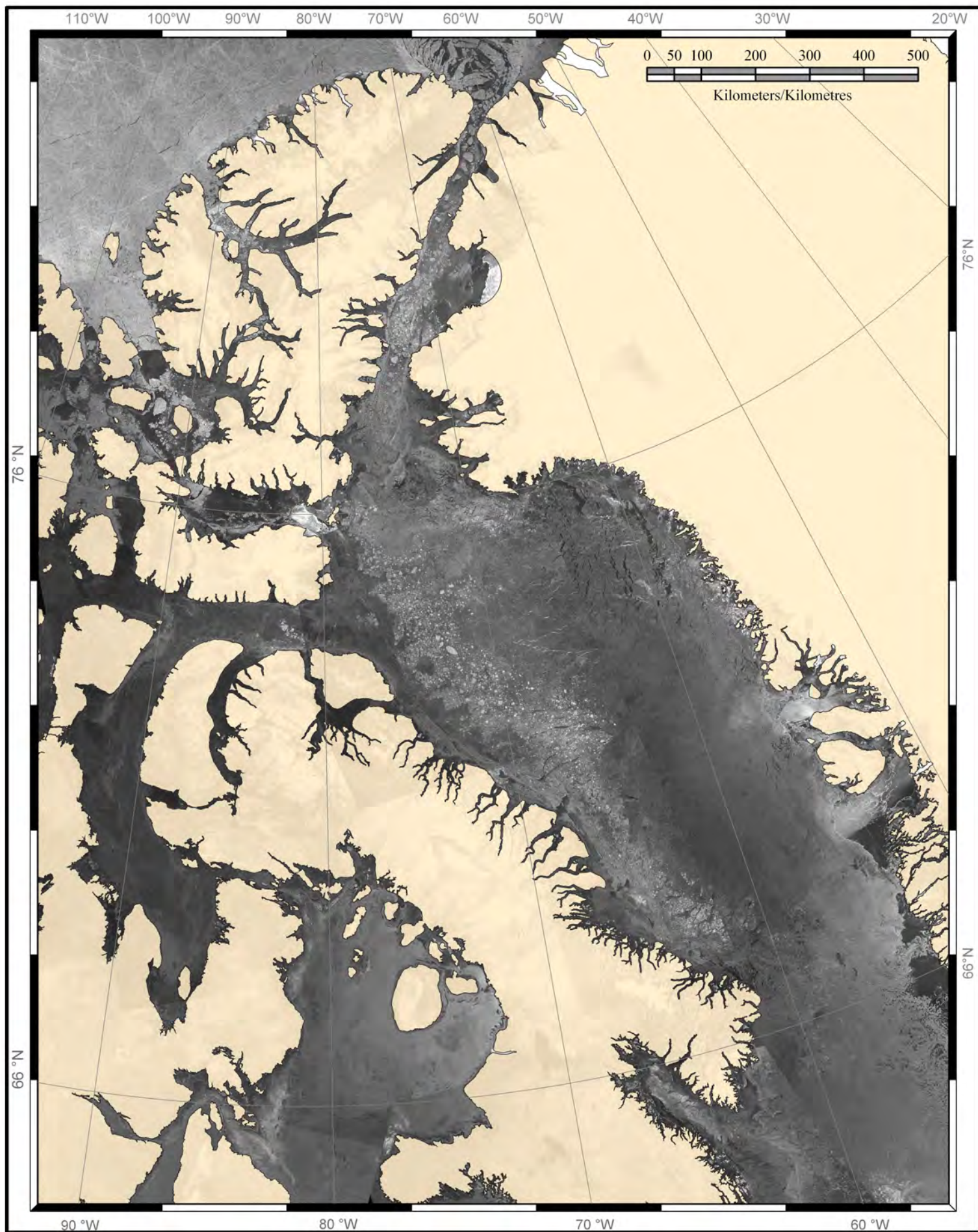




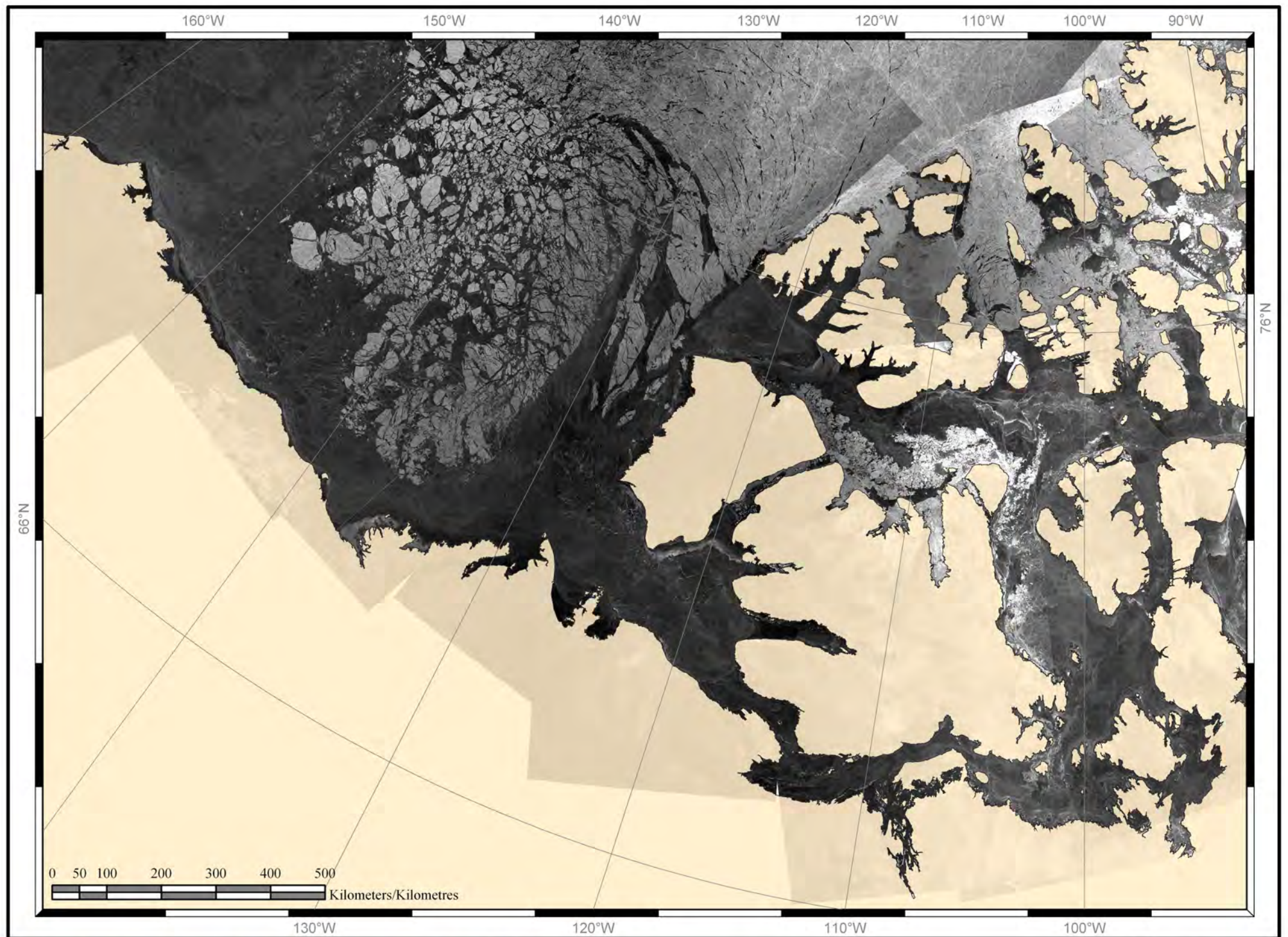
**Hudson Bay / Baie d'Hudson**

1/26/2008 - 2/02/2008

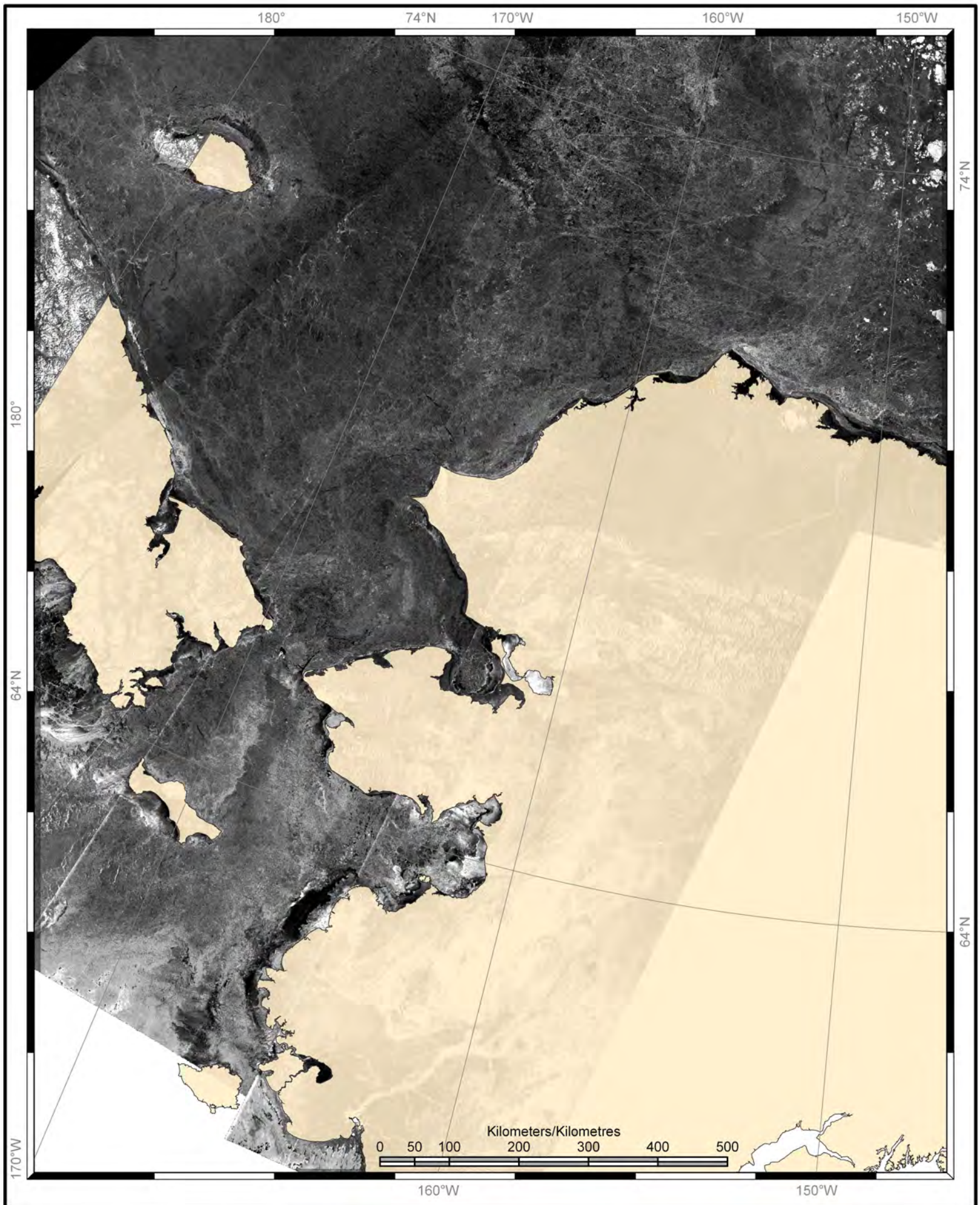








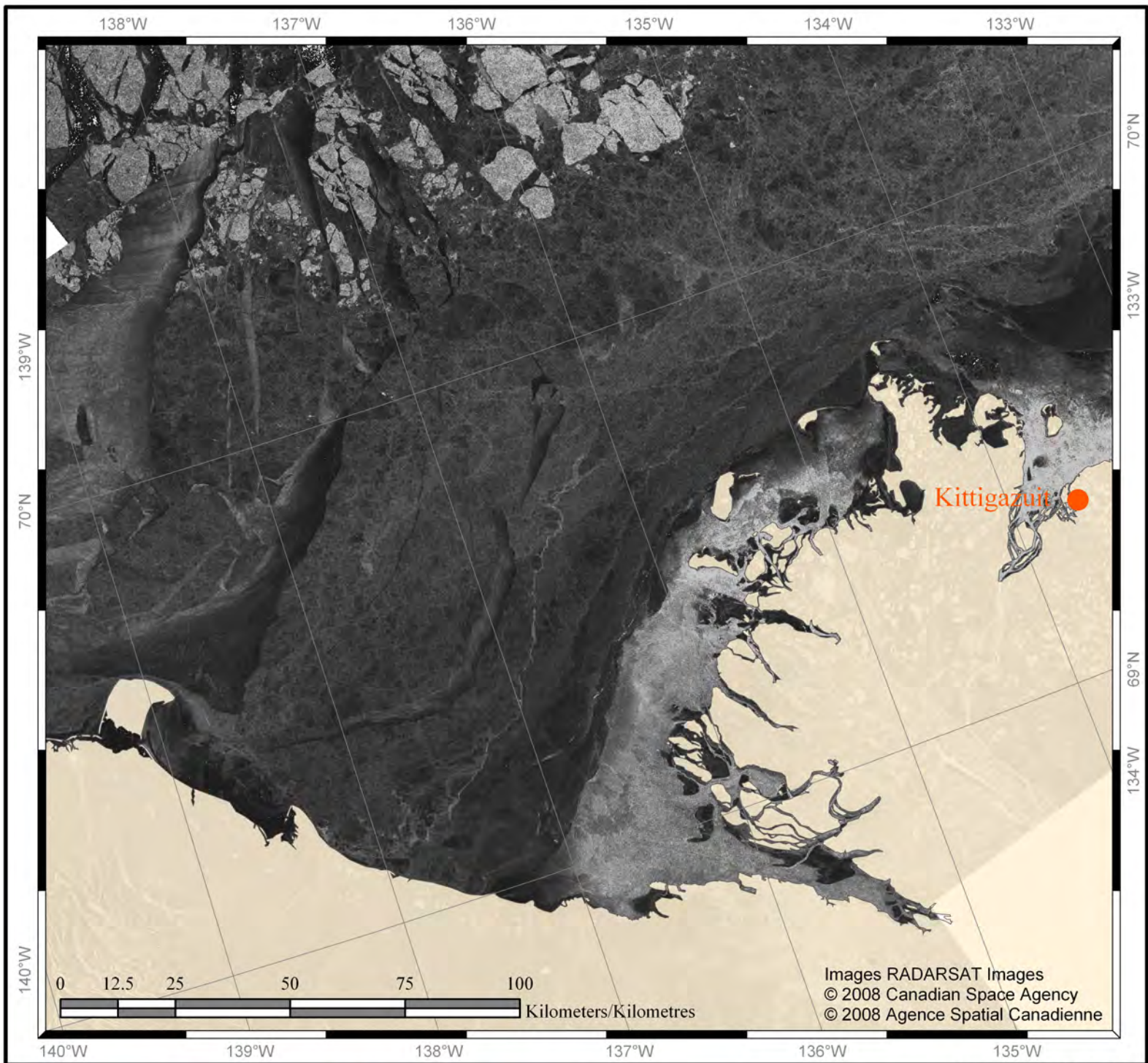




## Chukchi Sea / Mer de Chukchi

1/25/2008 - 2/02/2008

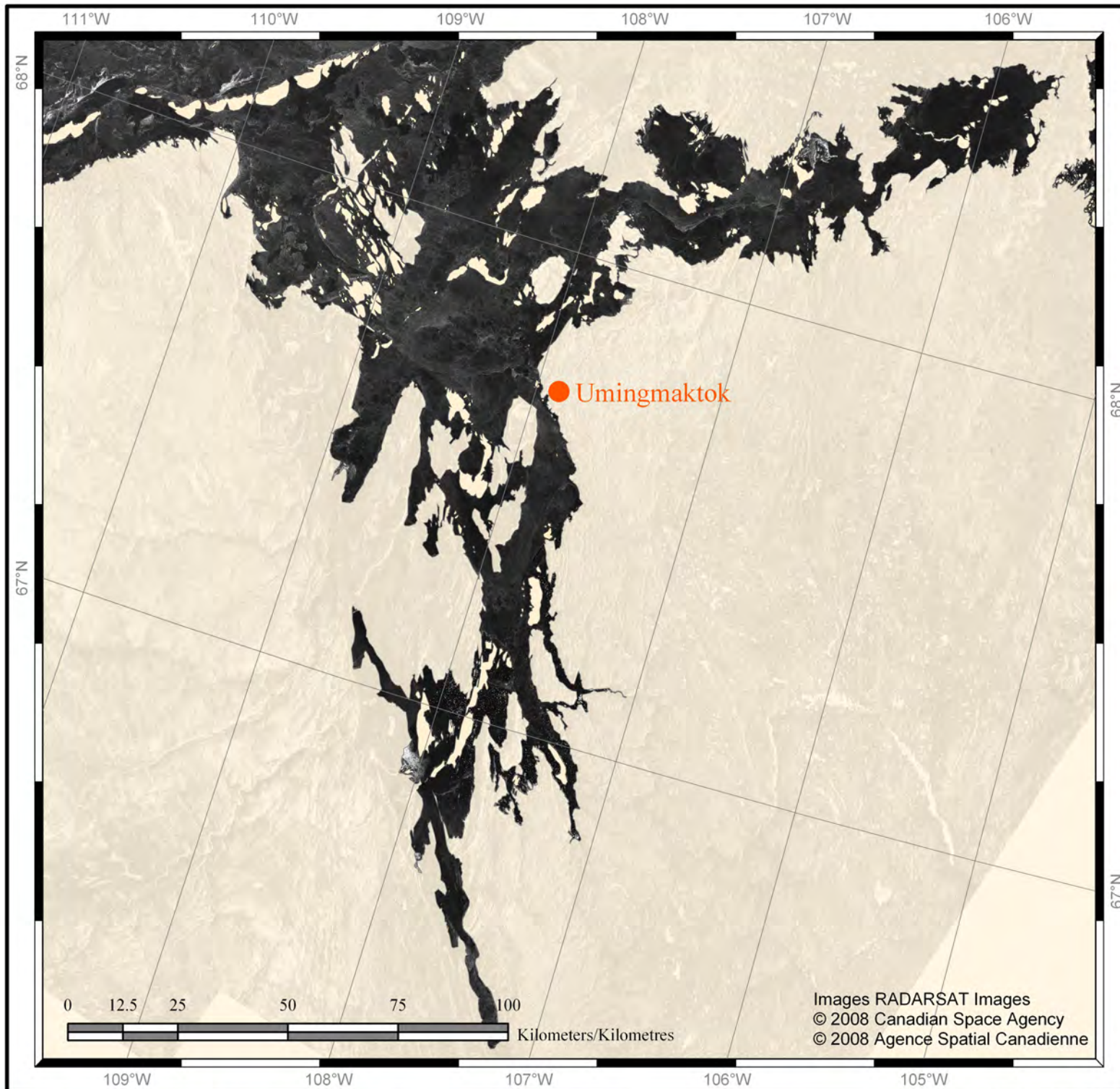




## Mackenzie Bay / Baie Mackenzie

01/31/2008 - 02/02/2008

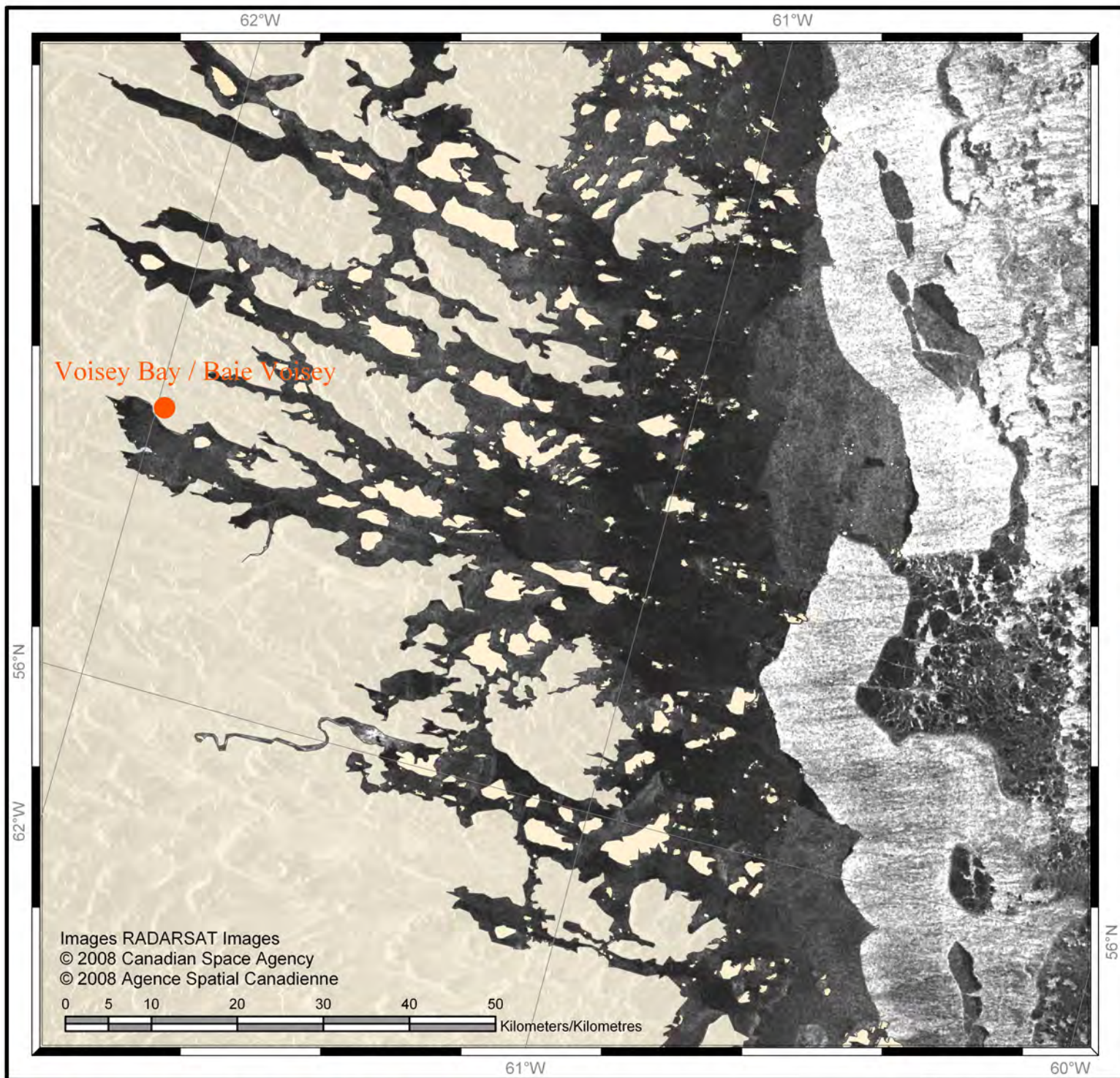




**Bathurst Inlet / L'anse de Bathurst**

01/31/2008 - 02/02/2008





**Voisey Bay / Baie Voisey**

01/29/2008 - 01/31/2008