

DEFINITIONS OF ICE STAGES

Modified from *Observer's Guide to Sea Ice*, prepared by the University of Alaska Anchorage, School of Engineering for the National Oceanic and Atmospheric Administration. For copies of this document, send e-mail request to library@hazmat.noaa.gov or fax your request to 206-6-4442.

New: ice in one of the following stages of formation:

- a) **Frazil:** separate fine needles or plates suspended in water
- b) **Grease:** a thin soapy-looking surface layer of coagulated frazil ice
- c) **Slush:** snow mixed with water in a viscous surface layer
- d) **Shuga:** an accumulation of spongy white lumps

Nilas: a thin elastic crust of ice, less than 10 cm (4 in) thick; easily bends on waves, often has striped or chevron appearance

Young: Ice 10-30 cm (4-12 in) thick in one of the following stages:

- a) **Gray:** young ice 10-15 cm (4-6 in) thick; less elastic than Nilas; breaks on swell and rafts (one layer over another) under pressure
- b) **Gray-White:** young ice 15-30 cm (6-12 in) thick, that buckles to form ridges on its edges from pressure or collisions

First-year ice: sea ice that, in uniform level areas without ridges or other deformations, is 30 cm - 1.2 m thick (12 in - 4 ft)

- a) **First-year thin:** Sea ice that, in uniform level areas without ridges or other deformations is 30-70 cm (12-27 in) thick
- b) **First-year medium:** sea ice 70-120 cm (27-48 in) thick
- c) **First-year thick:** sea ice over sea ice over 1.2 m (4 ft) thick

Old or multi-year: sea ice 3 m (10 ft) thick or more that has survived at least one melting season; characterized by undulating, weathered edges and a well-defined melt water drainage pattern.

DEFINITIONS OF ICE FORMS

New: small thin newly formed dinner plate-sized pieces

Brash: broken pieces less than 2 m (6 ft) across

Pancake: rounded floes 30 cm - 3 m (1-10 ft) across with ridged rims

Cake: level piece 3-20 m (6-65 ft) across

Floe Ice: level pieces ranging in size from 20 m to > 10 km

- a) **Small floe:** level piece 20-100 m (65-328 ft.) across
- b) **Medium floe:** level continuous piece 100-500 m (328-1640 ft) across
- c) **Big floe:** level continuous piece 500 m - 2 km (1/3-1 mi) across
- d) **Vast floe:** level continuous piece 2-10 km (1-6 mi) across
- e) **Giant floe:** level continuous piece greater than 10 km (6 mi) across

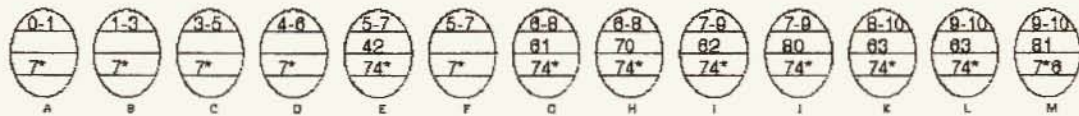
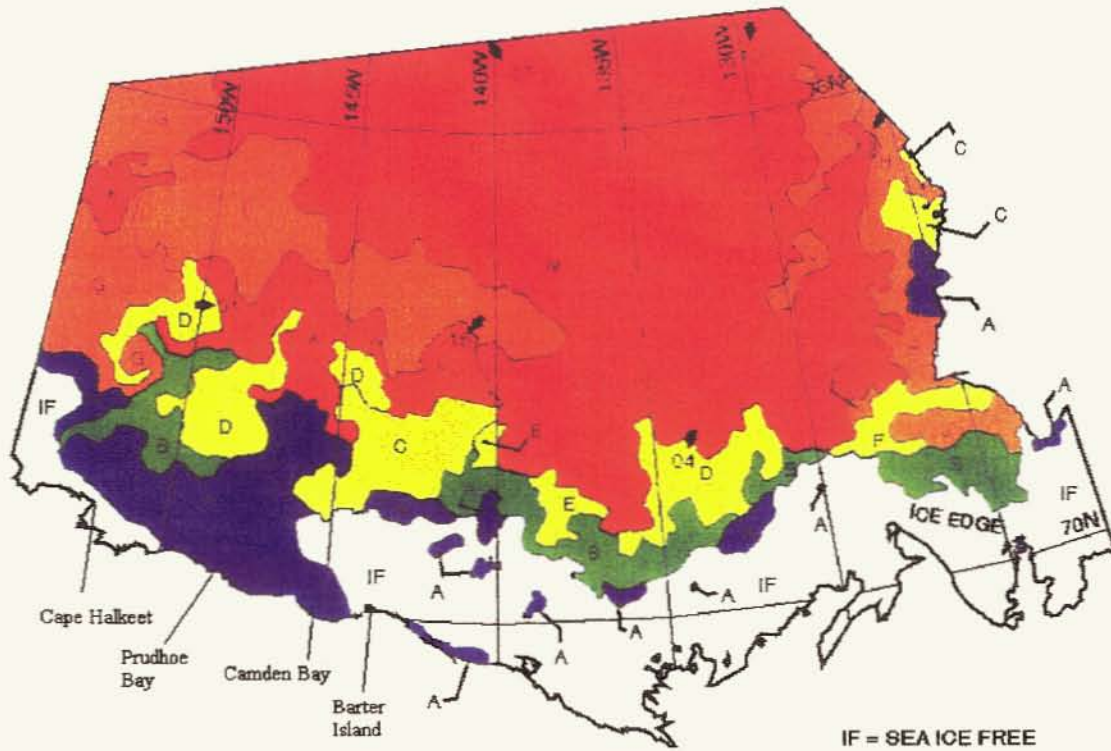
Strip: a linear accumulation of sea ice less than 1 km (0.6 mi) wide

Belt: a linear accumulation of sea ice from 1 km to over 100 km (0.6-60 mi) wide

Beach Ice or Stamukhas: irregular, sediment-laden blocks that are grounded on tidelands, repeatedly submerged, and floated free by spring tides

Fast Ice: ice formed and remaining attached to shore

**Appendix II. Ice map for September 19, 2001. Map taken from
www.natice.noaa.gov.**



COLOR CODES BASED ON TOTAL CONCENTRATION

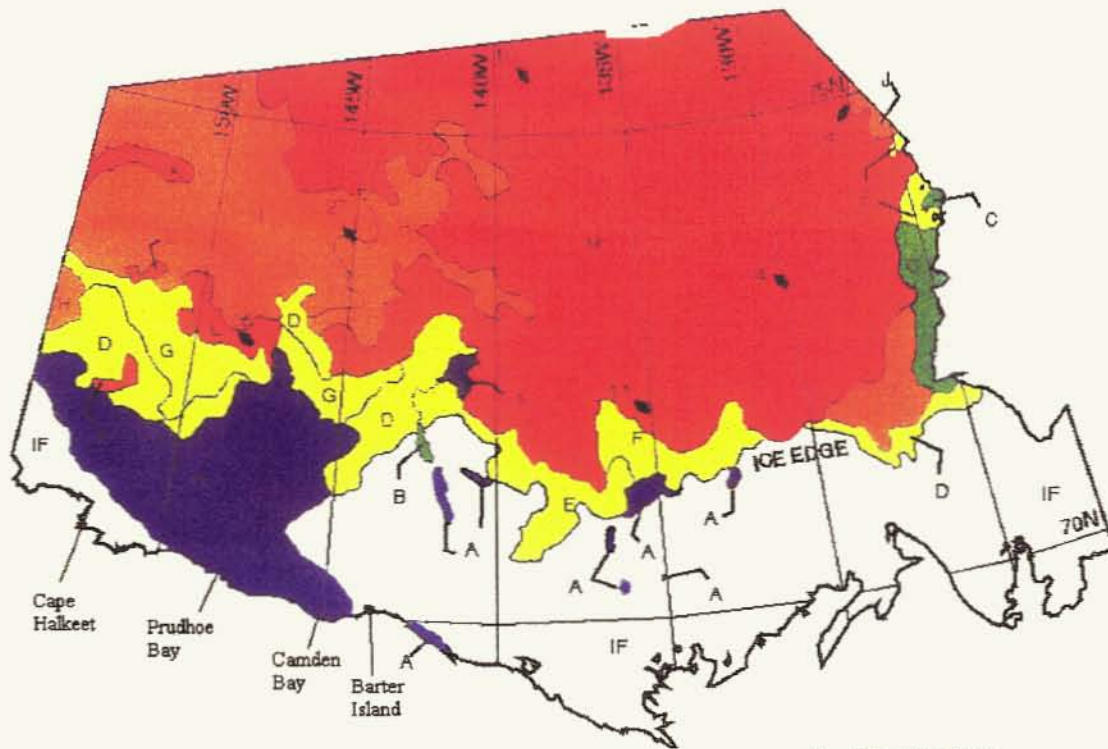
	LESS THAN 1 TENTH
	1-3 TENTHS
	4-6 TENTHS
	7-8 TENTHS
	9-10 TENTHS
	FAST ICE (TEN TENTHS)

**ICE ANALYSIS
BEAUFORT
NATIONAL/NAVAL ICE CENTER
ANALYSIS WEEK: 17-21 SEP 2001**

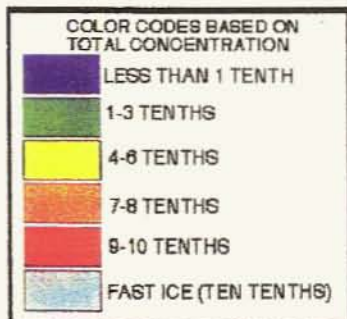
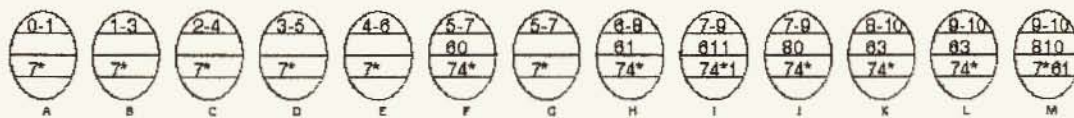
DATA SOURCES DATE
RADARSAT 5-17 SEP

ANALYST: CHRISTOPHER SZORC
UNCLASSIFIED

**Appendix III. Ice map for September 26, 2001. Map taken from
www.natice.noaa.gov.**



IF = SEA ICE FREE

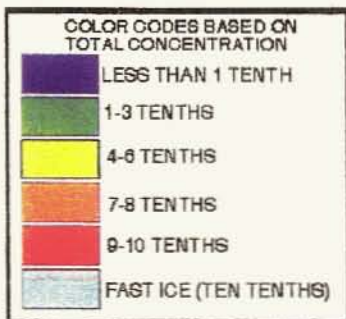
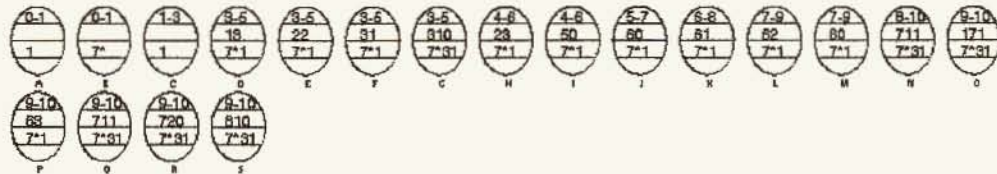
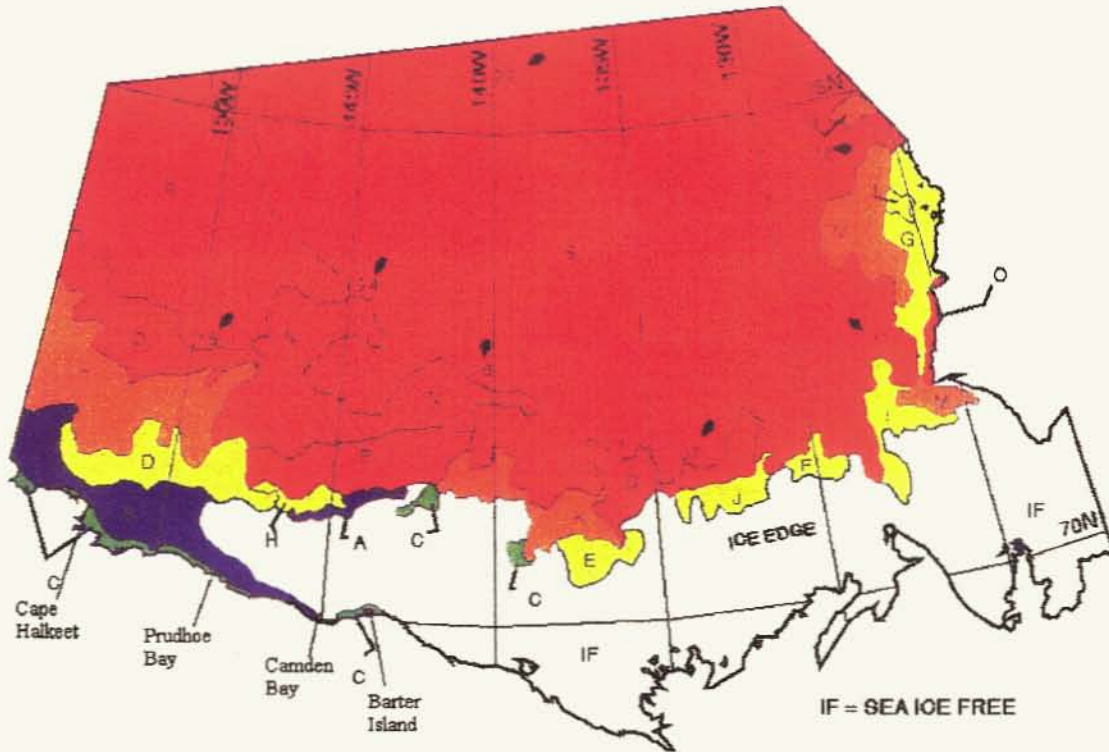


**ICE ANALYSIS
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ANALYSIS WEEK: 24-28 SEP 2001**

DATA SOURCES: RADARSAT DATE: 22-24 SEP

ANALYST: CHRISTOPHER SZORC
UNCLASSIFIED

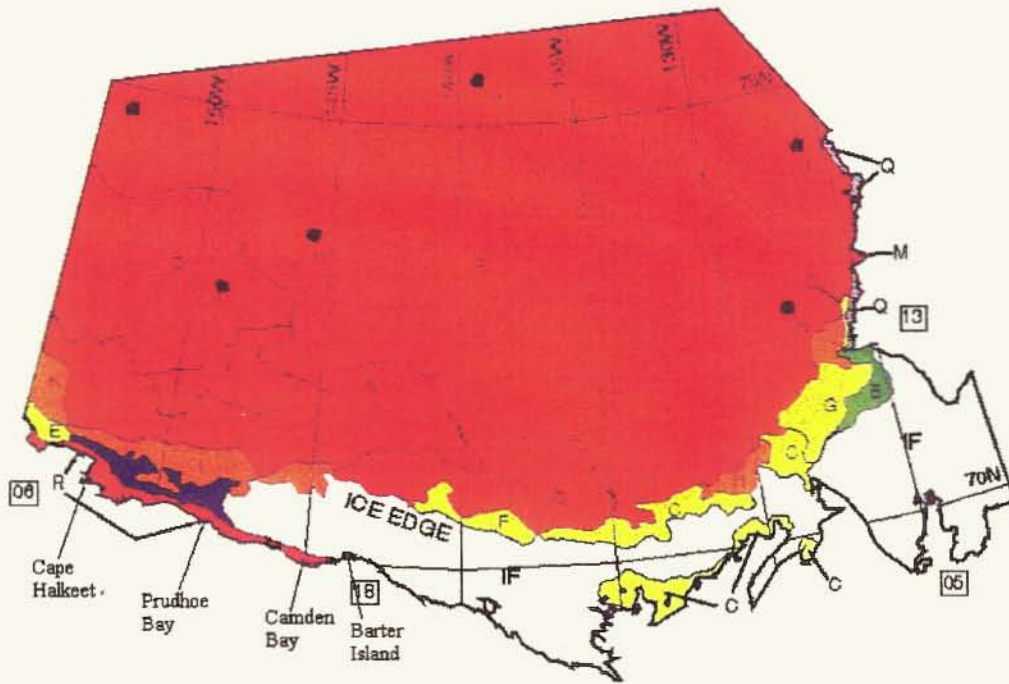
Appendix IV. Ice map for October 3, 2001. Map taken from www.natice.noaa.gov.



ICE ANALYSIS
BEAUFORT
NATIONAL/NAVAL ICE CENTER
 ANALYSIS WEEK: 01-05 OCT 2001
 DATA SOURCES DATE
 RADARSAT 29 SEP - 1 OCT

ANALYST: CHRISTOPHER SZORC
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Appendix V. Ice map for October 10, 2001. Map taken from www.natice.noaa.gov.



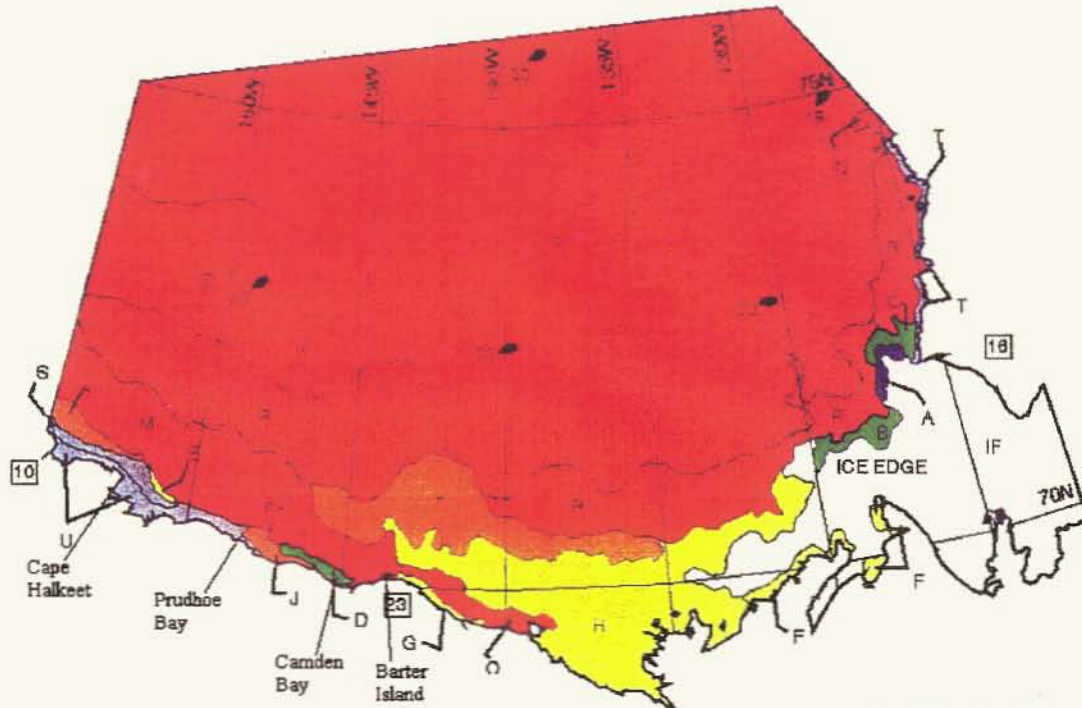
IF = SEA ICE FREE

0-1 7*1 A	2-4 21 31 B	3-5 22 31 C	3-5 31 7*3 D	5-7 132 7*31 E	5-7 42 31 F	5-7 510 7*31 G	6-8 331 7*31 H	7-9 134 7*31 I	7-9 521 7*31 J	7-9 620 7*31 K	8-10 720 7*31 L
9-10 171 7*31 M	9-10 630 7*31 N	9-10 720 7*31 O	9-10 810 7*31 P	10 19 7*3 8 Q	10 56 31 R						

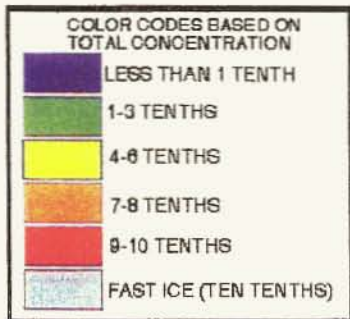
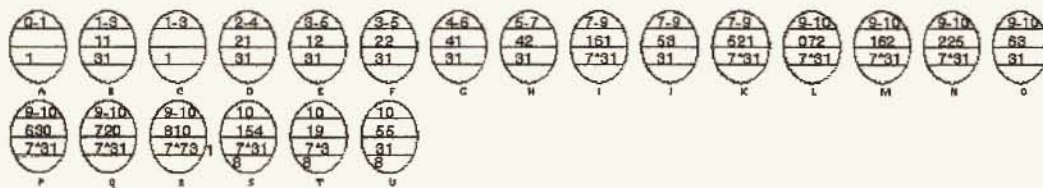
COLOR CODES BASED ON TOTAL CONCENTRATION	
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	FAST ICE (TEN TENTHS)

ICE ANALYSIS BEAUFORT	
NATIONAL/NAVAL ICE CENTER	
ANALYSIS WEEK: 08-12 OCT 2001	
DATA SOURCES	DATE
RADARSAT	6-9 OCT
ESTIMATED	9 OCT
ANALYST: CHRISTOPHER SZORC	
UNCLASSIFIED	

Appendix VI. Ice map for October 17, 2001. Map taken from www.natice.noaa.gov.



IF = SEA ICE FREE



**ICE ANALYSIS
BEAUFORT**
NATIONAL/NAVAL ICE CENTER
 ANALYSIS WEEK: 15-19 OCT 2001
 DATA SOURCES DATE
 RADARSAT 14-16 OCT
 ANALYST: CHRISTOPHER SZORC
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