Prepared by the North American Ice Service

A collaboration of the Canadian Ice Service and the National/Naval Ice Center

02 June 2006

Seasonal Outlook

For North American Arctic Waters

Summer 2006

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Ice Conditions in Northern American Arctic Waters

Introduction

This outlook is produced by the North American Ice Service, which is a joint co-operation of the Canadian Ice Service and the U.S. National Ice Center.

It will give an indication of the expected pattern of breakup and clearing of ice in the North American Arctic waters. It will identify areas and timings when breakup and clearing will likely occur with emphasis on those areas where there is ship navigation and other marine activities.

The outlook has been developed through the analysis of the meteorological and ice growth regimes. Thorough analyses have been done of extensive Radarsat imagery collected during the past winter and spring. NOAA, MODIS and ERS-1 satellite imagery were also used for the evaluation of the ice cover. All of this ice information was used in the preparation of regional ice analyses for the Arctic and Hudson Bay.

The results of the meteorological and ice analyses are then compared with previous year's ice conditions and, in conjunction with the forecast for wind and temperatures for June, are applied to evaluate the breakup and the clearing of ice in the areas of interest. The Canadian Meteorological Centre provides the temperature regime for the period from the end of June to the end of August. Any variations from these forecast parameters have an impact on the forecast breakup pattern and timing.

Tables are included showing the forecast breakup or clearing dates along with median dates and last year's dates for each region. During the summer these events will be updated by a bimonthly issue of a 30-day forecast to enable planning of shipping or other activities according to changing trends. These forecasts will also include a prediction of the beginning of the freeze-up process throughout the regions.

Daily radio broadcasts of ice charts and forecasts will be made to support ongoing operations in the various areas where ice affects marine activities. Appendix C contains links to these broadcast schedules as well as Aerial Reconnaissance Radio Facsimile Broadcast and NOAA Alaskan Marine Radio frequencies. Appendix A provides a link to the key to ice symbols showing the principle features of the International Ice symbols used on the ice charts, while Appendix B defines the ice terminology which is most frequently used.

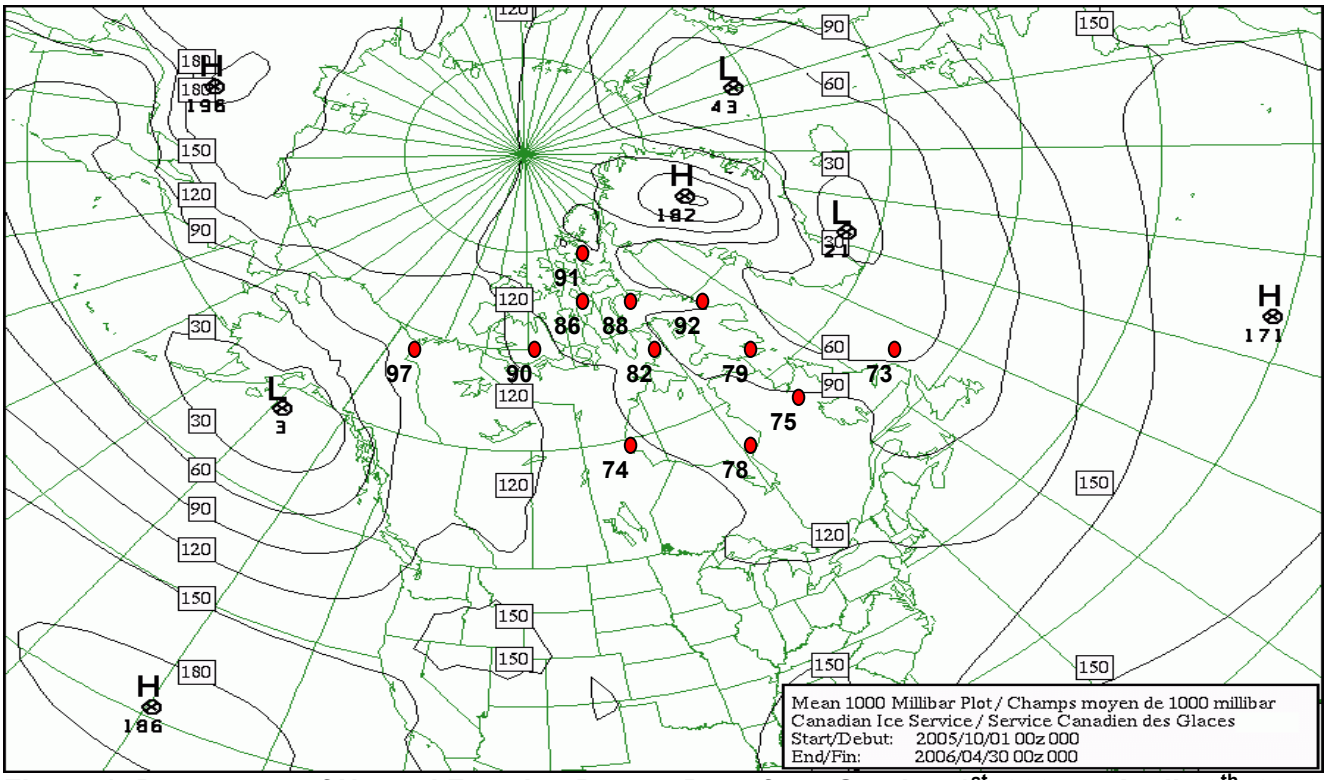

Figure 1: Percentage of Normal Freezing Degree Days from October 1st, 2005 to April 30th, 2006

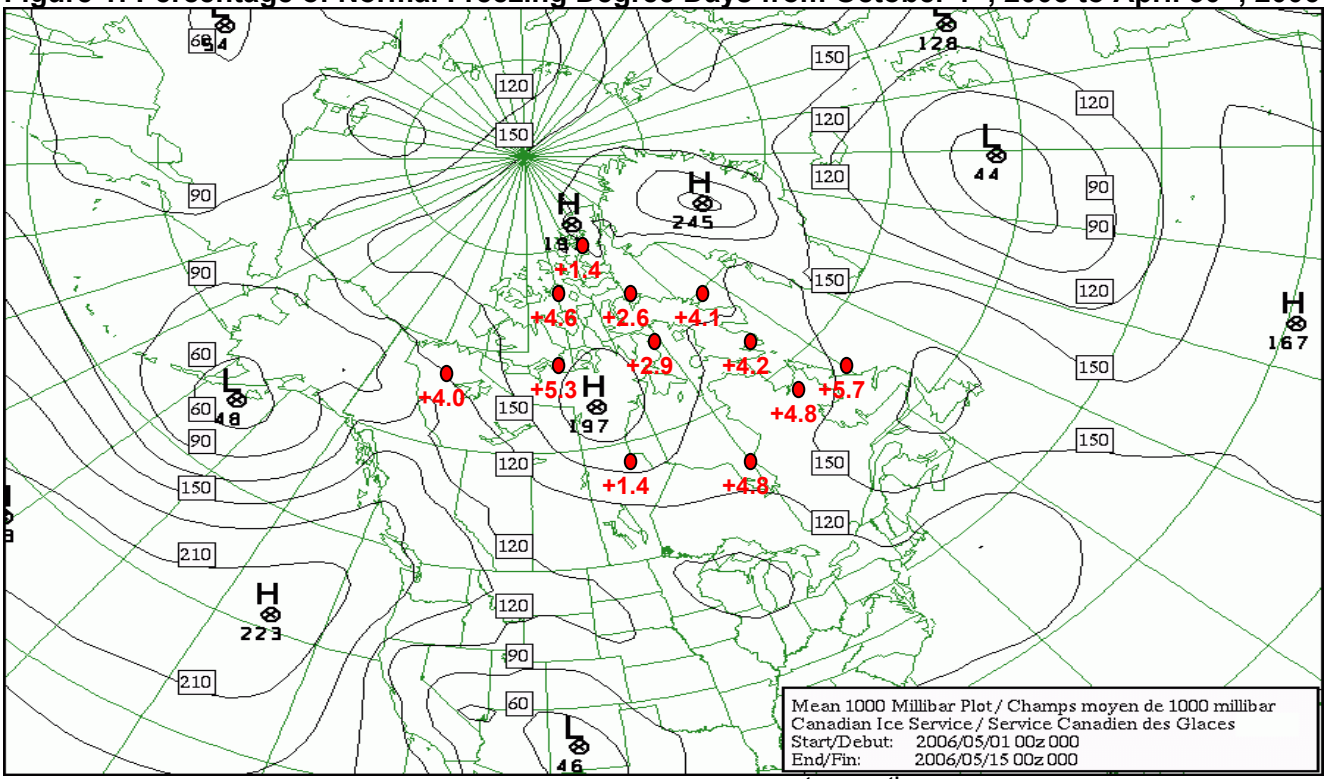

Figure 2: Departure from Normal Temperatures for May 1st to 15th, 2006

General Winter Conditions and Brief Outlook

The mean 1000 mb pressure pattern from October 01st, 2005 to April 30th, 2006 is represented in Figure 1. It indicated that a low pressure system was located near southeastern Greenland with a trough extending northwestward into northern Baffin Bay. As a result, a light to moderate northerly flow prevailed along the Labrador Coast, Davis Strait and in Baffin Bay. A predominant low pressure system over the Gulf of Alaska maintained a light to moderate easterly to northeasterly flow over the Beaufort Sea and along the Alaskan Coast. For the whole winter season, a light and variable flow dominated over the Central Arctic, Hudson Bay and Hudson Strait.

During the winter season from October 2005 to April 2006, averaged air temperatures were above normal values over the whole Arctic. Temperatures were 4C above normal over Hudson Bay and Hudson Strait, while they were 2 to 3C above normal over the Eastern and Western Arctic regions and along the Labrador Coast. With temperatures being above normal values, freezing degree day accumulation were in general 3 to 12 percent below normal over most of the Arctic. However freezing degree day accumulation were generally lower over Hudson Bay, Hudson Strait and along the Labrador coast with values ranging from 26 percent below normal in Nain and Churchill to 21 percent below normal in Iqaluit. These values are indicated in Figure 1.

The mean 1000 mb pressure pattern for the first half of May is shown in Figure 2. It indicated that the low pressure system over southeastern Greenland has moved over the Atlantic Ocean. An area of high pressure has developed over the central Arctic with a weak ridge of high pressure stretching northward to Resolute. A low pressure system has redeveloped over the Aleutian Islands. A light to moderate northerly flow formed over Hudson Bay, Hudson Strait and Foxe Basin. Over the Beaufort Sea and along the Alaskan Coast, a light to moderate easterly to northeasterly flow dominated over the area. A light and variable flow dominated over the rest of the Arctic and along the Labrador Coast. During the first half of May, temperatures were in general 4 to 5C over most of the Arctic except 1 to 2C over the High Arctic and the western portion of Hudson Bay.

Near to above normal temperatures are generally forecast for the whole Arctic area for the first half of June except for much above normal temperatures over Hudson Bay and its approaches. For the rest of the summer season, near to above normal temperatures are generally forecast over most areas. As a result, breakup events will occur much earlier than normal over Hudson Bay and its approaches, over northern Baffin Bay, Foxe Basin and eastern Barrow Strait. With the amount of old ice being significantly higher than normal, later than normal breakup events will occur in Queen Maud Gulf and west of Prudhoe Bay.

Hudson Bay and Approaches

Freeze-up and Winter Ice Regime

Temperatures were above normal over most of the area from October through the end of January. The exception was Davis Strait where temperatures were near normal in January. Freeze-up was delayed by two to three weeks over all areas. As a result, by the end of January, the calculated and measured ice thicknesses were less than normal.

New ice started to form along the shores of Southampton Island, in Roes Welcome Sound and along the northwestern shore of Hudson Bay during the second week in November. By the end of November, new and grey ice lay along the western and southern shores of Hudson Bay, James Bay and southern Ungava Bay. There was mostly grey ice over northwestern Hudson Bay, Foxe Channel and off Southampton Island to west of Nottingham Island. The main ice pack in Davis Strait lay north of Cumberland Sound with patchy new ice along the southern Baffin Island Coast. Freeze-up was three weeks later than normal.

Hudson Bay and Hudson Strait became completely ice covered with grey to thin first year ice just before Christmas Day. At this time the main ice edge lay near Cape Chidley with new ice along the Labrador Coast, grey ice in Frobisher Bay and Cumberland Sound and greywhite to thin first year offshore. The trace of old ice lay near Resolution Island.

By the beginning of February, most of Hudson Bay and Hudson Strait was covered with thin to medium first year ice, the Labrador Coast and northwestern Hudson Bay with greywhite to thin first year ice and Davis Strait with thin first year ice. The ice extent was near normal. The trace of old ice lay 100 miles north of Nain at this time.

With much above normal temperatures during the months of March and April, the ice has slowly thickened during the period but ice thicknesses remained below normal values. At the end of March, thick first year ice was covering most of Hudson Bay and Hudson Strait. Along the Labrador Coast, medium to thick first year with a trace of old ice prevailed along the coast with the ice extent closer to the shore than normal. During the month of April, thinner than normal ice conditions persisted over most areas. However the ice extent along the Labrador Coast returned to near normal conditions. In early May, wide leads of new and grey ice started to develop along the northern side of Hudson Strait, the northwestern shore of Hudson Bay and the northern section of Frobisher Bay. Little change in the ice conditions has been observed in other areas.

During the first half of May, mean air temperatures were in general 4 to 6C above normal over most regions except 1 to 2C above normal over northern Hudson Bay. At mid-May, the ice along the Labrador coast has retreated northward to lie north of Groswater Bay. Much looser than normal ice conditions were present along the Labrador Coast, northern and western Hudson Strait, northern Hudson Bay and eastern Frobisher Bay. Large areas of open water have developed along parts of the eastern shore of Hudson Bay, in southern James Bay and southern Ungava Bay.

Observed Ice Conditions

The regional ice chart in figure 3 was based on the analysis of Radarsat and NOAA/MODIS imageries from around May 15th, 2006. This chart reveals some of the following features:

a) Large leads of open water over northwestern Hudson Strait, along the southern shore of Southampton Island and parts of the eastern shore of Hudson Bay.

b) Ice edge in Davis Strait was closer to the shore than normal, while it is near normal along the Labrador coast.

c) Much looser than normal ice conditions along the Labrador Coast, over western Hudson Strait and the extreme northern portion of Hudson Bay.

d) Ice much thinner than normal over the entire area with less than normal fast ice near Belcher Islands.

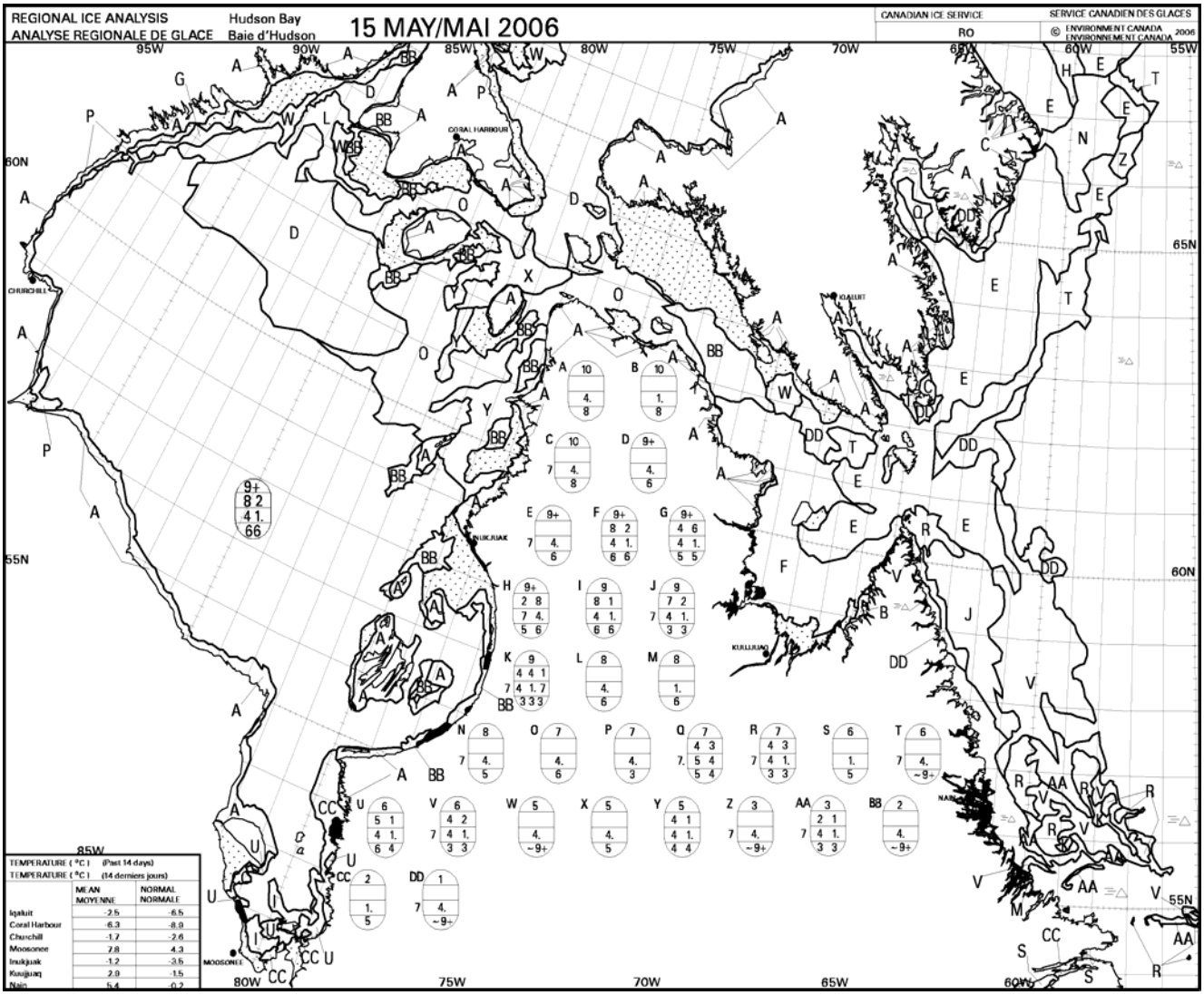

Figure 3: Hudson Bay and Approaches Regional chart for May 15th, 2006

Outlook for Hudson Bay and Approaches

During the first two weeks of June, a series of low pressure systems will move from northern Hudson Bay to southern Davis Strait. This will bring periods of moderate to strong southerly winds ahead of these low pressure systems and moderate westerly winds in the wake of these lows. As a result, mean air temperatures will be in general above normal values during the first half of June. For the rest of the summer, temperatures are expected to remain above normal values over most locations. The breakup has already started well ahead of normal especially over northern Hudson Bay, western Hudson Strait and along the Labrador Coast. Breakup events will be much earlier than normal over most regions. Clearing along the Labrador Coast to Cape Chidley will occur during the second week of July which will be 2 weeks ahead of normal. During the same time, an open drift or less route will develop across southern Davis Strait into Frobisher Bay which will be a week earlier than normal. Near mid-July, an open water route to Churchill will form across northern Hudson Bay, while the ice will melt completely in James Bay. Both of these events will be 7 to 10 days earlier than normal. The ice pack will retreat north of Frobisher Bay at the end of the third week of July, while Frobisher Bay will be clear of ice. Also, the ice will melt completely in Ungava Bay. Clearing events in both Frobisher and Ungava Bays will be 14 to 17 days earlier than normal. Clearing will occur over Hudson Strait at the end of July and over Hudson Bay during the first week of August. In both cases, these events will be 7 to 10 days earlier than normal.

Table 1: Hudson Bay and Approaches - Break-up Outlook Dates

	2005	Median	Outlook for 2006
Labrador Coast to Cape Chidley			
- Clearing	10 Jul	29 Jul	11-13 Jul
Frobisher Bay			
- Open drift or less	11 Jul	20 Jul	11-13 Jul
- Clearing	18 Jul	09 Aug	21-23 Jul
Ungava Bay			
- Clearing	26 Jul	04 Aug	21-23 Jul
Hudson Strait			
- Clearing	05 Aug	08 Aug	29-31 Jul
Open water route to Churchill	16 Jul	21 Jul	15-17 Jul
Hudson Bay			
- Clearing	03 Aug	17 Aug	03-05 Aug
James Bay			
- Clearing	05 Jul	30 Jul	16-18 Jul

Eastern Arctic

Freeze-up and Winter Ice Regime

Above normal temperatures were recorded over all areas during the months of October and November. Freeze-up started about a week later than normal. Temperatures dropped in December to near normal over the central Arctic but remained above normal elsewhere. In January near normal temperatures were reported over Baffin Bay and Foxe Basin while the remainder of the Eastern Arctic was above normal. By the end of January, near normal ice conditions were reported over the entire area. Calculated and measured ice thicknesses were slightly less than normal.

By the end of the summer of 2005, the old ice distribution was near normal. Around mid-September, new ice started forming in Eureka Sound, Norwegian Bay, Barrow Strait and a week later in Wellington Channel and Prince Regent Inlet. By early October this ice had thickened to mostly grey ice. By the end of October this grey ice had thickened to mostly thin first year with grey ice over northwestern Baffin Bay and new ice over northern Foxe Basin. Freeze-up was getting under way.

At mid-November, Eureka Sound, Norwegian Bay, northeastern Wellington Channel had consolidated. By the end of November, Admiralty Inlet, Pelly Bay, southern portions of Committee Bay and portions of Foxe Basin consolidated. At this time the ice growth in Baffin Bay extended southward along the eastern side of Baffin Island to the entrance of Cumberland Sound and to 74N along the western Greenland Coast. Freeze-up in Baffin Bay was about 10 days later than normal. There was patchy two tenths of old ice in Central Baffin Bay. Foxe Basin was covered with greywhite to thin first year ice.

By the end of December, Barrow Strait west of Resolute Bay had become consolidated. The bergy water lead along the west Greenland Coast extended north of Disco Island to 73N. By the beginning of February, the ice extent was near normal. Barrow Strait had consolidated with Lancaster Sound and Prince Regent Inlet remaining mobile. Robeson Channel to Kane Basin remained mobile allowing old ice to continue flowing from the north into Baffin Bay. There was a long line of 2 tenths of old ice in the main ice pack in Baffin Bay. The bergy water along the west Greenland Coast lay south of Disco Island. The ice extent was near normal but the calculated ice thicknesses remained less than normal.

Above to much above normal temperatures were recorded over the entire Eastern Arctic region during the month of March. In April, temperatures remained above normal values but dropped to near normal over Foxe Basin and Baffin Bay. Little change in the ice conditions was observed over most regions during the period. However the ice bridge formed over Kane Basin in early March and persisted into April. A large amount of old ice froze in the ice bridge over the southern side of Kane Basin. Leads of thinner ice conditions developed along the western shore of Foxe Basin and south of the ice bridge in Kane Basin during the month of April. The ice extent over Davis Strait and southern Baffin Bay was farther west than normal, while the lead of bergy water remained south of Disco Island.

During the first half of May, a light and variable flow persisted over the Eastern Arctic except for a light northerly flow over Foxe Basin. As a result, mean air temperatures were 2 to 4C above normals over all locations. At mid-May, very little change was observed over the entire area. However much looser than normal ice conditions was present in Cumberland Sound and near Cape Dyer. Areas of very loose ice or bergy water have expanded considerably south of the Kane Basin and extended southward into the eastern entrance to Lancaster Sound. Very loose ice conditions are also present in Lancaster Sound and northwestern Foxe Basin. Lead of bergy water lay south of 70N which is near normal for this time of year.

Observed Ice Conditions

The regional ice chart in figure 4 was based on the analysis of Radarsat and NOAA/MODIS imageries from around May 15th, 2006. This chart reveals some of the following features:

a) The bergy water lead along the west Greenland Coast was near normal.

b) The fast ice edge in eastern Barrow Strait was located near Prince Leopold Island which was normal.

c) Much looser than normal ice conditions prevailed south of the ice bridge from Kane Basin to north of Bylot Island, in Lancaster Sound, in northwestern Foxe Basin and in Cumberland Sound.

d) Less than normal old ice concentrations were observed near Pelly Bay and in Norwegian Bay.

e) The eastern extent of the sea ice was further west than normal in northern Davis Strait and in southern Baffin Bay.

f) Near normal old ice concentrations were present in western Baffin Bay and in northern Davis Strait.

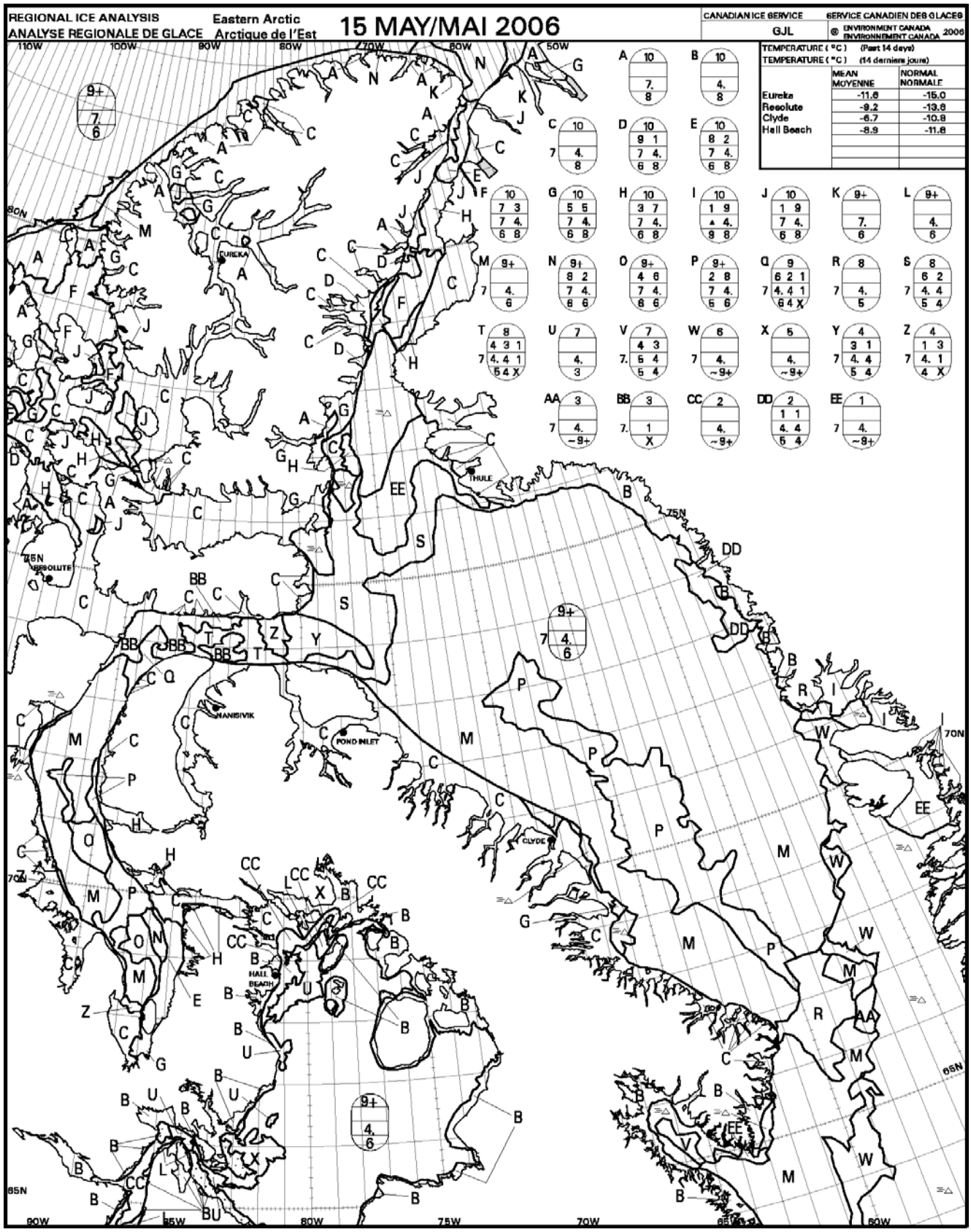

Figure 4: Eastern Arctic Regional chart for May 15th, 2006

Outlook for the Eastern Arctic
Baffin/Davis Area and Foxe Basin

During the first two weeks of June, a series of low pressure systems will move from south of Foxe Basin to southern Davis Strait. This will bring periods of moderate to strong northeasterly winds across Foxe Basin, while a light to moderate southeasterly flow will prevail over northern Davis Strait and Baffin Bay. As lows are moving towards southern Greenland, a light to moderate northwesterly flow will develop over Davis Strait and Baffin Bay. As a result, mean air temperatures will be above normal values over most locations. Assuming above normal temperatures for the rest of the summer season, breakup events will be near normal except much earlier than normal over northern Baffin Bay and Foxe Basin. The ice pack in northern Baffin Bay is showing signs of loosening up just south of Melville Bay. This will help in creating the open drift or less route across northern Baffin Bay late in the first week of July. A week later, a bergy water route will develop across northern Baffin Bay to Thule. These events will be occurring 10 to 14 days earlier than normal. An open drift or less route to Cape Dyer will develop during the fourth week of July which will be near normal. With the ice melting at a normal pace, an open drift or less route to Home Bay will form normally at the end of the first week of August. An open water route to Hall Beach will develop near mid-August, while the ice will melt completely in Davis Strait at the end of the month. Due to the normal presence of old ice in Baffin Bay, clearing will occur in Baffin Bay at the end of the first week of September. Just before mid-September, the ice will melt in Foxe Basin which is 7 to 10 days earlier than normal.

Parry Channel

During the first two weeks of June, a series of low pressure systems will move across the High Arctic bringing periods of light to moderate westerly winds over the Central Arctic. As a result, near to above normal temperatures will prevail over most areas. Assuming near to above normal temperatures for the rest of the summer, breakup events will be near normal except earlier than normal over eastern Barrow Strait. Because the ice never froze over Lancaster Sound, large areas of very loose ice conditions formed and quickly expanded to the eastern entrance during the last two weeks of May. The consolidated ice in eastern Barrow Strait will fracture during the first week of July which is a week earlier than normal. During the third week of July, the ice will start to fracture over the northern half of Admiralty Inlet. A week later, fracture will occur over Pond Inlet, Wellington Channel and the western side of Barrow Strait. The ice will continue to fracture over McDougall Sound during the second week of August, while mostly bergy water will develop over northern Admiralty Inlet. A week later, the ice will clear over Pond Inlet.

High Arctic

During the first two weeks of June, a series of low pressure systems will move across the area bringing periods of light to moderate westerly winds over the High Arctic. As a result, near to above normal temperatures will prevail over most areas. Assuming near to above normal temperatures for the rest of the summer, breakup events will be near normal except much earlier than normal over Kane Basin. Due to the late formation of an ice bridge and above normal concentrations of old ice, the consolidated ice in Kane Basin will fracture over the western side just before mid-July which is 10 days earlier than normal. During the last week of July, fracture will occur over Jones Sound. At the end of July, the ice will start to fracture over the southern portion of Norwegian Bay and in Eureka Sound. Northern Norwegian Bay is forecast to fracture during the second of August. Near mid-August, mostly bergy water conditions will develop over Eureka Sound.

Table 2: Eastern Arctic - Break-up Outlook Dates

	2005	Median	Outlook for 2006
Route across Northern Baffin Bay			
- Open drift or less	14 Jul	19 Jul	08-10 Jul
- Bergy water route	23 Jul	29 Jul	15-17 Jul
Baffin Bay			
- Clearing	30 Aug	10 Sep	08-10 Sep
Davis Strait			
- Clearing	20 Aug	02 Sep	31 Aug-02 Sep
Home Bay			
- Open drift or less	03 Aug	09 Aug	04-06 Aug
Cape Dyer			
- Open drift or less	17 Jul	28 Jul	23-25 Jul
Open water route			
to Hall Beach	21 Aug	05 Sep	15-17 Aug
Foxe Basin			
- Clearing	29 Sep	21 Sep	12-14 Sep
Pond Inlet			
- Fracture[1]	23 Jul	25 Jul	26-28 Jul
- Clearing	12 Aug	12 Aug	14-16 Aug
Admiralty Inlet northern half			
- Fracture[1]	21 Jul	21 Jul	19-21 Jul
- Mostly bergy water	03 Aug	11 Aug	09-11 Aug
Lancaster Sound			
- Fracture[1]	Not consolidated	08 Jul	Not consolidated
Barrow Strait to Resolute			
- Fracture/eastern[1]	05 Jul	11 Jul	04-06 Jul
- Fracture/western[1]	25 Jul	25 Jul	26-28 Jul
Wellington Channel			
- Fracture[1]	22 Jul	28 Jul	26-28 Jul
McDougall Sound			
- Fracture[1]	29 Jul	05 Aug	08-10 Aug
Kane Basin			
- Fracture[1]	25 Jul	24 Jul	12-14 Jul
Jones Sound			
- Fracture[1]	22 Jul	01 Aug	27-29 Jul
Norwegian Bay			
- Fracture/southern[1]	28 Jul	01 Aug	28-30 Jul
- Fracture/northern[1]	29 Jul	09 Aug	09-11 Aug
Eureka Sound			
- Fracture[1]	29 Jul	03 Aug	30 Jul-01 Aug
- Mostly bergy water	Never	18 Aug	15-17 Aug
Pacer Goose route to Thule			
-Open drift or less	14 Jul	19 Jul	08-10 Jul
-Bergy water route	23 Jul	29 Jul	15-17 Jul

[1] Fracture indicates complete breakage of consolidated ice.

Western Arctic

Freeze-up and Winter Ice Regime

Temperatures were above normal in October, near to above normal in November and above normal in December. A northwest flow brought colder temperatures to the Beaufort Sea in January. At this time, temperatures were slightly below normal over the Beaufort Sea and above normal in the Amundsen Gulf eastwards. By the end of January, the ice extent was near normal. The old ice edge was near normal off the Tuktoyaktuk Peninsula and Banks Island but slightly closer than normal in the Beaufort Sea with an intrusion of old ice just along the Alaskan Coast just west of Point Barrow. The measured ice thicknesses were less than normal at Inuvik and near normal at Cambridge Bay.

At the beginning of freeze-up, the old ice extent was slightly greater than normal over Larsen Sound. Some of this old ice flowed from Larsen Sound through Victoria Strait into northwestern Queen Maud Gulf. Elsewhere, there was open water from St. Roch Basin through Dease Strait into the Amundsen Gulf and along the Alaskan Coast. The main pack of old ice was near normal along the Alaskan Coast. New ice growth started in mid-September over Larsen and Peel Sounds which was near normal. By mid-October, there was rapid ice growth and expansion with new and grey ice along the Alaskan Coast to Point Barrow, in Mackenzie Bay eastward to Queen Maud Gulf to St. Roch Basin. Peel Sound had thickened to greywhite and thin first year with more old ice than normal in Larsen Sound and central Queen Maud Gulf. One week later, portions of the Tuktoyaktuk Peninsula and Queen Maud Gulf had become consolidated. Ice had thickened in the waterways to grey and greywhite. By the end of October, mostly grey ice covered much of Beaufort Sea south of the main old ice pack. The old ice pack was well offshore.

At mid-November, Peel Sound had consolidated. A week later, St. Roch Basin through the Queen Maud Gulf to Coronation Gulf became consolidated. By the end of November, the inland waters of the Western Arctic from Viscount Melville Sound through Larsen Sound to the Coronation Gulf were consolidated. Ice had thickened to thin first year over the Amundsen Gulf and Beaufort Sea with the old ice edge about 50 miles off Banks Island and 70 miles north of the Tuktoyaktuk Peninsula and 30 miles off Point Barrow. By the end of December, Amundsen Gulf and along the Alaskan Coast to the old ice edge was covered with thin and medium first year with a trace of old ice. The waterways was completely consolidated with medium first year ice except for embedded seven tenths of old ice in the central portion of the Queen Maud Gulf.

During the month of January, the fast ice edge along the Alaskan Coast and Amundsen Gulf thickened to thick first year with a trace of old ice. There was a mean northwesterly flow over the Beaufort Sea during this period causing the main pack of old ice to move slightly eastwards and southwards over the Beaufort Sea but near the coast around Point Barrow. By the end of January, the old ice edge lay 50 miles west of Banks Island, 100 miles north of the Tuktoyaktuk Peninsula but along the coast near Point Barrow southwestwards. It is unusual to have an old ice concentration of five tenths just west of Point Barrow.

Above normal temperatures were observed over most areas for the month of March except for below normal temperatures over the Beaufort Sea and along the Alaskan Coast. Temperatures slightly decrease during the month of April where near to slightly above normal temperatures were recorded over most locations. However temperatures remained below normal values over the Beaufort Sea and along the Alaskan Coast.

During March and April, little change has occurred in the ice distribution over the Western Arctic except for a slight increase in the amount of old ice near Point Barrow. The ice was still mobile in the Amundsen Gulf area during the period but consolidated for a brief period during the first half of April. Mostly thick first year with a trace of old ice was present just off the fast ice along the Tuktoyaktuk Peninsula and off the Alaskan Coast east of Prudhoe Bay. At the end of April, the old ice edge was located 60 miles west of Banks Island, 110 miles north of Tuktoyaktuk Peninsula and near Point Barrow.

During the first half of May, a weak low pressure system over the Aleutian Islands brought a light to moderate easterly to northeasterly flow over the Beaufort Sea. A light and variable flow prevailed over the rest of the Western Arctic. The first half of May was in general milder than normal except near normal over the Beaufort Sea area. Consequently, little change was observed in the ice conditions for the first two weeks of May. However areas of very loose ice started to form over the extreme eastern portion of Amundsen Gulf and along Tuktoyaktuk Peninsula. The old ice pack was still lying much further south than normal west of Herschel Island and near Point Barrow. Greater than normal old ice concentrations were still present west of Point Barrow to north of Bering Strait.

Observed Ice Conditions

The regional ice charts in figures 5, 6 and 7 were based on the analysis of Radarsat and NOAA/MODIS imageries from around May 22nd, 2006. These charts reveal some of the following features:

a) More old ice than normal in Victoria Strait southward to western Queen Maud Gulf.

b) Old ice pack along the Alaskan Coast closer to the shore than normal west of Herschel Island.

c) Old ice pack farther away from the shore than normal east of Herschel Island.

d) High concentration of old ice between Point Barrow and Point Hope.

e) Small but unusual amounts of old ice in the Bering Strait.

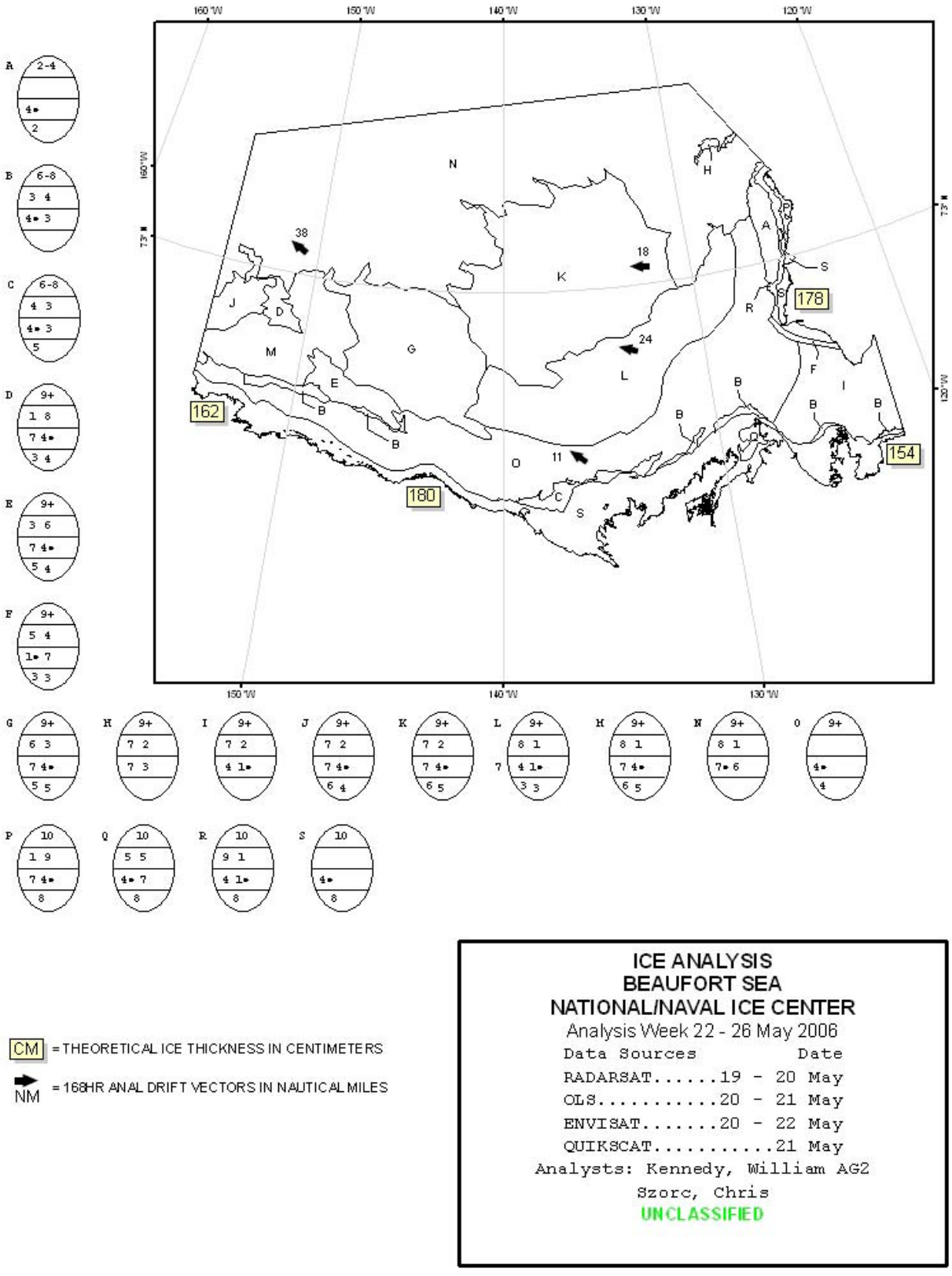

Figure 5: Beaufort Sea Regional chart for May 22nd, 2006

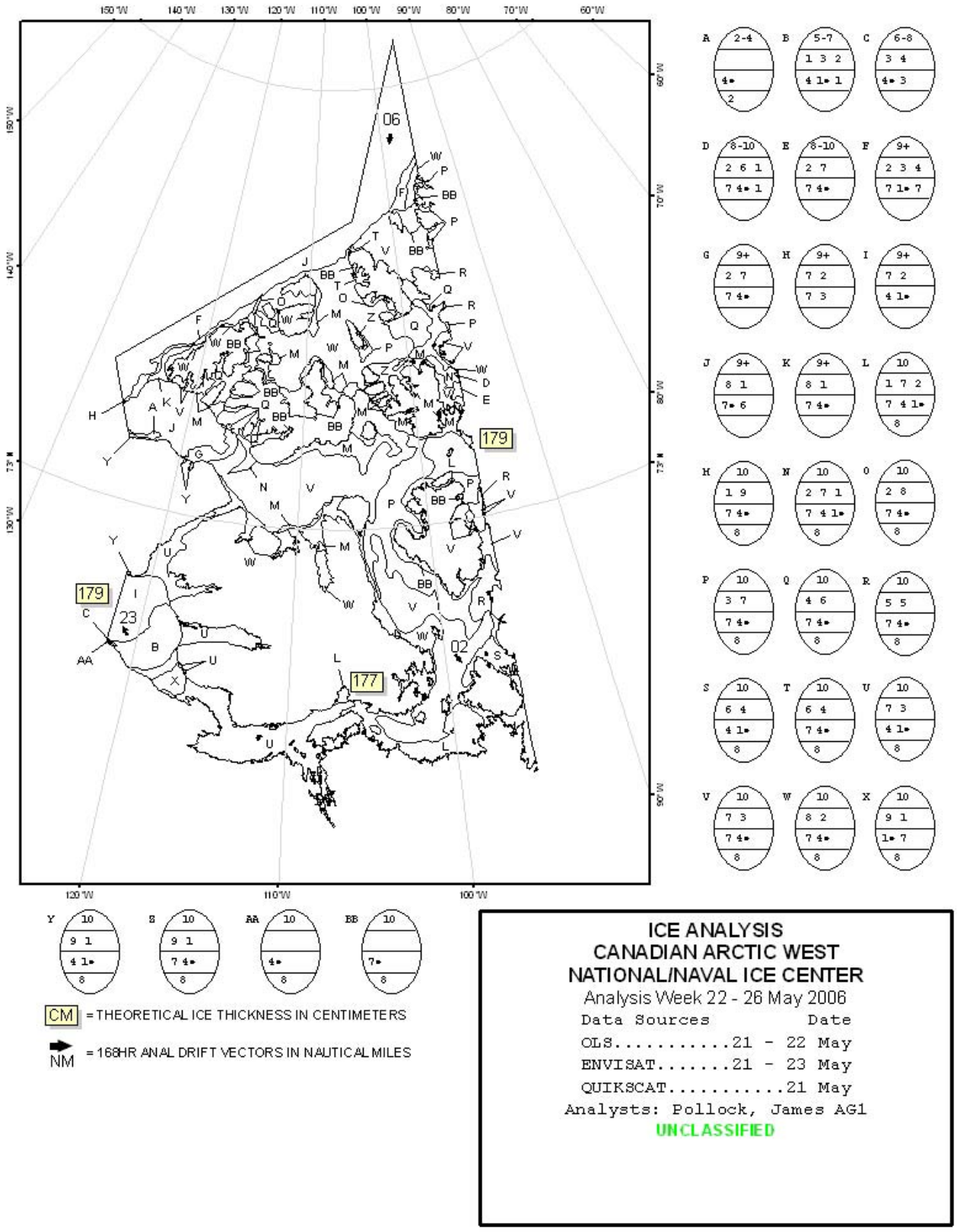

Figure 6: Canadian Archipelago Regional chart for May 22nd, 2006

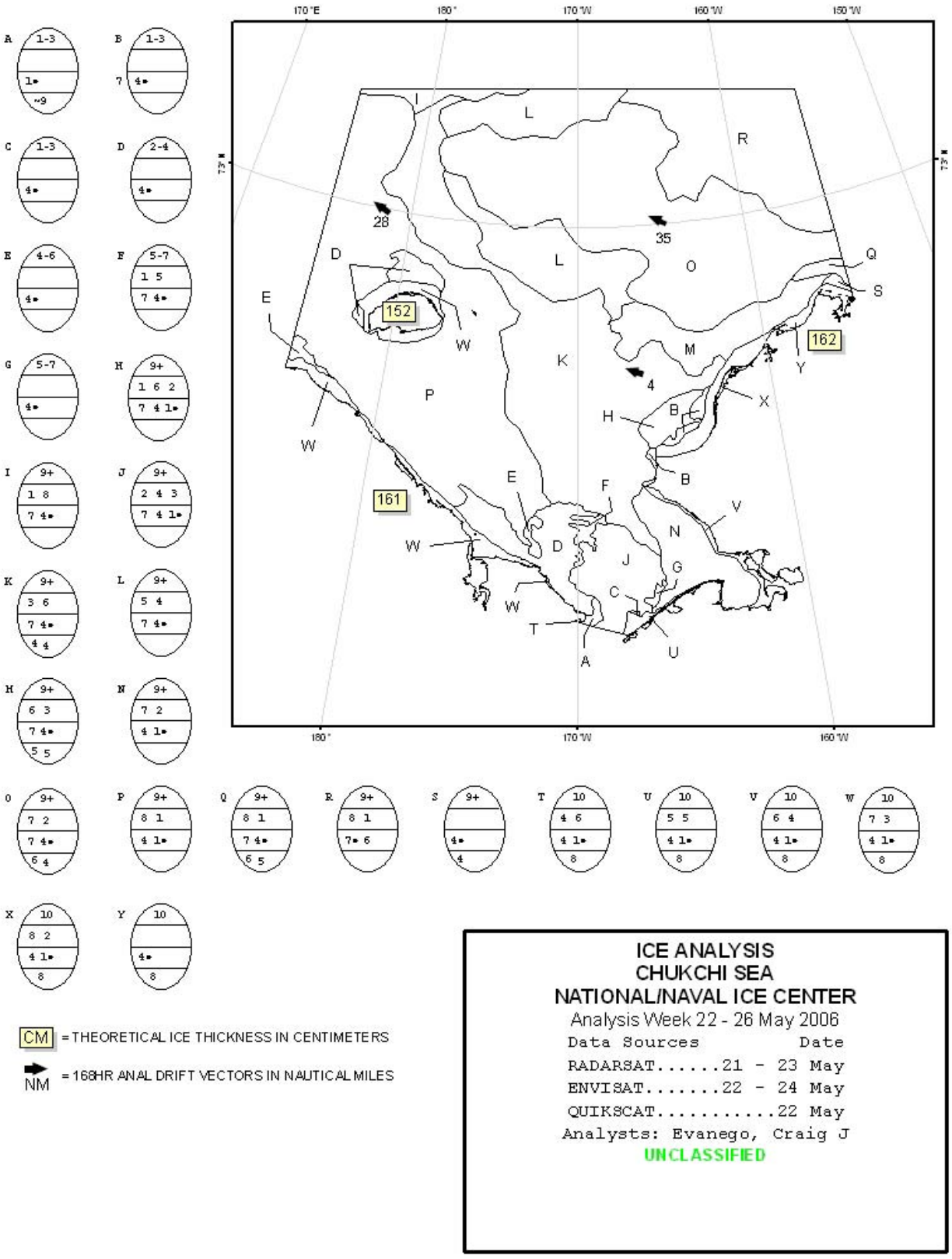

Figure 7: Chukchi Sea Regional chart for May 22nd, 2006

Outlook for the Western Arctic

With generally near normal temperatures during the past winter the fracturing and clearing events in the western Arctic area should be near their normal dates, east of Prudhoe Bay.

Clearing events should occur near their normal dates over the Beaufort Sea east of Barter Island. Mackenzie Delta will clear during the third week of June and Kugmallit Bay a week later. The fast ice along the Tuktoyaktuk Peninsula will begin to fracture during the first week of July. The open water route from Mackenzie Bay to Cape Bathurst will develop during the final week of July. Coronation Gulf will fracture near mid-July and clear by the end of July which is near normal. Both Queen Maud Gulf and Peel Sound will fracture during the last week of July and Larsen Sound in early August. Due to the large amount of old ice present in Queen Maud Gulf, the open water route to Taloyoak will be delayed to a week later than normal.

West of Prudhoe Bay, an increased amount of old ice along the Alaskan coast from Point Barrow to Cape Lisburne will delay clearing of the waterway by 2 weeks, with large amounts of old ice just off the coast of Point Barrow. The coastal waterway between Mackenzie Bay and Prudhoe Bay will open during the third week of August with the western portion being the last to open up.

Table 3: Western Arctic - Break-up Outlook Dates

	2005	Median	Outlook for 2006
Mackenzie Delta			
- Clearing	20 Jun	18 Jun	18-20 Jun
Kugmallit Bay			
- Clearing	20 Jun	27 Jun	27-29 Jun
Tuktoyaktuk Peninsula			
- Fracture[1]	07 Jul	03 Jul	01-03 Jul
Mackenzie Bay to Cape Bathurst			
- Open water	02 Aug	27 Jul	26-28 Jul
Coastal waterway Mackenzie Bay to Prudhoe Bay			
- Open drift or less	08 Sep	14 Aug	17-19 Aug
Coastal waterway Prudhoe Bay to Point Barrow			
- Open drift or less	25 Jul	12 Aug	27-29 Aug
- Close pack (refreeze)	03 Oct	06 Oct	30 Sept-02 Oct
Cape Lisburne to Point Barrow			
- Open drift or less	15 Jul	03 Aug	14-16 Aug
- Open water	25 Jul	18 Aug	25-27 Aug
Wainwright			
- Open drift or less	01 Jul	29 Jun	09-11 Jul
Coastal waterway Prudhoe Bay to Barter Island			
- Open drift or less	01 Aug	01 Aug	01-03 Aug
Open water route to Taloyoak	30 Aug	18 Aug	23-25 Aug
Amundsen Gulf			
- Fracture[1]	07 Jul	07 Jul	Fractured
- Clearing	Never	15 Aug	17-19 Aug
Coronation Gulf			
- Fracture[1]	17 Jul	15 Jul	11-13 Jul
- Clearing	02 Sep	01 Aug	29-31 Jul
Queen Maud Gulf			
- Fracture	30 Jul	23 Jul	24-26 Jul
Larsen Sound			
- Fracture[1]	10 Aug	01 Aug	30 Jul-01 Aug
Peel Sound			
- Fracture[1]	09 Aug	01 Aug	28-30 Jul

[1] Fracture indicates complete breakage of consolidated ice.

Table 4: Selected Sea Ice Data and Severity Index for the north coast of Alaska (1953-2005)

		1	2	3	4	5	6	7	8		
RANK	YEAR	10-Aug	15-Sep	10-Aug	15-Sep	date	date	#days	#days	Obs Inx	Fcst Indx
1	2004	13	238	70	260	16-Jul	8-Oct	71	68	637	602
2	1958	50	150	50	210	19-Jul	25-Oct	92	99	624	446
3	1968	25	165	30	200	19-Jul	18-Oct	86	91	615	495
4	1998	15	105	20	240	15-Jul	21-Oct	72	100	584	486
5	2005	70	130	85	250	23-Jul	3-Oct	63	70	580	381
6	2003	18	167	27	185	21-Jul	20-Oct	52	92	568	481
7	1993	0	130	5	185	18-Jul	7-Nov	64	112	565	388
8	2002	0	135	18	225	13-Aug	14-Oct	32	64	504	293
9	1962	25	150	30	150	19-Jul	30-Sep	49	68	490	406
10	1973	5	80	5	190	31-Jul	20-Oct	73	82	486	344
11	1954	20	115	20	210	1-Aug	30-Sep	38	61	484	552
12	1997	28	150	40	150	8-Aug	10-Oct	47	63	463	297
13	1963	5	130	5	130	13-Aug	18-Oct	67	67	442	351
14	1990	0	90	40	90	23-Jul	12-Oct	75	105	429	173
15	1961	15	105	15	135	25-Jul	24-Sep	49	62	418	414
16	1996	10	65	70	155	16-Jul	25-Sep	37	71	405	446
17	1979	0	125	0	125	4-Aug	8-Oct	31	56	394	178
18	1989	10	70	55	110	19-Jul	22-Oct	34	95	383	284
19	1974	10	100	10	100	6-Aug	5-Oct	35	61	351	372
20	1978	5	70	30	95	25-Jul	9-Oct	35	76	343	492
21	1986	10	80	10	110	29-Jul	21-Oct	30	58	342	517
22	1999	15	45	45	105	30-Jul	8-Oct	56	70	338	98
23	1977	5	55	25	85	2-Aug	15-Oct	63	74	336	381
24	1959	20	65	20	65	19-Jul	6-Oct	42	86	331	271
25	1995	30	30	50	50	15-Jul	17-Oct	70	94	329	477
26	1972	0	60	30	90	31-Jul	1-Oct	45	63	320	251
27	1982	0	85	0	95	3-Aug	10-Oct	21	69	318	271
28	1994	10	35	10	60	5-Aug	24-Sep	44	55	251	334
29	1957	5	45	70	60	1-Aug	6-Oct	18	67	250	300
30	1987	0	10	0	85	5-Aug	30-Oct	35	59	250	299
31	1981	0	0	35	100	26-Jul	1-Oct	0	66	232	521
32	2000	10	70	10	75	31-Jul	2-Oct	19	33	228	274
33	1985	0	35	0	55	1-Aug	15-Oct	22	52	224	245
34	1967	15	0	30	50	25-Jul	12-Oct	25	68	213	212
35	1984	0	25	0	50	11-Aug	15-Oct	21	42	209	219
36	1966	5	0	5	45	1-Aug	22-Oct	24	65	194	296
37	1992	15	0	15	75	9-Aug	19-Sep	24	37	188	560

38	1965	0	10	0	70	25-Aug	25-Sep	25	32	173	182
39	2001	0	25	15	25	17-Aug	8-Oct	26	52	172	262
40	1980	15	25	15	25	5-Aug	30-Sep	11	42	159	426
41	1953	0	0	5	35	27-Jul	16-Sep	5	52	157	213
42	1976	0	15	0	15	15-Aug	7-Oct	21	53	150	106
43	1971	0	0	0	30	23-Aug	1-Nov	8	71	147	166
44	1991	0	0	0	20	16-Aug	2-Oct	0	46	111	199
45	1960	0	0	20	20	5-Aug	7-Sep	0	34	110	231
46	1988	0	0	0	25	9-Aug	20-Sep	0	32	110	354
47	1964	0	0	0	5	13-Aug	20-Sep	0	39	95	536
48	1983	0	10	0	10	8-Aug	16-Sep	0	21	92	41
49	1970	0	0	5	0	6-Aug	14-Sep	0	32	87	251
50	1956	0	0	0	40	7-Sep	30-Sep	0	24	87	93
51	1969	0	0	0	30	7-Sep	18-Sep	5	12	70	157
52	1955	0	0	5	15	13-Sep	24-Sep	0	12	44	44
53	1975	5	0	5	0	NEVER	NEVER	0	0	0	8

1 - Distance from Point Barrow northward to ice edge (10 Aug)

2 - Distance from Point Barrow northward to ice edge (15 Sept)

3 - Distance from Point Barrow northward to boundary of five tenths ice concentration (10 Aug)

4 - Distance from Point Barrow northward to boundary of five tenths ice concentration (15 Sep)

5 - Initial date entire sea route to Prudhoe Bay less than/equal to five tenths ice concentration

6 - Date that combined ice concentration and thickness dictate end of prudent navigation

7 - Number of days entire sea route to Prudhoe Bay ice free

8 - Number of days entire sea route to Prudhoe Bay less than/equal to five tenths ice concentration

Appendix A : Key To Canadian Ice Service Sea Ice Symbols

For more information on this section, please refer to the following web link on the Canadian Ice Service web site:

http://ice-glaces.ec.gc.ca/App/WsvPageDsp.cfm?ID=155&LnId=3&Lang=eng

or on the National Ice Center web site:

http://www.natice.noaa.gov/egg_code/index.html

Appendix B : Stages of Development of Sea Ice

For more information on this section, please refer to the following web link on the Canadian Ice Service web site:

http://ice-glaces.ec.gc.ca/App/WsvPageDsp.cfm?ID=11170&LnId=32&Lang=eng

Appendix C : Broadcast Schedules For Arctic Ice and Marine Conditions

For more information on this section, please refer to the following web links:

Canadian coast guard:

http://www.ccg-gcc.gc.ca/mcts-sctm/ramn_arnm/Atlantic/part_5_e.htm

Alaska Marine VHF Voice:

http://www.nws.noaa.gov/om/marine/akvhfv.htm

NOAA MF/HF Voice – 4125kHZ:

http://www.nws.noaa.gov/om/marine/noaahfv.htm

NOAA Weather Radio at U.S. Coast Guard Sites in Alaska:

http://www.nws.noaa.gov/om/marine/aknwr.htm

For further information concerning these services please contact Canadian Ice Service by phone (613) 996-1550 or email at cis-scg.client@ec.gc.ca or the National Ice Center by phone at (301) 394-3050 or email liaison@natice.noaa.gov.