Prepared by the North American Ice Service

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

03 June 2005

Seasonal Outlook

For North American Arctic Waters

Summer 2005

Table of contents

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.

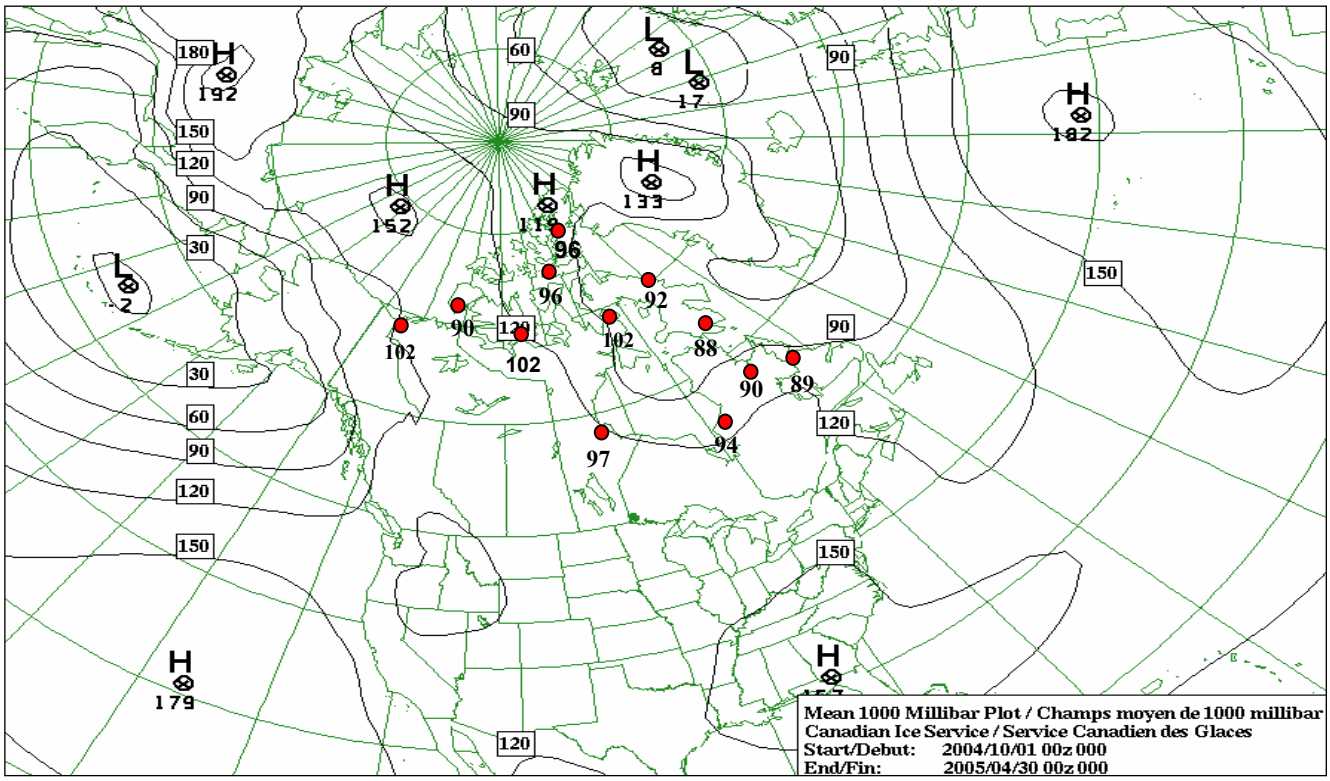

Figure 1: 1000mb mean pressure pattern from October 1st, 2004 to April 30th, 2005 with percentage of normal freezing degree-days over the winter season.

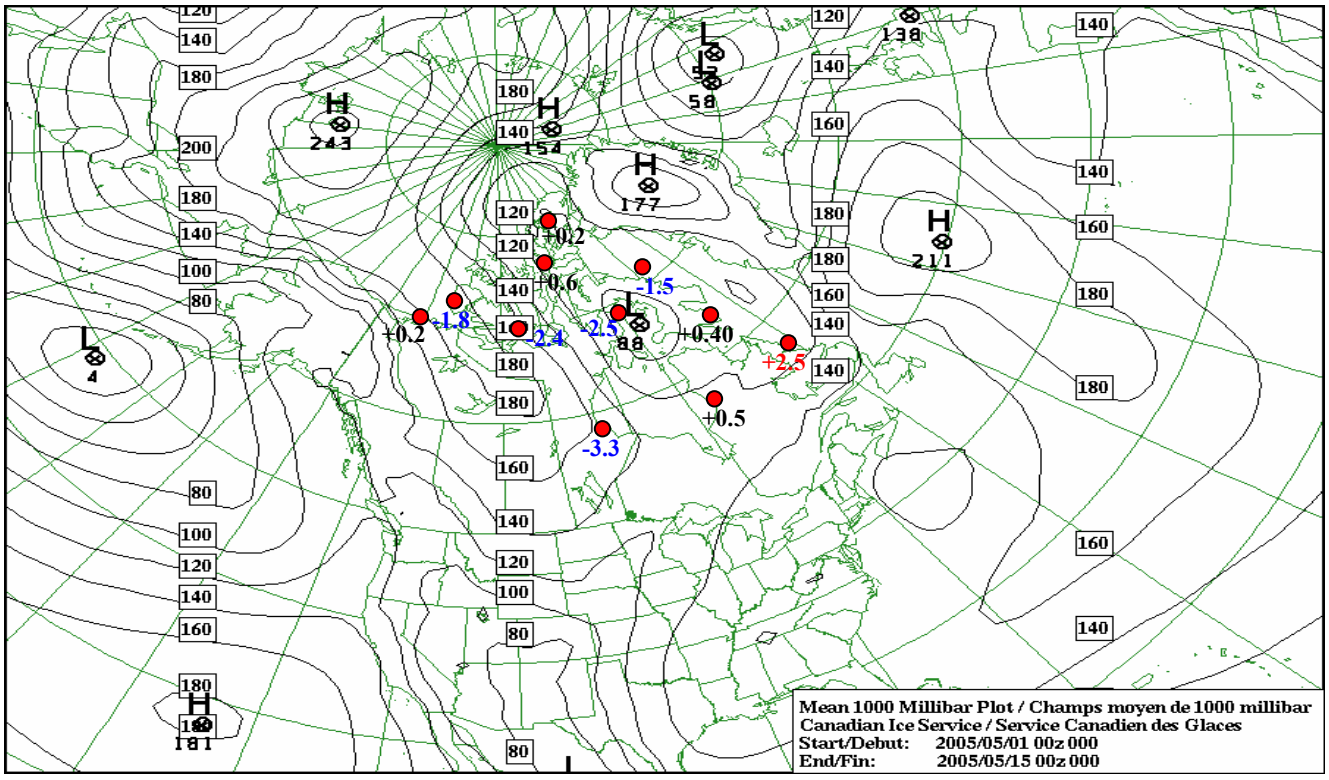

Figure 2: 1000 mb mean pressure pattern from May 1st to May 15th 2005 with departure from normal temperatures.

General Winter Conditions and Brief Outlook

The mean 1000 mb pressure pattern from October 01st, 2004 to April 30th, 2005 is represented in Figure 1. It indicates a low pressure area near the southern tip of Greenland with a trough extending northwestward. As a result a light and variable flow generally predominated over the Labrador coast, Davis Strait, Baffin Bay as well as over the Central Arctic. Hudson Bay was under the influence of a light to moderate northwesterly flow. A high pressure system over northwestern Beaufort Sea with a ridge stretching southeastward dominated the pressure pattern over the western Arctic. As a result eastern Beaufort Sea was generally under the influence of a light and variable flow while a light to moderate easterly flow dominated along the Alaskan coast. A low pressure system over the Aleutians generated a moderate northeasterly flow over the Bering Strait area.

Temperatures during the month of October were in general above normal over the entire Arctic except near to below normal over the western Arctic. Pond Inlet's temperatures were 5.6C above normal in October. Reported temperatures were in general below normal and in some locations much below normal, for the months of November and December for most of the Arctic except for continued above normal over Hudson Bay area for the month of November. Pelly Bay's temperatures in November were 5.7C below normal while they were 7.0C below normal at Hall Beach during the following month. In January, temperatures were in general above normal except below normal over the Baffin Island area and along the Labrador coast. Most locations in February reported above normal temperatures except for near to below normal temperatures over the Waterways area. Above normal temperatures were generally reported over most areas in March and April. Of note, March's temperatures in Clyde and Iqaluit were 5.7C and 6.4C above normal, respectively.

Freezing degree-day accumulation was in generally within 5 percent of the normal but within 10 to 15 percent in Davis Strait and along the Labrador coast. 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 indicates a low pressure over Foxe Basin with a trough extending northward. The Beaufort Sea area was under the influence of a ridge of high pressure extending from a high pressure system located over Victoria Island. A deep low pressure system south of the Aleutians was generating moderate easterly flow over the Alaskan coast. Temperatures in the first two weeks in May were above normal over the Beaufort Sea, High Arctic and along the Labrador coast but colder than normal elsewhere.

Above normal temperatures are generally forecast for the whole Arctic Area for the first half of June. Over the rest of the summer season near to above normal temperatures are generally forecast. As a result breakup events will occur at an earlier date than normal in most locations. However later than normal breakup events are forecast in Larsen Sound and Queen Maud areas where the amount of old ice is significantly higher than normal. As well later than normal breakup and clearing events could be expected in southeastern Beaufort Sea since the old ice edge is closer to the shore than normal.

Hudson Bay and Approaches

Freeze-up and Winter Ice Regime

Above normal temperatures generally prevailed over the entire area during the months of October and November followed by significantly below normal temperatures during the next two months. Milder to much milder than normal temperatures were generally reported in February and March except near normal over western and southern Hudson Bay. In April above to much above normal temperatures were reported over much of the forecast area.

Freeze up followed a near normal pattern in Hudson Bay but was delayed by about 10 days in Hudson Strait, Davis Strait, and along the Labrador coast. Ice started to form along the coast of Southampton Island in late October and early November and spread along the western shore of Hudson Bay during the first two weeks of November. At the end of November mostly greywhite ice was covering the northern half of Hudson Bay while new and grey ice were predominant over the southern section. At that time open water was still reported along the eastern shore of Hudson Bay north of the Belcher Islands. Ice started to form in northern Davis Strait during the first week of November and progressed southward to reach the entrance to Frobisher Bay by month's end. At that time ice was starting to form in the western end of Hudson Strait. At the end of November freeze up was near normal in Hudson Bay but a week to 2 weeks late elsewhere. Colder than normal temperatures in December allowed for ice to further develop and at the end of the year, thin first year ice was covering Hudson Bay and Hudson Strait. This situation was normal. At that time first year ice was predominant in Davis Strait but the seaward extent of the pack was less than normal. The ice extent along the Labrador coast was near normal but the ice thickness was significantly less than normal. At the end of the year the calculated ice thicknesses were near normal over Hudson Bay and Hudson Strait but less than normal in Davis Strait and along the Labrador coast. The trace of old ice, which migrated in northern Davis Strait at the beginning of December, progressed gradually southward and reached the southern portion of the Strait at the end of the year.

Continuing colder than normal temperatures during the first month of the year thickened the ice in Hudson Bay, Hudson Strait and Davis Strait to the medium and thin first year ice stages. Despite colder than normal temperatures thinner than normal ice condition was still prevailing along the Labrador coast as well as in Frobisher Bay.

During February and March milder than normal temperatures were reported over most of the forecast area except below normal over western Hudson Bay. However mean temperatures allowed for a further increase in ice thicknesses and at the end of February thick first year ice was prevalent almost everywhere over the forecast area except for somewhat thinner ice along the Labrador coast. Thick first year ice became predominant along the Labrador coast before the end of March. The trace of old ice continued its southward progression and spread along the Labrador coast, reaching the approach to Groswater Bay at the end of February. Ice conditions, at the end of March, were near normal except for the eastern ice edge in Davis Strait which was closer to the shore than normal.

Above to much above normal temperatures were widespread in April so little change occurred during that month. At the end of April the ice situation was near normal except for the seaward extent of the ice in Davis Strait which remained a lot less than normal.

During the first half of May temperatures were in general above normal except below normal over western Hudson Bay. At mid-May loose ice or open water areas were developing along the northwestern shore of Hudson Bay, south of Southampton Island, along the eastern shore of James Bay as well as along parts of Hudson Strait's Shores. At that time the ice concentration along the Labrador coast and the eastern extent of the main pack in southern Davis Strait were less than normal. The calculated ice thicknesses were thinner than normal in most locations at mid-May.

Observed Ice Conditions

The regional chart in figure 3 was based on the analysis of Radarsat and NOAA imageries around May 15th, 2005. This chart reveals some of the following features:

a) Looser than normal ice conditions along the eastern shore of James Bay and Hudson Bay as well as along the northern and southern shores Hudson Strait.

b) Ice edge in Southern Davis and along the Labrador coast much closer to the shore than normal. As well ice there generally looser than normal.

c) Near normal calculated ice thickness in western Hudson Bay but less than normal elsewhere.

d) Smaller fast ice areas east of the Belcher Islands than normal.

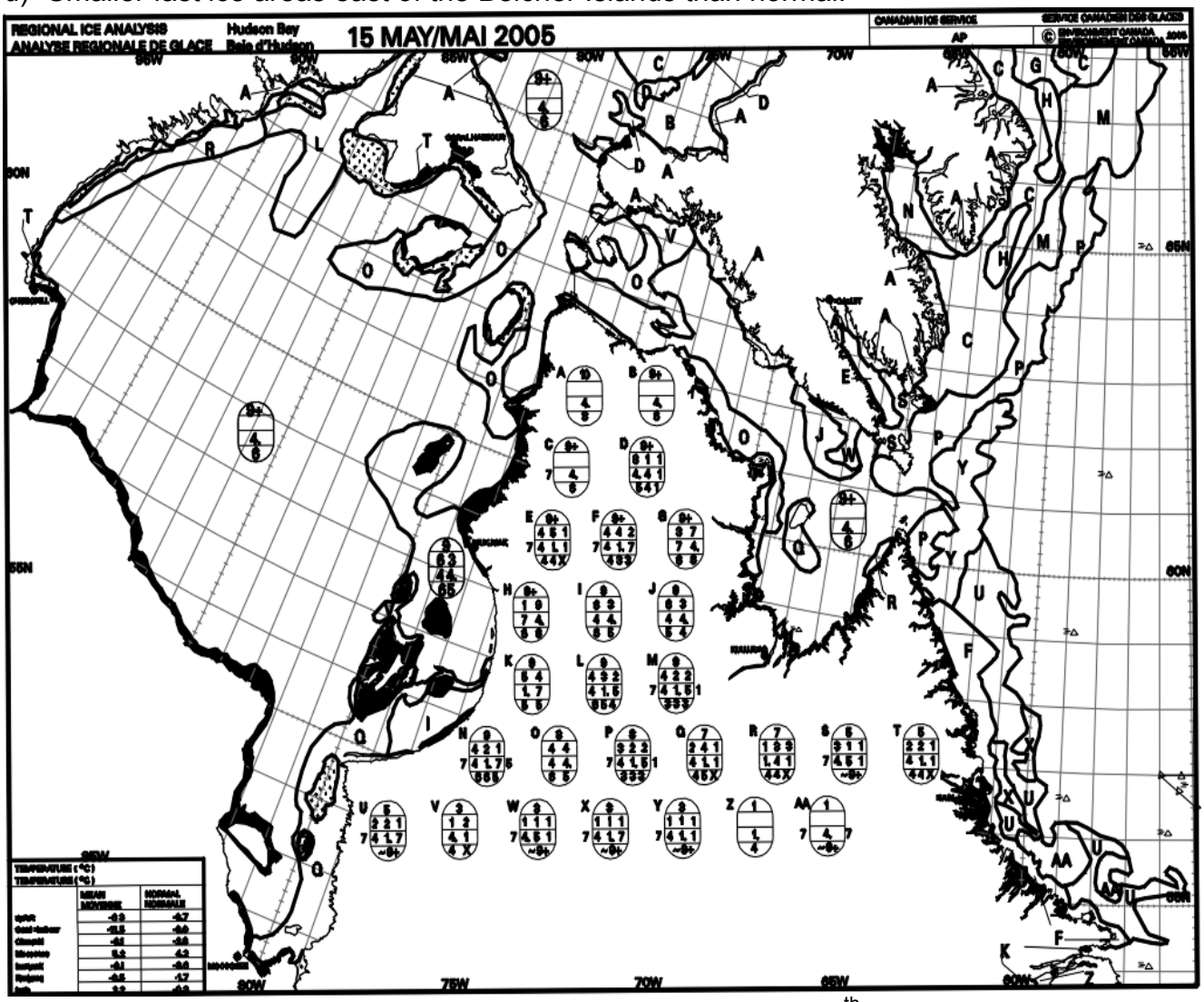

Figure 3: Hudson Bay and Approaches Regional chart for May 15th, 2005

Outlook for Hudson Bay and Approaches

Hudson Bay area and the northern Labrador coast were generally under the influence of a moderate occasionally strong south southeasterly flow during the second half of May. The exception was the northwestern section of Hudson Bay where the winds were generally from the northeast during the last week of the month. As a result above to well above normal temperatures were generally reported over the forecast area. Because of the milder than normal temperatures and predominant southerly winds a wider than normal open water lead has already developed along the southwest shore of Hudson Bay as well as along the southern shore of Hudson Strait in late May. Also significant open water areas could already be found in James Bay and along parts of the eastern shore of Hudson Bay. However because the winds have been predominantly onshore, the ice conditions over the northwestern section of Hudson Bay was close to what is normally expected at the end of May. The seaward ice extent along the Labrador coast and in southern Davis Strait remained significantly less than normal. The fast ice in western Lake Melville broke up early in the second week of May and about a week later in the eastern section.

A series of low will cross the area during the first half of June bringing moderate variable winds. As a result temperatures will oscillate between above and below normal but the average should be close the normal over the period. For the rest of the summer above normal temperatures are forecast except near normal over northwestern Hudson Bay. The fact that breakup is already in advance compared to normal and that looser than normal ice conditions are encountered in many areas we expect the ice to clear earlier than normal at most locations. The exception is northwestern Hudson Bay which should clear near its normal date or just a few days earlier. The Labrador coast will clear during the first week in July which is about three weeks earlier than normal and the open water route to Churchill will develop during the third week in July which is a near normal event. James Bay, Ungava Bay and Frobisher Bay are expected to clear during the last week of July, about 2 weeks earlier than normal. The clearing of Hudson Bay will occur near mid-August which is a few days earlier than normal.

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

	2004	Median	Outlook for 2005
Labrador Coast to Cape Chidley			
- Clearing	24 July	01 August	04-07 Jul
Frobisher Bay			
- Open drift or less	18 July	21 July	06-09 Jul
- Clearing	30 July	12 August	28-31 Jul
Ungava Bay			
- Clearing	23 July	05 August	24-27 Jul
Hudson Strait			
- Clearing	03 August	10 August	31 Jul – 03 Aug
Open water route to Churchill	25 July	21 July	17-20 Jul
Hudson Bay			
- Clearing	10 September	18 August	14-17 Aug
James Bay			
- Clearing	06 September	31 July	21-24 Jul

Eastern Arctic

Freeze-up and Winter Ice Regime

Temperatures in October were generally above to much above normal over the entire forecast area. November's temperatures were generally below normal except continuing above normal over Baffin Bay. December's temperatures were, for the most part, below normal except much below normal over the south central section from Resolute Bay area southeastward to Foxe Basin. During the first three months of 2005, the High Arctic experienced above to much above normal temperatures. Over the rest of the eastern Arctic January and February were near to above normal except below normal over the south central section while March's temperatures were above to much above normal everywhere. That same trend continued in April except for a return to near normal temperatures in the High Arctic.

At the end of summer, the old ice distribution was in general close to what could be normally expected except for somewhat more old ice than normal in southwestern Lancaster Sound, in McDougall Sound as well as in the approaches to Pelly Bay.

New ice started to form in the Canadian Archipelago in late September and at mid-October greywhite ice had formed in Prince Regent Inlet, western Lancaster Sound as well as in Jones Sound. At that time thin first year ice was already predominant in Norwegian Bay, northward into Eureka Sound while new ice was found in eastern Lancaster Sound and in northern Foxe Basin. Two weeks later thin first year ice was generally predominant in the Archipelago while grey and greywhite ice prevailed in northwestern Baffin Bay as well as in northern Foxe Baffin. At the end of October freeze up was generally near normal except a week to 10 days late in northern Baffin Bay.

New and grey ice started to develop in southern Foxe Basin during the first week in May. At that time Norwegian Bay and Eureka Sound became consolidated. As well new and grey ice developed rapidly during the first half of November in northeastern and southwestern Baffin Bay and in northern Davis Strait during the second half of the month. Pond and Admiralty Inlets became consolidated near mid-November which is a week or so later than normal. At the end of the month thin first year ice was predominant in northern Foxe Basin northward to Jones Sound and in northwestern Baffin Bay while thinner ice prevailed in southern Foxe Basin and in the rest of Baffin Bay. Medium first year ice with some old ice was predominant in eastern Norwegian Bay northward into Eureka Channel and in Kane Basin. At that time the bergy water lead along the west coast of Greenland extended farther north than normal. At the end of 2004 ice conditions were close to normal except in southern Baffin Bay and northern Davis Strait where the seaward ice extent was significantly less than normal. The ice bridge in Kane Basin formed in late December which is earlier than normal. Patchy areas of very open to open drift old ice that drifted down from Kane Basin were found in the western section of Baffin Bay which is normally the case at the end of December.

January and February saw a gradual increase in ice thicknesses and at the end of February thick first year ice has spread over most of the Eastern Arctic area. Eastern Barrow Strait and the northern section of Prince Regent Inlet consolidated during the last half of

February which is a near normal event for the former but an early event for the latter. Little change has been noticed during March and April except for a slow eastward expansion of the ice pack in Davis Strait. However the seaward extent of the ice pack remained less than normal at the end of the April. At that time the fast ice extent along the eastern shore of Baffin Island was much less than normal.

During the first half of May a low pressure system located over Foxe Basin generated a moderate northwesterly flow over the eastern Arctic area and as a result below normal temperatures were generally reported except over the High Arctic where temperatures were more moderate. Relatively speaking Hall Beach was the coldest spot during that period with temperatures averring 2.5C below normal.

Little overall changes were noticed in ice conditions during the first half in May except for a slight westward expansion of the bergy water area along the western coast of Greenland. Also open water areas started to develop in Roes Welcome Sound as well as in the southern section of Nares Strait.

Observed Ice Conditions

The regional chart in figure 4 was based on the analysis of Radarsat and NOAA imageries around May 15th, 2005. This chart reveals the following features:

a) The bergy water lead along the west Greenland Coast was more extensive than normal.

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

c) More old ice than normal was present in Pelly Bay and its approaches.

d) Seaward extent of the ice pack in northern Davis Strait less than normal.

e) The extent of the fast ice along the eastern coast of Baffin Island was much less than normal.

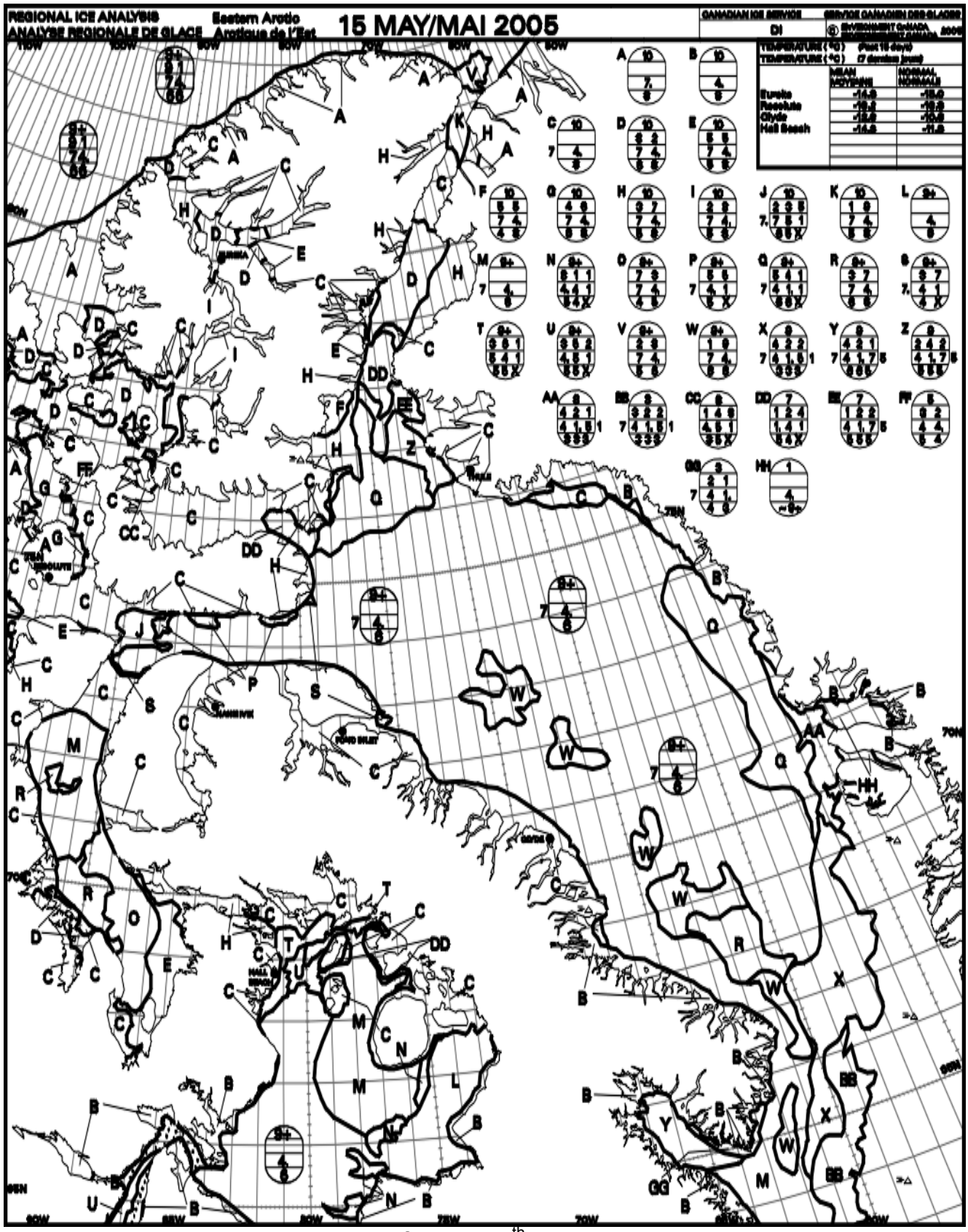

Figure 4: Eastern Arctic regional chart for May 15th, 2005

Outlook for the Eastern Arctic

Baffin/Davis Area and Foxe Basin

A strong ridge of high pressure extending from the Labrador Sea northward combined with a low pressure system well to the west produced a generally southerly flow over the forecast area during the third week in May. As a result above normal temperatures generally prevailed over that period. The general flow change to north northeasterly during the last week in May and as a result temperatures then cool to near normal values. The bergy water area in southern Nares Strait gradually expanded and reached the entrance to Jones Sound before the end of May. Eastern Lancaster Sound experienced a significant decrease in ice concentration during the last two weeks in May and the bergy water area along the western coast of Greenland continued to expand. During that time loose ice areas developed in northern Foxe Basin and Roes welcome Sound was mostly open water at the end of May.

A light and variable flow will predominate during the first half of June except for a moderate northwesterly flow over Foxe Basin during the second week. Above normal temperatures will generally prevail over the forecast area during the first two weeks in June. Assuming near to above normal temperatures during the rest of the summer, earlier than normal breakups are generally expected. The exception is in Foxe Basin where breakups will occur at a later date than normal. The open drift or less route across northern Baffin Bay to Thule will develop during the second week in July which is a week to 10 days earlier than normal. The bergy water route for the above area will develop a week or so later. The open drift route to Cape Dyer and Home Bay will develop near mid-July and during the last week of July respectively, about 10 days to two weeks earlier than what is normally expected for both events. Davis Strait will clear about two weeks early, hence during the third week in August and Baffin Bay will be mainly bergy water in early September, about a week earlier than normal. The open water route to Hall Beach will develop and the clearing of Foxe Basin will occur during second and last week of September respectively, about a week later than normal for both events.

Parry Channel

During the third week of May, a light to moderate east to southeasterly flow prevailed over the Parry Channel while a light northwesterly flow was generally reported during the last week of the month. Temperatures were above normal during the third week but normal during the last week of May. Eastern Barrow Strait was still consolidated at the end of May which is normal. At that time Lancaster Sound was mobile and loose ice areas were developing in parts of the sound especially over the western section. Elsewhere, all the bays and inlets were still consolidated at the end of May.

A generally light and variable flow is forecast for the first week of June followed by a moderate northerly flow during the second week. Temperatures will be above normal during the first week but below normal over the second week of June. Assuming near to above normal temperatures for the rest of the summer, break-up events should occur earlier or near their normal dates. The exception is McDougall Sound where a later than normal breakup is forecast due to higher than normal old ice concentration. Eastern Barrow Strait will fracture during the

second week in July and the western section of the strait 10 days to two weeks later which are slightly early events. Pond inlet, northern Admiralty Inlet and Wellington Channel will fracture during the third week of July, which is a few day to a week earlier than normal. The clearing of Pond Inlet and northern Admiralty Inlet will occur during the second week of August, a few days earlier than normal. Wellington Channel will fracture near its normal date that is to say near the end of July while McDougall Sound's fracture will be delayed by about a week, hence occurring just before mid-August.

High Arctic

A light to moderate east to southeasterly flow generally predominated over the High Arctic during the third week in May followed a light to moderate northwesterly flow during the last week. At the end of May, ice conditions in the High Arctic were normal.

Light and variable winds will predominate over the High Arctic during the first week of June but a light to moderate northwesterly flow is expected to predominate during the second week of the month. Mean air temperatures will be near normal for the first two weeks of June. Assuming near to above normal temperatures for the rest of the summer, breakup events will generally occur near their normal dates or a few days earlier. Kane Basin will fracture during the third week in July which is a near normal event. Jones Sound will fracture at the end of July or early August which is also a near normal event. Southern Norwegian Bay is forecast to fracture in early August while the northern section fracture a week to 10 days later which, in both cases, are near normal events. The fracture and clearing of Eureka Sound will be happening near its normal date that is to say during the first and third week of August respectively.

Table 2: Eastern Arctic - Break-up Pattern and Outlook

	2004	Median	Outlook for 2005
Route across Northern Baffin Bay			
- Open drift or less	06 July	21 July	13-16 Jul
- Bergy water route	27 July	29 July	20-23 Jul
Baffin Bay			
- Clearing	22 September	11 September	03-06 Sep
Davis Strait			
- Clearing	18 August	03 September	20-23 Aug
Home Bay			
- Open drift or less	05 August	09 August	25-27 Jul
Cape Dyer			
- Open drift or less	06 August	29 July	13-16 Jul
Open water route			
to Hall Beach	11 September	06 September	10-13 Sep
Foxe Basin			
- Clearing	never	21 September	25-28 Sep
Pond Inlet			
- Fracture[1]	26 July	26 July	19-22 Jul
- Clearing	13 August	13 August	06-09 Aug
Admiralty Inlet northern half			
- Fracture[1]	22 July	22 July	18-21 Jul
- Mostly bergy water	12 August	12 August	08-11 Aug
Lancaster Sound			
- Fracture[1]	Not consolidated	08 July	Not consolidated
Barrow Strait to Resolute			
- Fracture/eastern[1]	Not consolidated	11 July	07-10 Jul
- Fracture/western[1]	01 August	25 July	21-14 Jul
Wellington Channel			
- Fracture[1]	05 August	29 July	25-28 Jul
McDougall Sound			
- Fracture[1]	08 August	06 August	10-13 Aug
Kane Basin			
- Fracture[1]	15 July	24 July	20-23 Jul
Jones Sound			
- Fracture[1]	30 July	02 August	30 Jul – 02 Aug
Norwegian Bay			
- Fracture/southern[1]	04 Agust	02 August	01-04 Aug
- Fracture/northern[1]	21 August	10 August	08-11 Aug
Eureka Sound			
- Fracture[1]	21 August	03 August	01-04 Aug
- Mostly bergy water	Never	18 August	18-21 Aug
Pacer Goose route to Thule			
-Open drift or less	06 July	21 July	13-16 Jul
-Bergy water route	27 July	29 July	20-23 Jul

[1] Fracture indicates complete breakage of consolidated ice.

Western Arctic

Freeze-up and Winter Ice Regime

Mean air temperatures during October through December were in general near to below normal except much below normal over Queen Maud Gulf area and in southern Beaufort Sea during the last month of the year. Near to above normal temperatures were generally reported in January except much above over the Beaufort Sea area. February's temperatures were generally below normal except continued above normal over the Beaufort Sea while near to above normal temperatures prevailed over most areas in March. Above normal temperatures continued into April except near normal in southeastern Beaufort Sea and along the Alaskan coast.

At the beginning of October the southern edge of the old ice pack in southeastern Beaufort Sea was significantly closer to the shore than normal. Also a loose area of old ice was extending from the main old ice pack southward to Franklin Bay and in western Amundsen Gulf. Normally Franklin Bay and western Amundsen Gulf are open water in early October. Meanwhile the old ice pack off the Alaskan coast was much farther offshore than normal, as it has been the case the last few years. At that time much more old ice than normal was found in Larsen Sound southward to Queen Maud Gulf which could have a significant impact on the next arctic shipping season. Somewhat more old ice than normal was also found in McClintock Channel and Viscount Melville Sound. Very open drift old ice was present in Peel Sound at that time which is what is normally expected.

The northern section of McDougall Sound became consolidated early in October which is two weeks earlier than normal. New ice started to develop in the Waterways and in the southeastern section of the Beaufort Sea near mid-October and along the Alaskan coast a week later. At mid-October Grey and greywhite ice have already developed in eastern Larsen Sound, northward. Normal ice growth during the second half of October allowed for much of the young ice to turn into thin first year first during the last week of the month. The exception is the western section of the Waterways which remained covered with greywhite until mid-November. The Mackenzie Delta became consolidated during the third week of October which is normal. Peel Sound consolidated during the second week of November and Larsen Sound, Queen Maud Gulf and the Waterways were all consolidated about a week later. Those events were a few days to a week late compared to normal.

In December little change was noted except for a general thickening of the ice which reached the medium thick first year ice stage at the end of the month. At the end of 2004 the ice conditions in the western Arctic were near normal except for the following two exceptions: the old ice edge along the Alaskan coast lay much further offshore than normal and there was significantly more old ice than normal in Larsen Sound southward to Queen Maud Gulf which at that time was consolidated.

In January ice thickened to thick first year almost everywhere. However persistent northwesterly winds during the first half of January pushed the old ice pack towards the shore in

the southeast section of the Beaufort Sea area. In fact at the end of the month the old ice pack was lying about 40 miles north of the Tuk Peninsula. Normally the old ice pack lies about 100 miles or more off the Tuk Peninsula coast. At the same time a tongue of mainly thick first year ice was found in the western central section of the Beaufort Sea where we normally found old ice.

In February and March little overall change occurred as the tongue of mainly first year ice in western central Beaufort Sea persisted and the position of the old ice edge in the southeastern section of the Beaufort Sea remained much closer from the shore than normal. However the old ice pack along the Alaskan did move slightly towards the shore. In April mainly offshore winds during the last part of the month developed open water or thin ice areas along the fast ice edge in Amundsen Gulf and along the Tuk peninsula as well as causing the old ice pack in southeastern Beaufort Sea to retreat slightly. At the end of April much less old ice than normal still prevailed in the west central section of the Beaufort Sea.

The first half of May was in general colder than normal except near normal over the Beaufort Sea area. As a result little change occurred during the first half of May except for loose ice areas developing along the fast ice edges in Amundsen Gulf and along the Tuk peninsula.

Observed Ice Conditions

The regional ice charts in figure 5 and 6 were based on an analysis of Radarsat and NOAA imagery from around 27 May, 2005. These charts reveal some of the following features:

a) Significantly more old ice than normal in Larsen Sound southward to Queen Maud Gulf.

b) Old ice pack along the Alaskan coast closer to the shore than normal.

c) Old ice pack closer to the shore then normal in southeast Beaufort Sea.

d) A tongue of first year ice lies in western central Beaufort Sea.

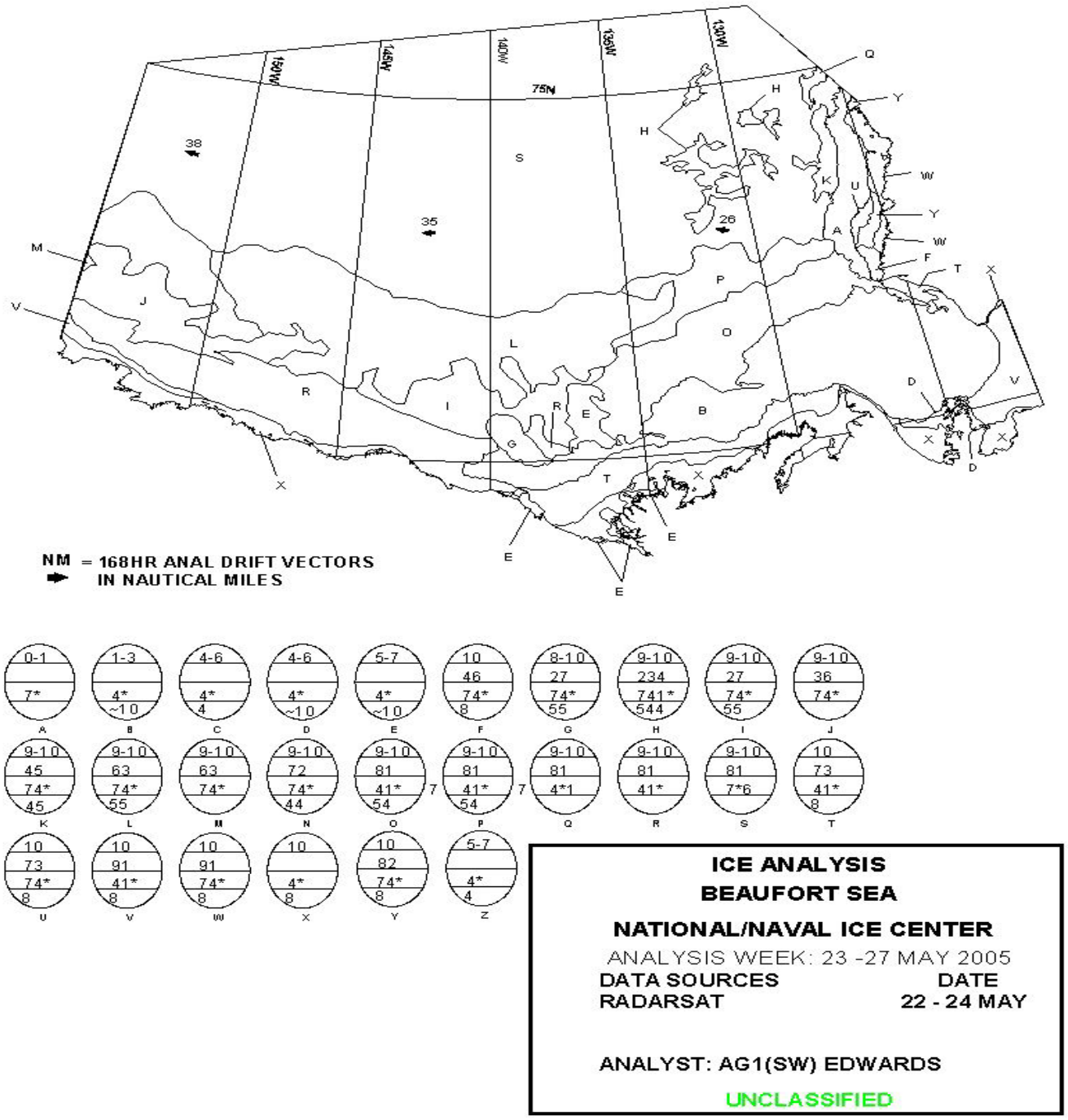

Figure 5: Beaufort Sea Regional chart for May 27th, 2005

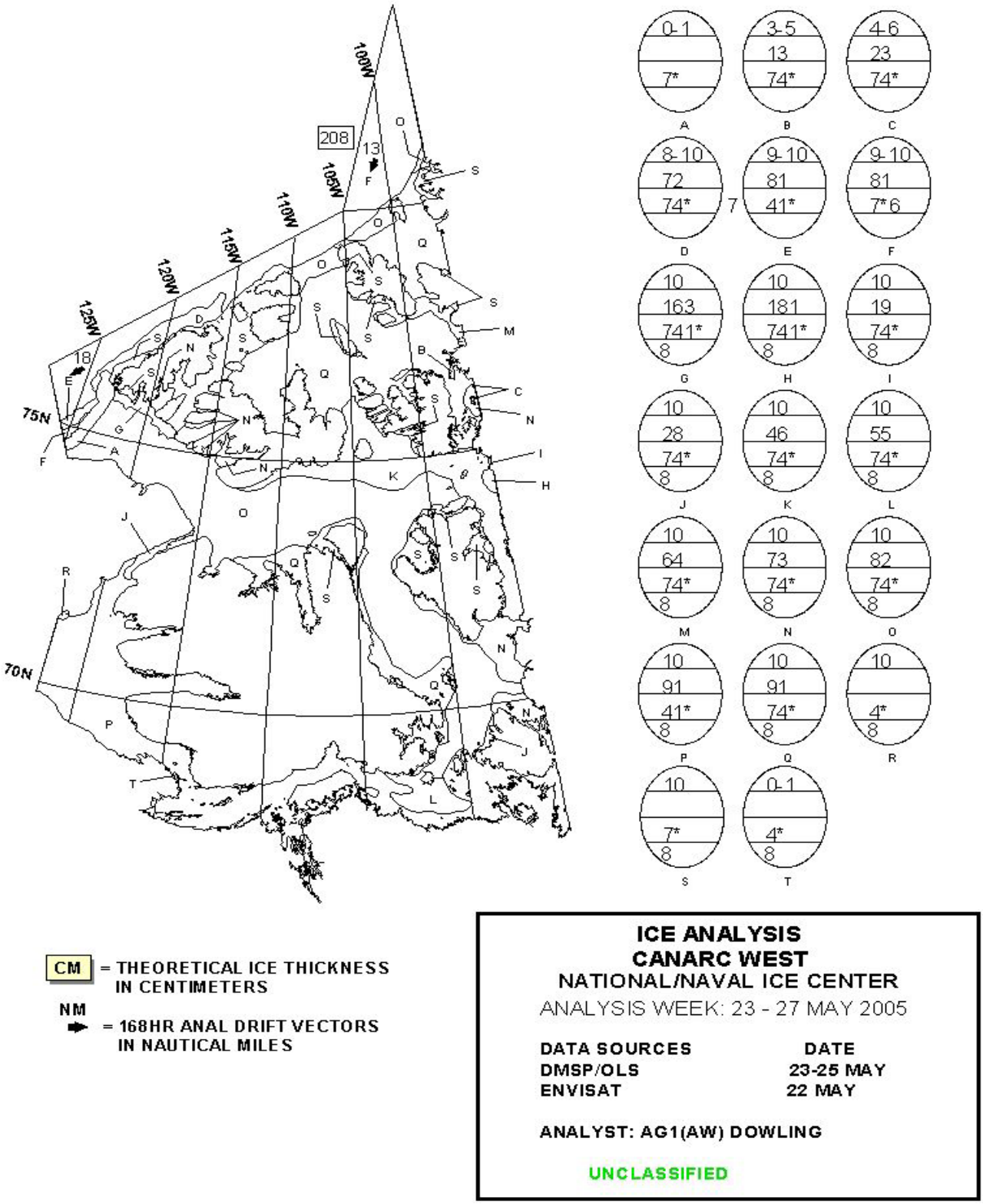

Figure 6: Canadian Archipelago Regional chart for May 27th, 2005

Outlook for the Western Arctic

In general because of near normal temperatures over the past winter as well as near to slightly above normal forecast temperatures over the next three months, clearing events should occur near their normal dates over the Beaufort Sea and the Waterways. However clearing in the southeastern section of the Beaufort Sea could by delayed especially if the old ice pack remains closer to the shore than normal. Conversely, breaking and clearing events in Larsen Sound southward to Queen Maud Gulf will be significantly delayed due to higher than normal amount of old ice in that general area.

Clearing of the Mackenzie Delta will occur near mid-June and Kugmallit Bay will clear a week to 10 days later which, in both cases, are near normal event. The Tuktoyaktuk Peninsula and Amundsen Gulf are expected to fracture during the first and second week of July respectively, which are also near normal events. Coronation Gulf will fracture during the second week of July and clear just before the end of the month, which are slightly early events. Due to the presence of old ice, the open water route from Mackenzie Bay to Cape Bathurst will develop about 10 days later than normal, hence during the first week in August. Peel Sound will fracture in late July or early August as per normal. Fracture in Queen Maud Gulf and Larsen Sound will occur in early August and near mid-August respectively, about 10 to 14 days later than normal. Amundsen Gulf will clear and an open water route to Taloyoak will develop during the last week of August which represents a 10 to 14 days delay compared to normal for both events. The open drift or less route from Prudhoe Bay to Point Barrow and from Mackenzie Bay to Prudhoe Bay will develop during the second and third week of August respectively.

Table 3: Western Arctic – Break-up Pattern and Outlook

	2004	Median	Outlook for 2005
Mackenzie Delta **- Clearing**	08 July	17 June	19-22 June
Kugmallit Bay **- Clearing**	07 July	27 June	29 June – 02 July
Tuktoyaktuk Peninsula **- Fracture[1]**	04 July	2 July	30 June – 03 July
Mackenzie Bay to Cape Bathurst **- Open water**	03 Aug	26 July	30 July – 02 August
Coastal waterway Mackenzie Bay to Prudhoe Bay **- Open drift or less**	19 August	13 August	18-21 August
Coastal waterway Prudhoe Bay to Point Barrow **- Open drift or less** **- Close pack (refreeze)**	17 July 20 October	1 August 6 October	03-06 August 06-08 October
Cape Lisbourne to Point Barrow **- Open drift or less** **- Open water**	26 June 14 July	3 July 18 July	09-12 July 21-24 July
Wainwright **- Open drif or less**	28 June	29 June	02-05 July
Coastal waterway Prudhoe Bay to Barter Island **- Open drift or less**	28 July	01 August	03-06 August
Open water route to Taloyoak	31 August	16 August	23-26 August
Amundsen Gulf **- Fracture[1]** **- Clearing**	11 July Never	7 July 15 August	06-09 July 19-22 August
Coronation Gulf **- Fracture[1]** **- Clearing**	20 July 16 August	15 July 31 July	10-13 July 25-28 July
Queen Maud Gulf **- Fracture**	31 July	23 July	02-05 August
Larsen Sound **- Fracture[1]**	17 August	31 July	15-18 August
Peel Sound **- Fracture[1]**	24 August	31 July	06-09 August

[1] Fracture indicates complete breakage of consolidated ice.

SELECTED SEA ICE DATA AND SEVERITY INDEX FOR THE NORTH COAST OF ALASKA 1953-2004

RANK	YEAR	1 10-Aug	2 15-Sep	3 10-Aug	4 15-Sep	5 date	6 date	7 #days	8 #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	2003	18	167	27	185	21-Jul	20-Oct	52	92	568	481
6	1993	0	130	5	185	18-Jul	7-Nov	64	112	565	388
7	2002	0	135	18	225	13-Aug	14-Oct	32	64	504	293
8	1962	25	150	30	150	19-Jul	30-Sep	49	68	490	406
9	1973	5	80	5	190	31-Jul	20-Oct	73	82	486	344
10	1954	20	115	20	210	1-Aug	30-Sep	38	61	484	552
11	1997	28	150	40	150	8-Aug	10-Oct	47	63	463	297
12	1963	5	130	5	130	13-Aug	18-Oct	67	67	442	351
13	1990	0	90	40	90	23-Jul	12-Oct	75	105	429	173
14	1961	15	105	15	135	25-Jul	24-Sep	49	62	418	414
15	1996	10	65	70	155	16-Jul	25-Sep	37	71	405	446
16	1979	0	125	0	125	4-Aug	8-Oct	31	56	394	178
17	1989	10	70	55	110	19-Jul	22-Oct	34	95	383	284
18	1974	10	100	10	100	6-Aug	5-Oct	35	61	351	372
19	1978	5	70	30	95	25-Jul	9-Oct	35	76	343	492
20	1986	10	80	10	110	29-Jul	21-Oct	30	58	342	517
21	1999	15	45	45	105	30-Jul	8-Oct	56	70	338	98
22	1977	5	55	25	85	2-Aug	15-Oct	63	74	336	381
23	1959	20	65	20	65	19-Jul	6-Oct	42	86	331	271
24	1995	30	30	50	50	15-Jul	17-Oct	70	94	329	477
25	1972	0	60	30	90	31-Jul	1-Oct	45	63	320	251
26	1982	0	85	0	95	3-Aug	10-Oct	21	69	318	271
27	1994	10	35	10	60	5-Aug	24-Sep	44	55	251	334
28	1957	5	45	70	60	1-Aug	6-Oct	18	67	250	300
29	1987	0	10	0	85	5-Aug	30-Oct	35	59	250	299
30	1981	0	0	35	100	26-Jul	1-Oct	0	66	232	521
31	2000	10	70	10	75	31-Jul	2-Oct	19	33	228	274
32	1985	0	35	0	55	1-Aug	15-Oct	22	52	224	245
33	1967	15	0	30	50	25-Jul	12-Oct		68	213	212
34	1984	0	25	0	50	11-Aug	15-Oct	21	42	209	219
35	1966	5	0	5	45	1-Aug	22-Oct	24	65	194	296
36	1992	15	0	15	75	9-Aug	9-Sep	24	37	188	560
37	1965	0	10	0	70	25-Aug	25Sep	25	32	173	182
38	2001	0	25	15	25	17-Aug	8-Oct	26	52	172	262
39	1980	15	25	15	25	5-Aug	30-Sep	11	42	159	426

40	1953	0	0	5	35	27-Jul	16-Sep	5	52	157	213
41	1976	0	15	0	15	15-Aug	7-Oct	21	53	150	106
42	1971	0	0	0	30	23-Aug	1-Nov	8	71	147	166
43	1991	0	0	0	20	16-Aug	2-Oct	0	46	111	199
44	1960	0	0	20	20	5-Aug	7-Sep	0	34	110	231
45	1988	0	0	0	25	9-Aug	20-Sep	0	32	110	354
46	1964	0	0	0	5	13-Aug	20-Sep	0	39	95	536
47	1983	0	10	0	10	8-Aug	16-Sep	0	21	92	41
48	1970	0	0	5	0	6-Aug	14-Sep	0	32	87	251
49	1956	0	0	0	40	7-Sep	30-Sep	0	24	87	93
50	1969	0	0	0	30	7-Sep	18-Sep	5	12	70	157
51	1955	0	0	5	15	13-Sep	24-Sep	0	12	44	44
52	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 Sept)

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 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.