

**Seasonal Summary  
for the Canadian Arctic  
Summer 2007**



**Produced by the Canadian Ice Service  
December 7, 2007**

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## **Hudson Bay and Approaches**

Mean air temperatures were below normal values over most locations during the month of May except near to slightly above normal values over southern Hudson Bay and along the Labrador Coast. As a result, ice conditions at the end of the May were near normal except a week earlier than normal over northern Hudson Bay and northern Hudson Strait.

### **June 2007**

Near normal temperatures prevailed over most locations during the month of June except for above normal temperatures over southeastern Hudson Bay and eastern Hudson Strait as indicated in Table 1. Light to moderate southeasterly winds dominated along the Labrador Coast and in Hudson Strait, while light and variable winds prevailed over Hudson Bay as indicated in Figure 29. As a result, ice melted at a moderate to rapid pace over all areas.

At the beginning of June, clearing was already occurring in most of Frobisher Bay, along the northern shore of Hudson Strait, along the southern shore of James Bay and in northwestern Hudson Bay. Very close pack ice conditions was present elsewhere at the start of the month. With the ice melting rapidly during the month, ice concentrations decrease significantly over most areas. The ice in Goose Bay melted completely near mid-month. At the end of June, large areas of open water were present over the northwestern section of Hudson Bay, in southwestern James Bay and east of Belcher Islands, while a bergy water area dominated over western Frobisher Bay. Elsewhere, open drift to close pack ice conditions prevailed along the Labrador Coast north of 54N, in Hudson Strait and over southeastern James Bay. The rest of Hudson Bay, northern James Bay and eastern Frobisher Bay were covered with close to very close pack ice conditions. However a trace of old ice was embedded in the ice pack along the Labrador Coast and in Ungava Bay, while patches of 1 tenth of old ice was present in the ice pack in southern Davis Strait. At the end of June, ice conditions were 1 to 2 weeks earlier than normal.

Ice conditions as well as departure from normal ice concentration for mid-June are shown in Figure 3 and Figure 4, respectively.

### **July 2007**

Near normal temperatures persisted over most locations during the month of July except for above normal temperatures over western Hudson Bay and eastern Hudson Strait as indicated in Table 1. During the first half of the month, light and moderate east to southeasterly winds dominated along the Labrador Coast and in Hudson Strait, while light to moderate northerly winds developed over Hudson Bay. During the last two weeks of July, light to moderate west to southwesterly winds prevailed over the whole area as indicated in Figure 30.

Areas of open or bergy water started to expand rapidly over northwestern Hudson Bay, in northern Hudson Strait and southern James Bay during the month of July. At the start of the month, very open to open drift ice conditions prevailed along the Labrador Coast and in Frobisher Bay with patches of one tenth of old ice embedded in the ice pack. Open drift to close pack ice dominated over Hudson Strait, in most of Hudson Bay and in northern James Bay. However patches of very close pack ice were present along the northeastern and southwestern shores of Hudson Bay. The ice started to retreat north of Groswater Bay during the second week of July, while an open water route developed from Hudson Strait to Churchill. The ice retreated north of Cape Chidley near mid-July. At that time, an open drift or less route developed in Frobisher Bay. The ice melted completely in Hudson Strait during the third week of July. The ice melted rapidly over Hudson Bay during the period. At the end of the month, most of Hudson Bay was ice free except for a small patch of very open drift ice along the southern shore. During that time, most of the ice melted in Frobisher Bay except for a very narrow band of open drift ice along the northern shore. At the end of July, ice conditions were 1 to 2 weeks earlier than normal.

Ice conditions as well as departure from normal ice concentration for mid-July are shown in Figure 5 and Figure 6, respectively.

### **August 2007**

Near normal temperatures persisted over most locations during the month of August except for above normal temperatures along the Labrador Coast, in Davis Strait and northern Hudson Bay as indicated in Table 1. Light to moderate westerly winds dominated over all regions during the month of August as indicated in Figure 31.

The remaining ice in Frobisher Bay and southern Hudson Bay melted completely in early August. The rest of the area was clear of ice during the month.

Ice conditions as well as departure from normal ice concentration for mid-August are shown in Figure 7 and Figure 8, respectively.

**Table 1: Temperatures and departures from normal (°C) for Hudson Bay**

Stations	June		July		August		September	
	Temp.	Depart.	Temp.	Depart.	Temp.	Depart.	Temp.	Depart.
Nain	6.5	0.4	10.4	0.3	11.6	1.0	5.7	-1.0
Iqaluit	3.2	-0.3	6.6	-0.9	8.2	1.4	2.4	0.2
Kuujuaq	8.0	1.0	14.3	3.0	11.1	0.6	5.3	-0.3
Cape Dorset	2.1	-0.2	7.8	0.7	7.6	1.8	1.5	0.1
Churchill	5.9	-0.7	15.4	3.6	12.0	0.5	5.4	-0.3
Moosonee	12.8	0.4	15.8	0.1	14.9	0.0	10.7	0.2
Kuujuarapik	8.5	1.6	10.5	-0.1	12.0	0.7	7.2	-0.1

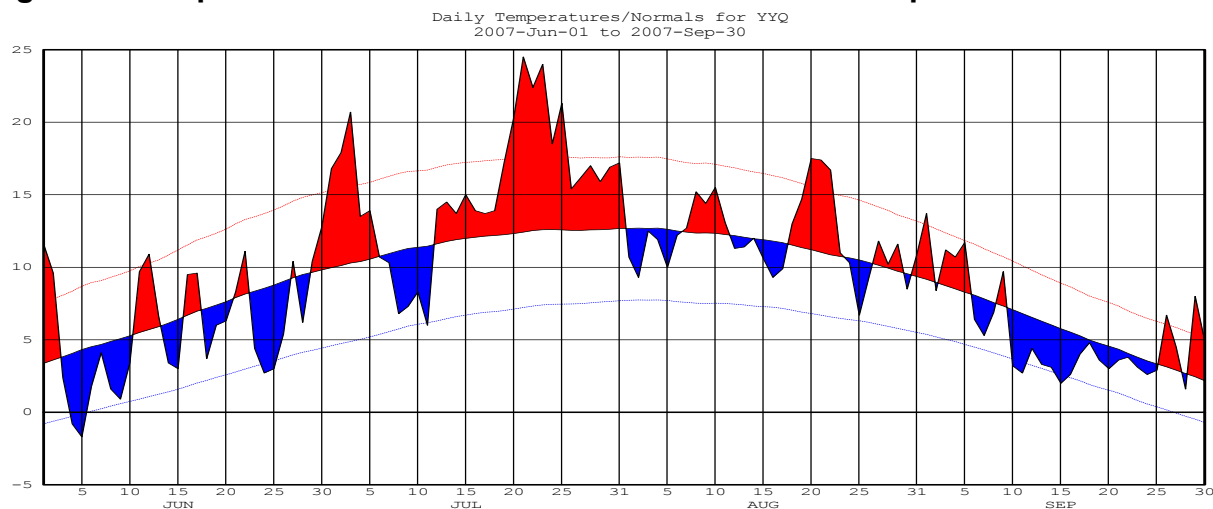
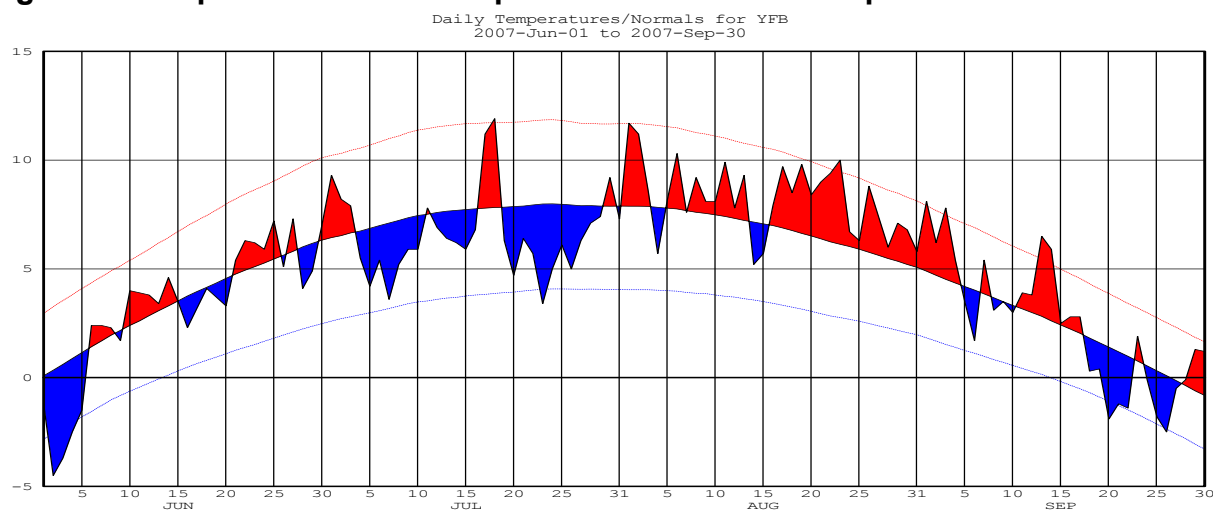
**Figure 1: Temperature trend for Churchill from June 1<sup>st</sup> to September 30<sup>th</sup>****Figure 2: Temperature trend for Iqaluit from June 1<sup>st</sup> to September 30<sup>th</sup>**

Figure 3: Hudson Bay Regional chart - June 18<sup>th</sup>

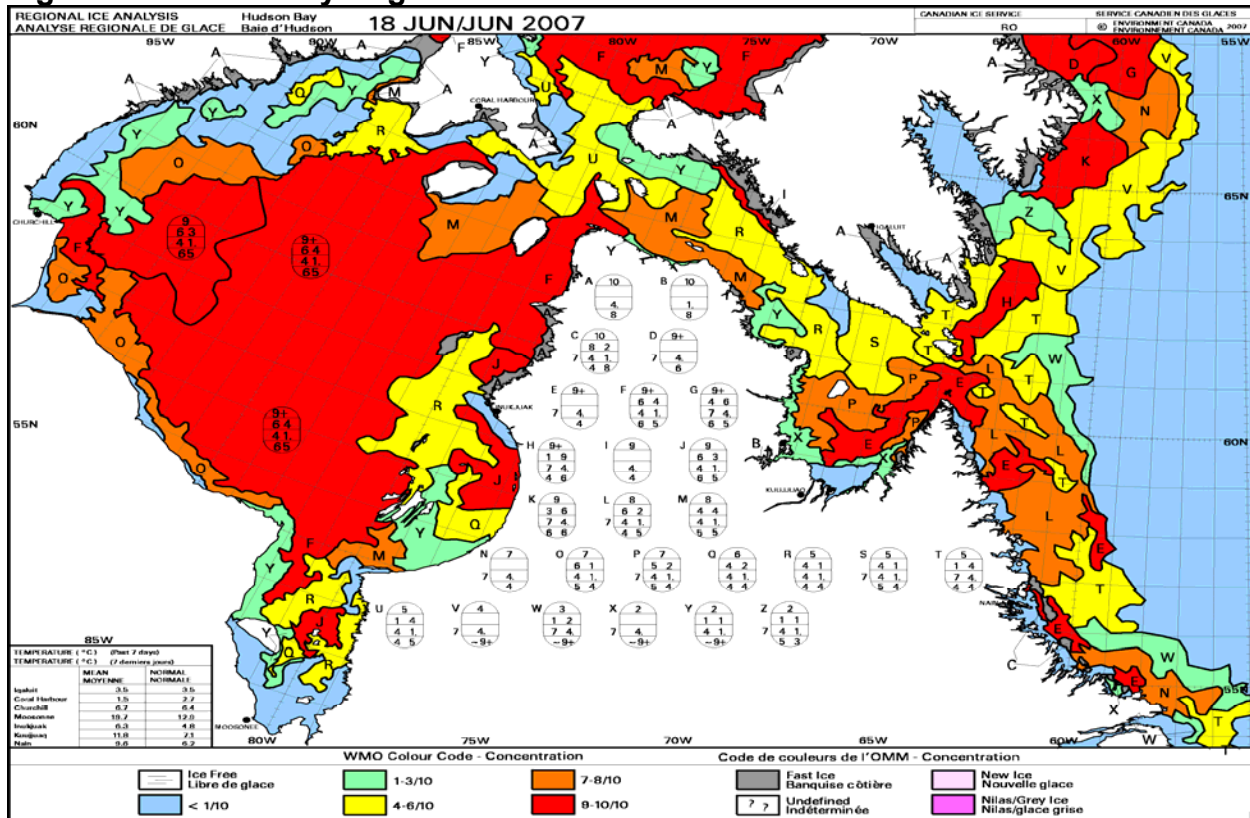


Figure 4: Departure from normal ice concentration for Hudson Bay - June 18<sup>th</sup>

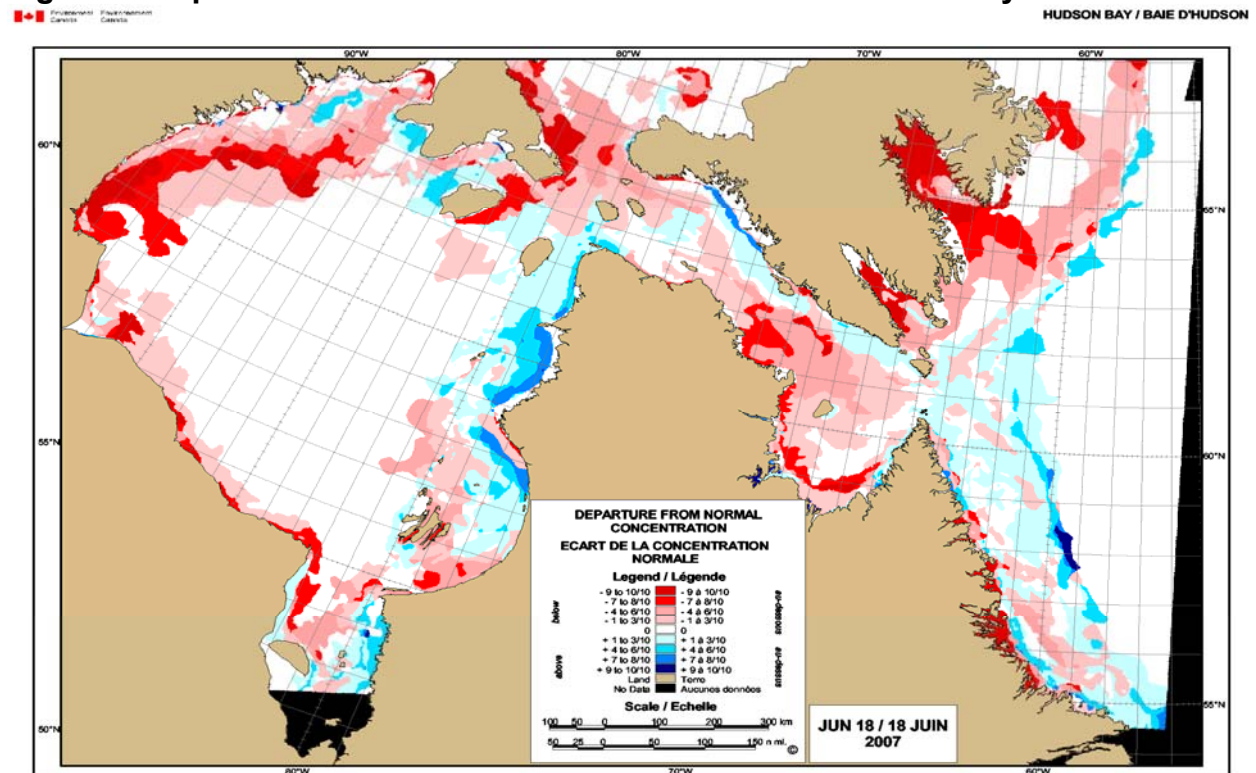




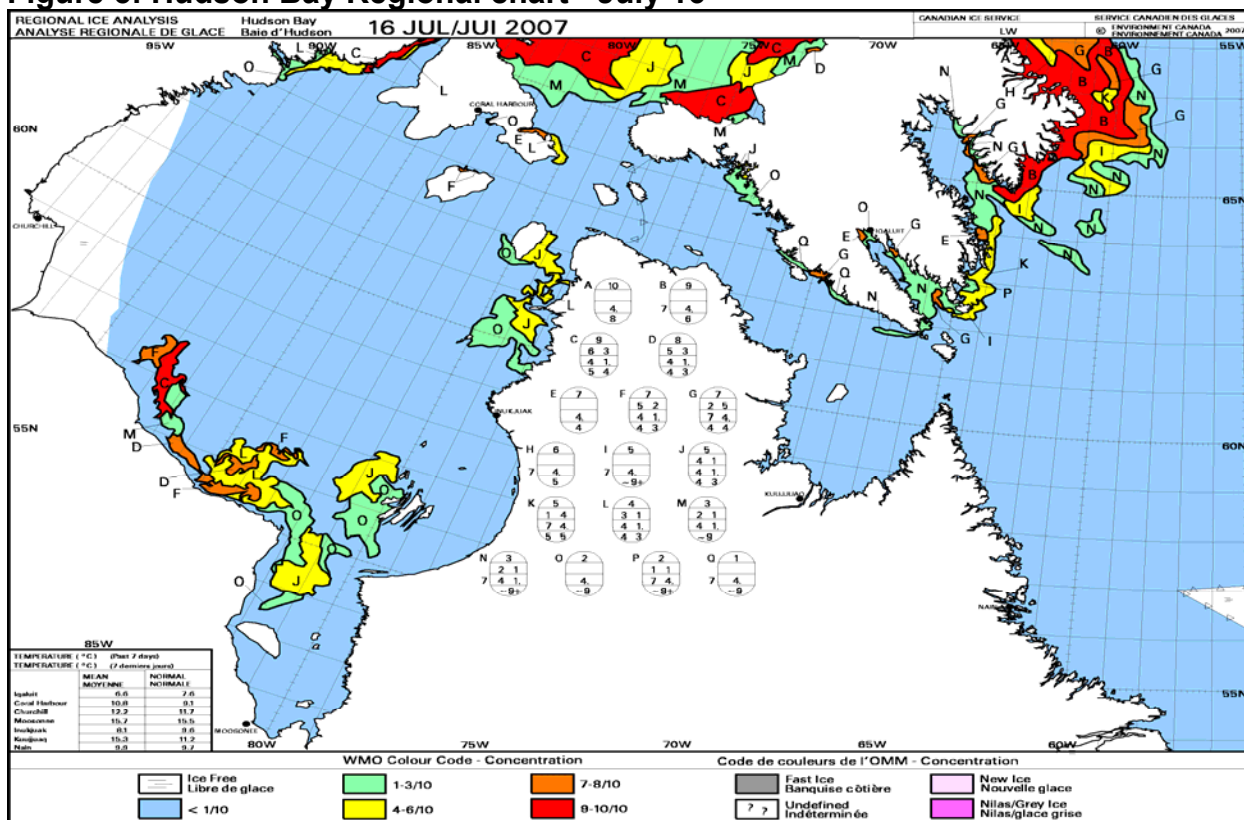
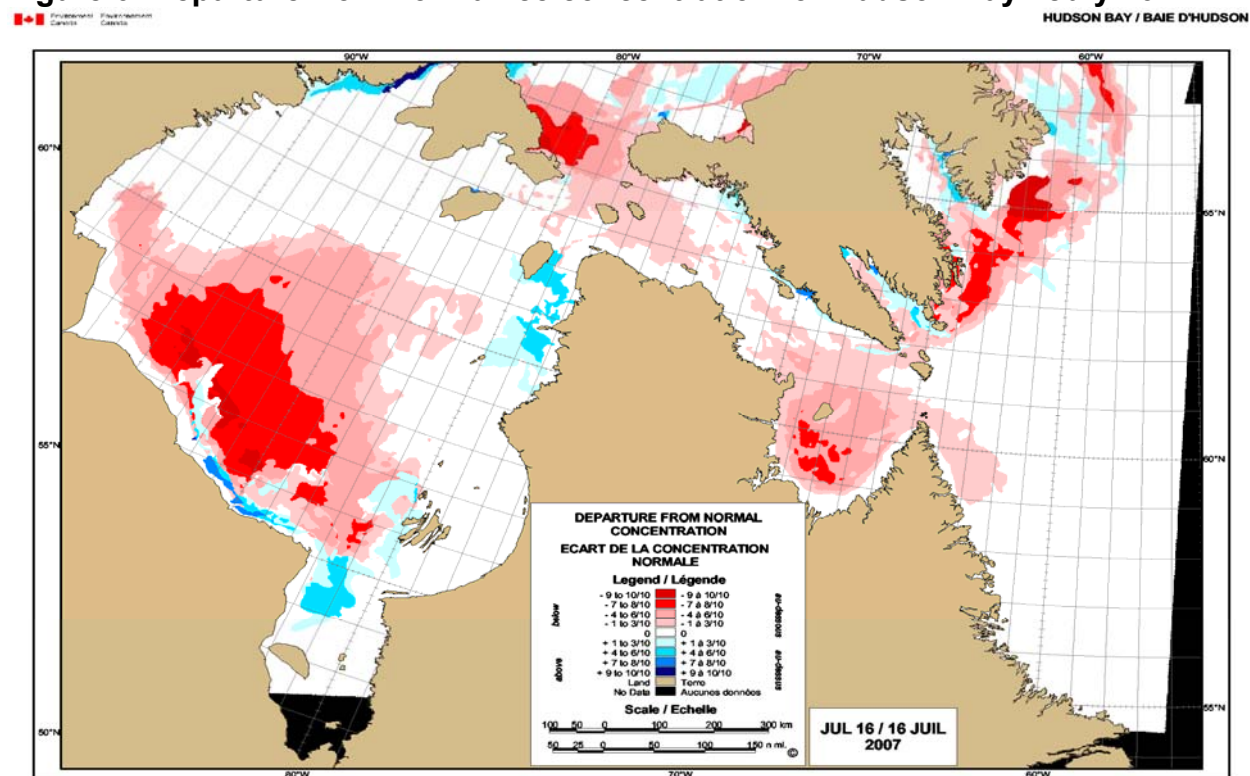
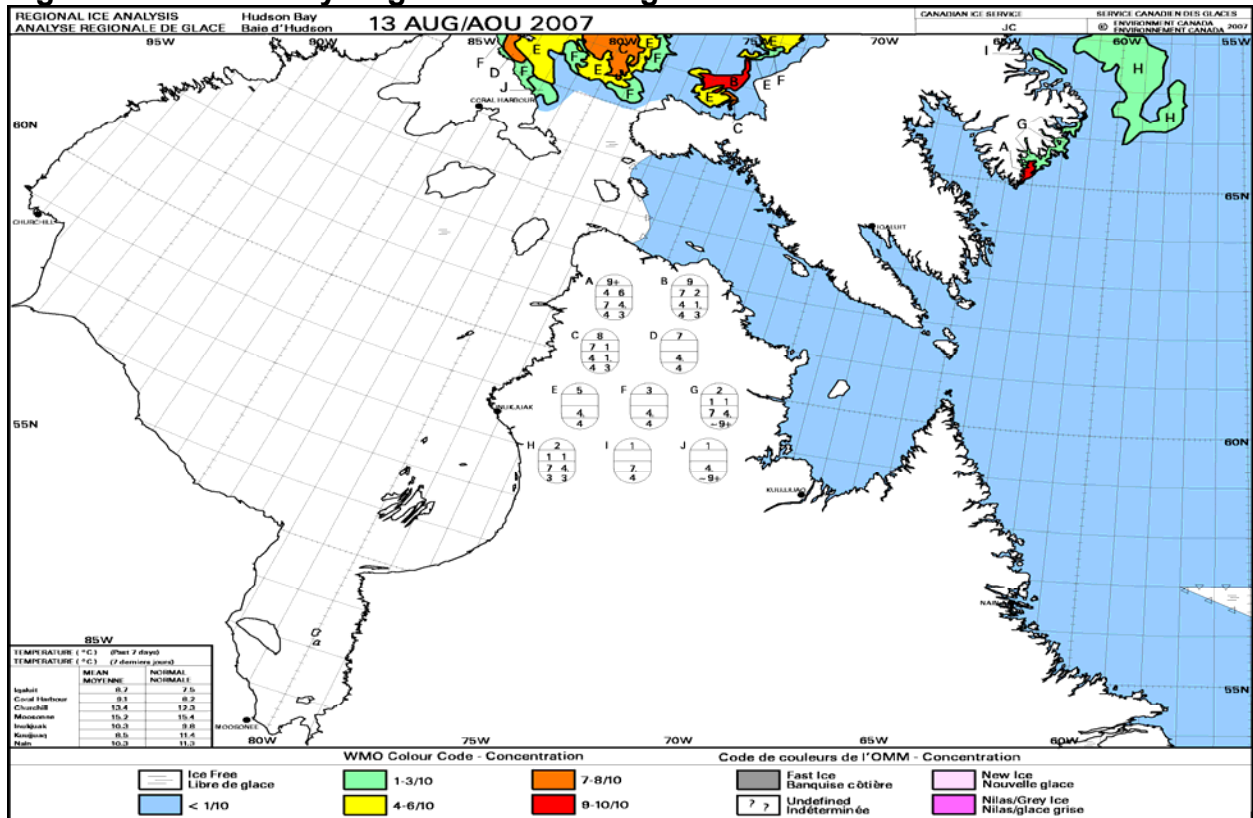
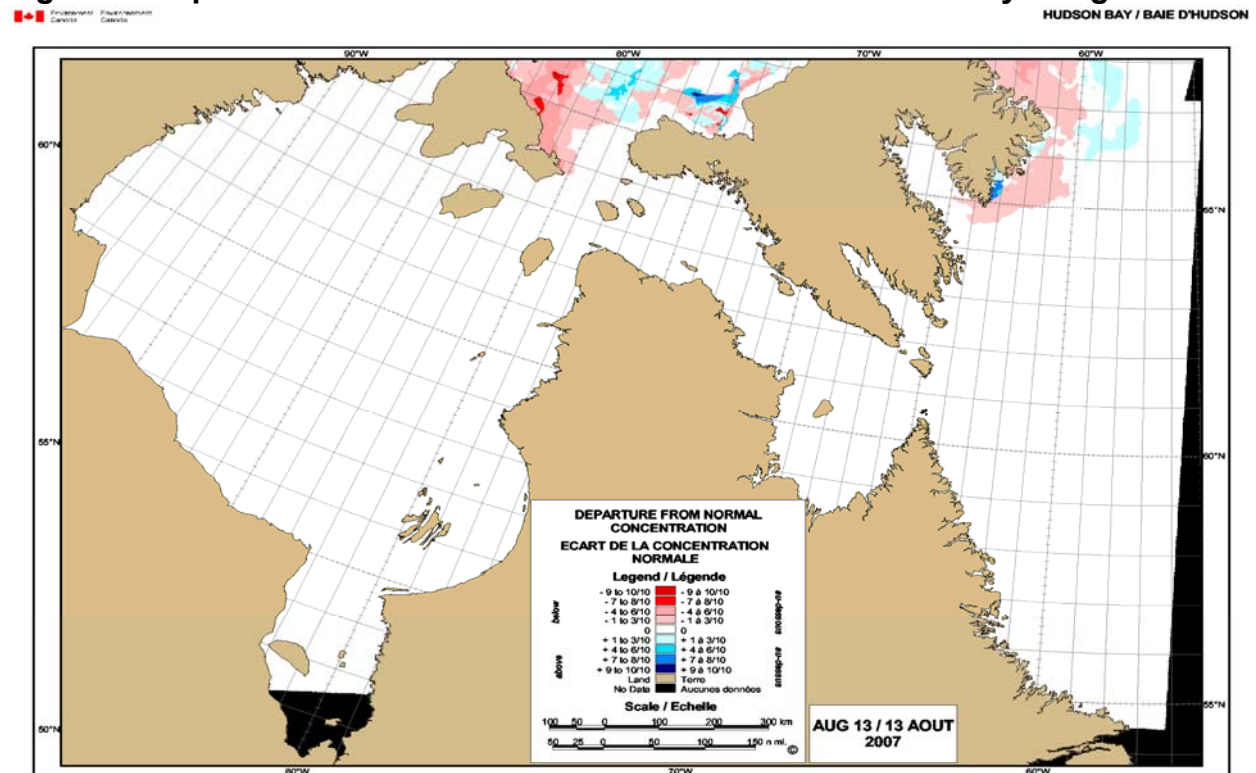
Figure 5: Hudson Bay Regional chart - July 16<sup>th</sup>Figure 6: Departure from normal ice concentration for Hudson Bay - July 16<sup>th</sup>



Figure 7: Hudson Bay Regional chart - August 13<sup>th</sup>Figure 8: Departure from normal ice concentration for Hudson Bay - August 13<sup>th</sup>

## Eastern Arctic

Mean air temperatures were below normal values over the entire area during the month of May. As a result, ice conditions at the end of May were near normal over most locations except 1 to 2 weeks earlier than normal over Baffin Bay, Foxe Basin and Lancaster Sound. At the end of May, large bergy water leads formed along the western Greenland Coast south of 73N, while large areas of bergy water developed over northern Lancaster Sound and in most of Cumberland Sound. Clearing was already under progress over the extreme northwestern portion of Foxe Basin. Old ice concentrations were greater than normal over central Baffin Bay, while a trace of old ice was present over Barrow Strait and from Prince Regent Inlet to Pelly Bay.

### **June 2007**

Near normal temperatures prevailed over most locations during the month of June except for above normal temperatures over the High Arctic as indicated in Table 2. During the first half of June, light to moderate easterly winds dominated over most locations except for light and variable winds over Baffin Bay and Davis Strait. During the last two weeks of June, light and variable winds prevailed over the whole area as indicated in Figure 29. The ice melted at a moderate pace over most areas during the period but at a slower pace over northwestern Baffin Bay and in eastern Lancaster Sound.

At the start of the month, bergy water lead was present along the Greenland Coast south of 74N. Large areas of open or bergy water were already developing over northwestern Baffin Bay, in western Lancaster Sound, in Cumberland Sound and northwestern Foxe Basin. Very close pack ice conditions dominated over most of Baffin Bay, in northern Davis Strait and the rest of Foxe Basin. Large bands of 4 tenths of old ice were embedded in the ice pack in the central portion of Baffin Bay and south of Cape Dyer. As the easterly winds developed over the High Arctic during the first half of June, bands of 6 tenths of old ice from the Kane Basin area drifted southward into the eastern entrance to Jones Sound and in eastern Lancaster Sound. This created an ice hazard for shipping activities over these areas. Ice concentrations continued to decrease rapidly during the month over northern Baffin Bay, in Davis Strait and southern Foxe Basin. Open drift to close pack ice conditions prevailed over these areas. An open drift or less route developed across northern Baffin Bay during the third week of June. At that time, fast ice fractured in eastern Barrow Strait. The rest of the Eastern Arctic remained consolidated during the period. Ice conditions were 1 week earlier than normal over Baffin Bay, northern Davis Strait and southern Foxe Basin and near normal elsewhere.

Ice conditions as well as departure from normal ice concentration for mid-June are shown in Figure 11 and Figure 12, respectively.

## **July 2007**

Above normal temperatures prevailed over most locations during the month of July except for near normal temperatures over southern Baffin Bay as indicated in Table 2. Light to moderate east to southeasterly winds developed over the whole area during the month of July as indicated in Figure 30. The ice melted at a moderate pace over most areas during the period but at a slower pace over northwestern Baffin Bay and in eastern Lancaster Sound.

In early July, bergy or open water was present over eastern Baffin Bay, in Cumberland Sound and northwestern Foxe Basin. Otherwise, similar ice conditions persisted over most of the Eastern Arctic. The ice started to melt rapidly during the month of July. A bergy water route developed across northern Baffin Bay to Thule during the second week of July. However the ice only cleared off along the shipping route to Lancaster Sound at the end of July due to the presence of old ice floes over northwestern Baffin Bay. The ice fractured over western Barrow Strait and in Wellington Channel near mid-July and in northern Admiralty Inlet, Pond Inlet, McDougall Sound and southern Norwegian Bay during the third week of July. A week later, fast ice fractured from northern Norwegian Bay to Eureka Sound and in Jones Sound.

At the end of the month, very open to open drift ice conditions with one tenth of old ice embedded in the ice pack dominated over western Baffin Bay, along the shore from Cape Dyer to Cumberland Sound, in Parry Channel and in eastern Jones Sound. As well, very open to open drift ice conditions persisted in southeastern Foxe Basin. During the period, bands of very open to open drift old ice continued to drift southward into the eastern entrances to Lancaster Sound and Jones Sound. This created an ice hazard to shipping activities over these areas. At the end of July, close to very close pack ice conditions prevailed over the rest of Foxe Basin, in Gulf of Boothia and in Norwegian Bay. Patches of 1 tenth of old ice was embedded in the ice pack in Norwegian Bay. Most of the ice in Eureka Sound melted completely except for a few patches of open drift to close pack ice in the central section. Mostly bergy water conditions were present over northern Prince Regent Inlet, in northern Admiralty Inlet and in eastern Baffin Bay. Ice conditions were 1 to 2 weeks earlier than normal.

Ice conditions as well as departure from normal ice concentration for mid-July are shown in Figure 13 and Figure 14, respectively.

## **August 2007**

Above normal temperatures prevailed over most locations during the month of August except for near normal temperatures over Foxe Basin as indicated in Table 2. Light to moderate east to southeasterly winds dominated over the whole area during the month of August as indicated in Figure 31. The ice melted at a moderate pace over most areas during the period but at a slower pace over northwestern Baffin Bay and in Foxe Basin.

In early August, very open to open drift ice conditions with 1 tenth of old ice dominated over central Baffin Bay and along the Baffin Island coast from Cumberland

Sound to south of Pond Inlet. The ice melted completely in Pond Inlet and in Barrow Strait during the first week of August and a week later in northern Admiralty Inlet. An open drift or less route developed towards Home Bay during the first week of August. Very open to open drift old ice persisted south of Kane Basin and in Jones Sound during the period creating an ice hazard to shipping activities. Similar ice conditions persisted elsewhere over the Eastern Arctic at the start of the month. Ice concentrations continued to decrease rapidly during the month.

At the end of August, bergy water was present in Baffin Bay except for a few isolated patches of old ice in the central section and along the Baffin Island coast from Cumberland Sound to south of Pond Inlet. A continuous flow of old ice from Kane Basin maintained an area of very close pack old ice in the eastern entrance of Jones Sound. Most of the ice melted completely in Parry Channel, western Jones Sound, in northern Norwegian Bay and southern Eureka Sound. Some of the old ice which broke in Nansen Sound drifted southward into the northern portion of Eureka Sound. This prevented the clearing of Eureka Sound. Very open to open drift ice prevailed over most of Foxe Basin and in Gulf of Boothia at the end of the period. At that time, an open water route developed towards Hall Beach. However higher concentrations of ice persisted over the southwestern section of Foxe Basin. Ice conditions were 2 weeks earlier than normal.

Ice conditions as well as departure from normal ice concentration for mid-August are shown in Figure 15 and Figure 16, respectively.

### **September 2007**

Near normal temperatures prevailed over most locations during the month of September except for above normal temperatures over the High Arctic as indicated in Table 2. Light and variable winds dominated over the whole area during the month of September as indicated in Figure 32. Freeze-up over the High Arctic was delayed by 2 to 3 weeks.

Due to the presence of old ice this year, clearing was near normal over Baffin Bay and Davis Strait. The ice melted completely over Baffin Bay, northern Davis Strait and in Pelly Bay during the first week of September and over the Gulf of Boothia near mid-September. However, bands of very open to open drift old ice from eastern Jones Sound continued to drift southward during the period to cover the eastern entrance to Lancaster Sound. Bergy or open water persisted over most of Parry Channel, Prince Regent Inlet, western Jones Sound and northern Norwegian Bay during the first two weeks of September. Most of the ice melted over Foxe Basin except for a narrow band of ice which persisted along the northeast shore of Southampton Island until early October. New ice started to form over the High Arctic during the last week of September which was 7 to 10 days later than normal.

Ice conditions as well as departure from the normal ice concentration for mid-September are shown in Figure 17 and Figure 18, respectively.

**Table 2: Temperatures and departures from normal (°C) for Eastern Arctic**

	June		July		August		September	
Stations	Temp.	Depart.	Temp.	Depart.	Temp.	Depart.	Temp.	Depart.
Eureka	3.4	1.7	7.9	2.4	5.6	3.2	-5.6	2.3
Resolute	1.3	1.7	7.3	3.3	4.9	3.5	-3.1	1.9
Pond Inlet	2.4	0.8	7.5	1.7	6.9	2.9	-1.3	0.5
Clyde	1.0	0.5	3.9	-0.3	5.3	1.5	0.1	0.4
Hall Beach	0.6	0.0	7.0	1.2	5.4	0.9	0.1	0.6
Kugaaruk	3.3	0.4	10.3	1.6	8.3	1.9	0.4	0.3

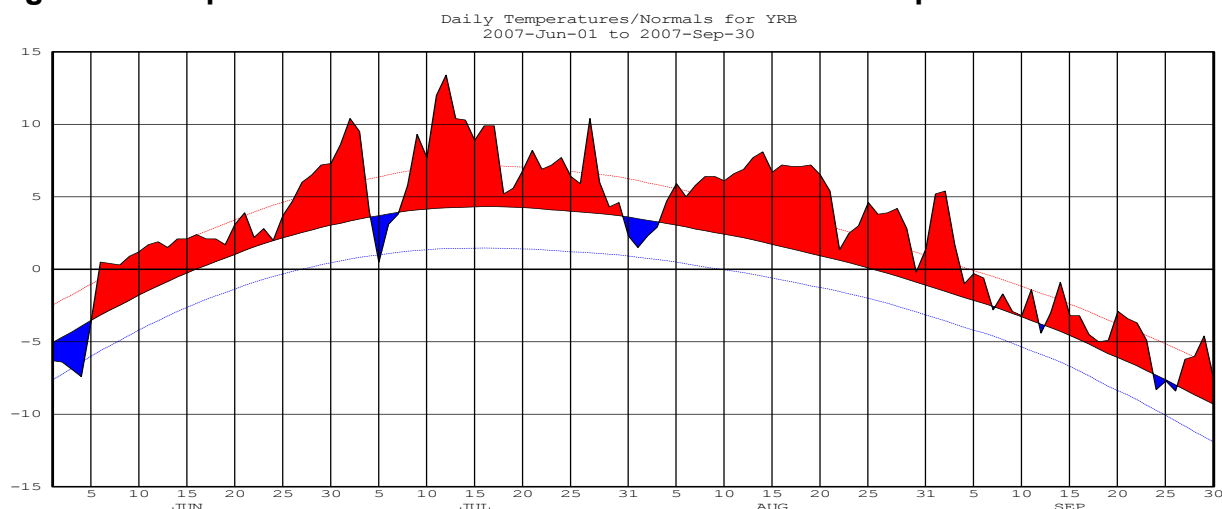
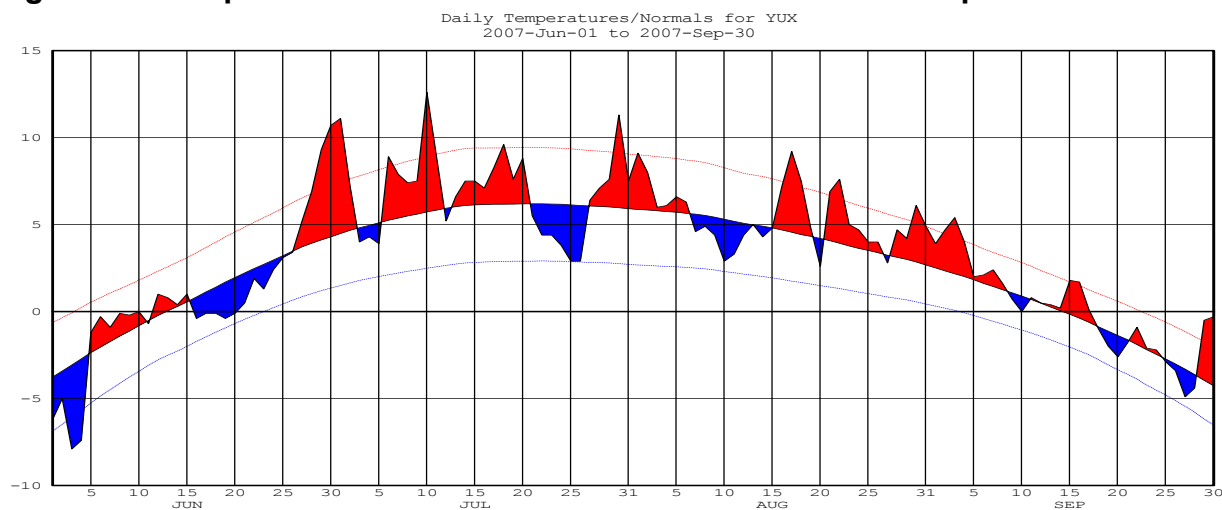
**Figure 9: Temperature trend for Resolute from June 1<sup>st</sup> to September 30<sup>th</sup>****Figure 10: Temperature trend for Hall Beach from June 1<sup>st</sup> to September 30<sup>th</sup>**







Figure 13: Eastern Arctic Regional chart - July 16<sup>th</sup>

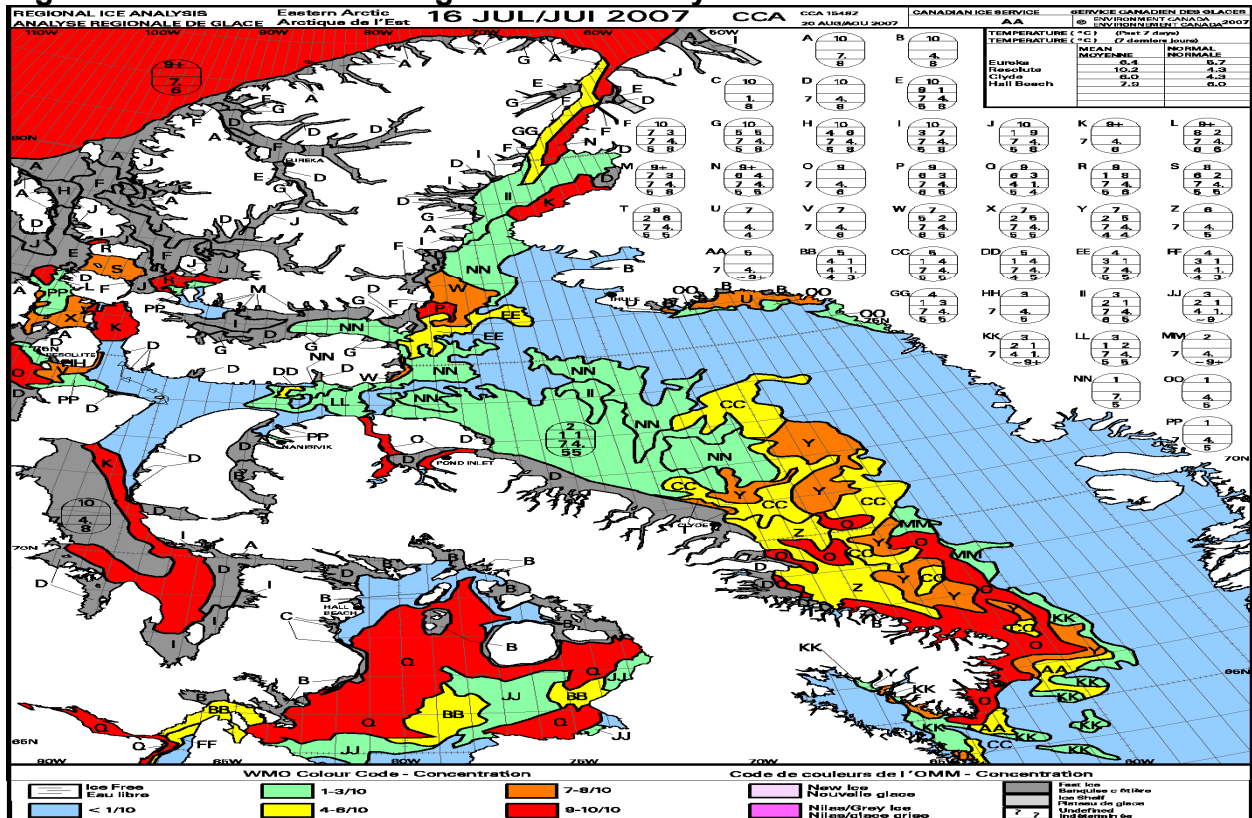


Figure 14: Departure from normal ice concentration for Eastern Arctic - July 16<sup>th</sup>

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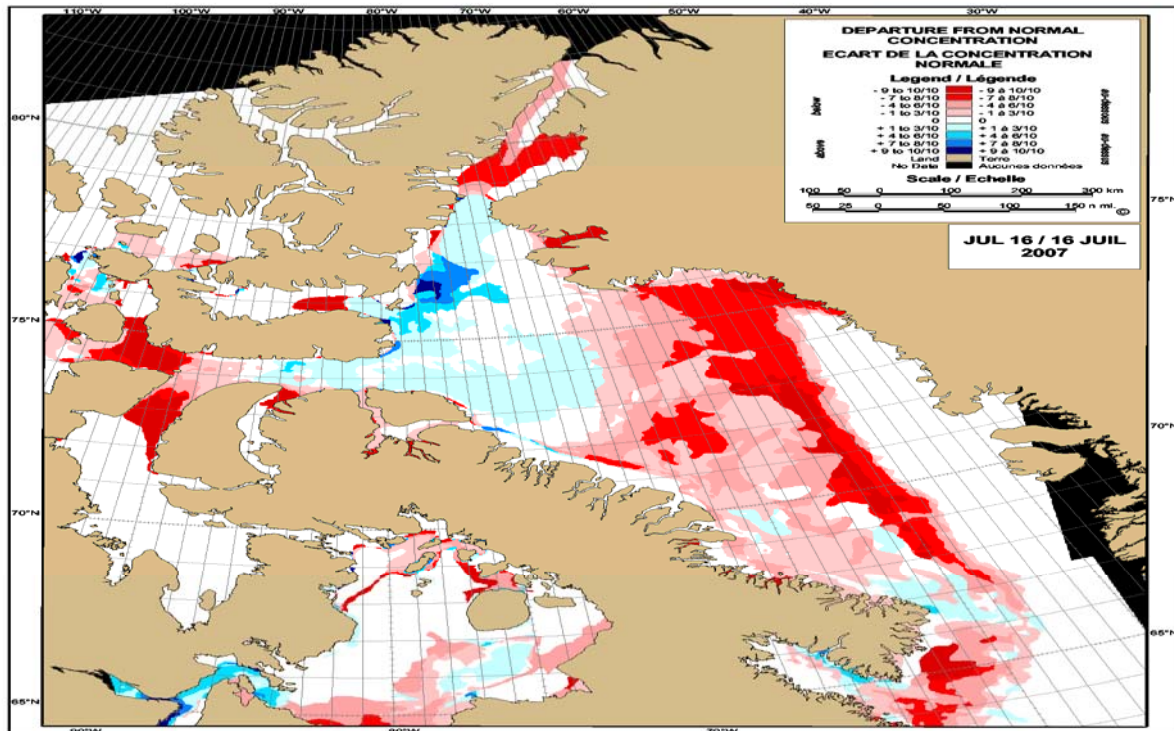


Figure 15: Eastern Arctic Regional chart - August 13<sup>th</sup>

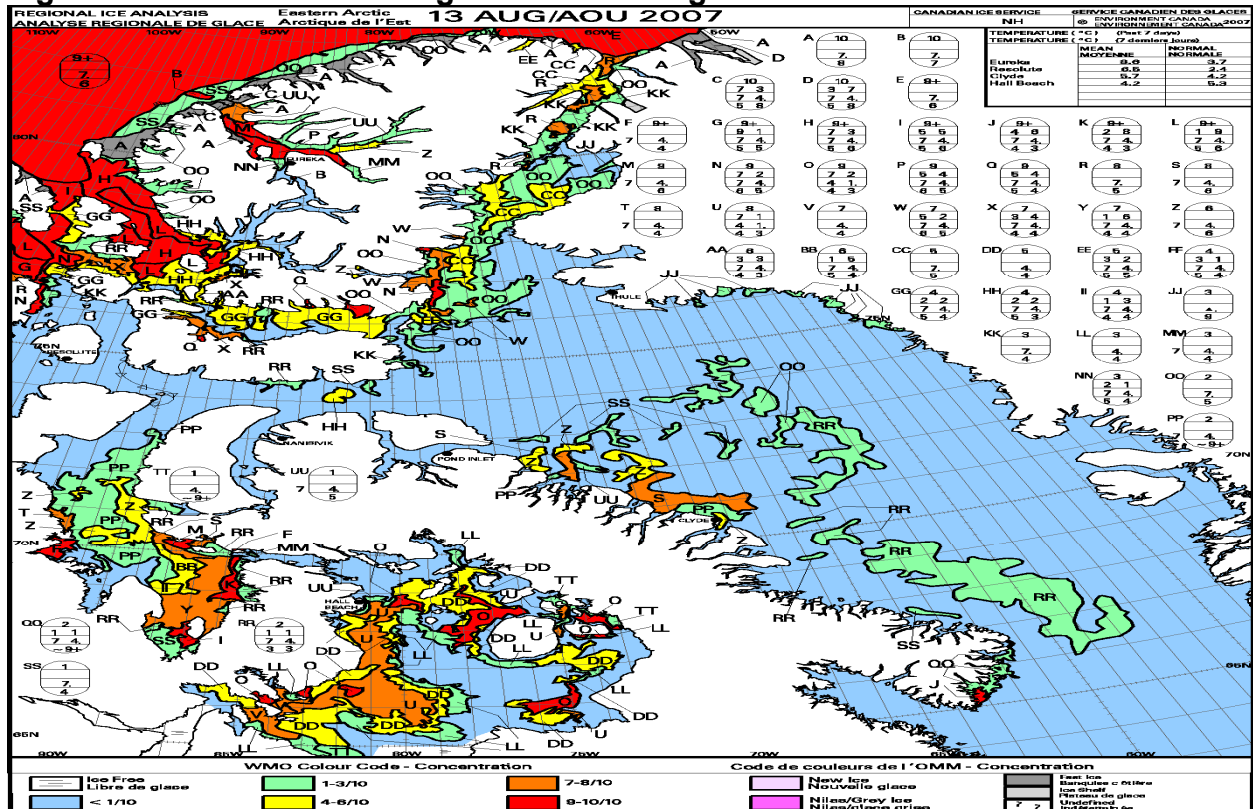


Figure 16: Departure from normal ice concentration for Eastern Arctic - August 13<sup>th</sup>

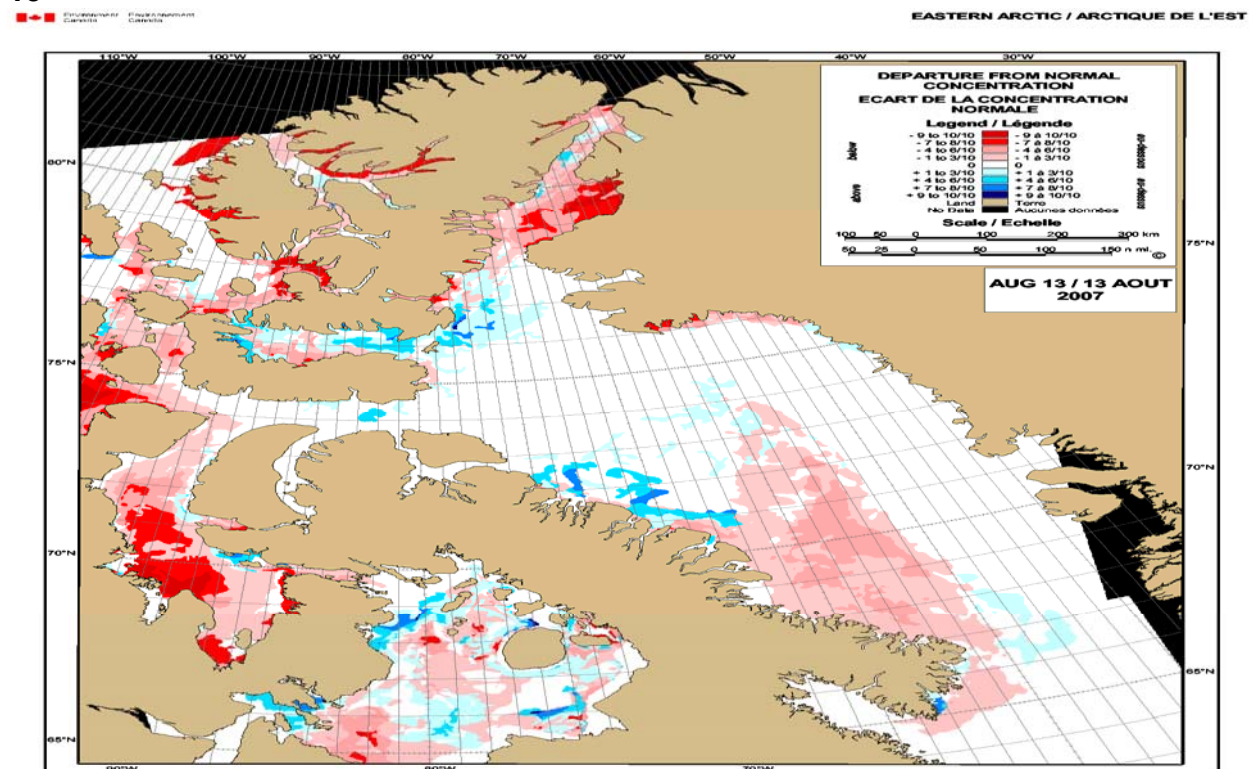




Figure 17: Eastern Arctic Regional chart - September 17<sup>th</sup>

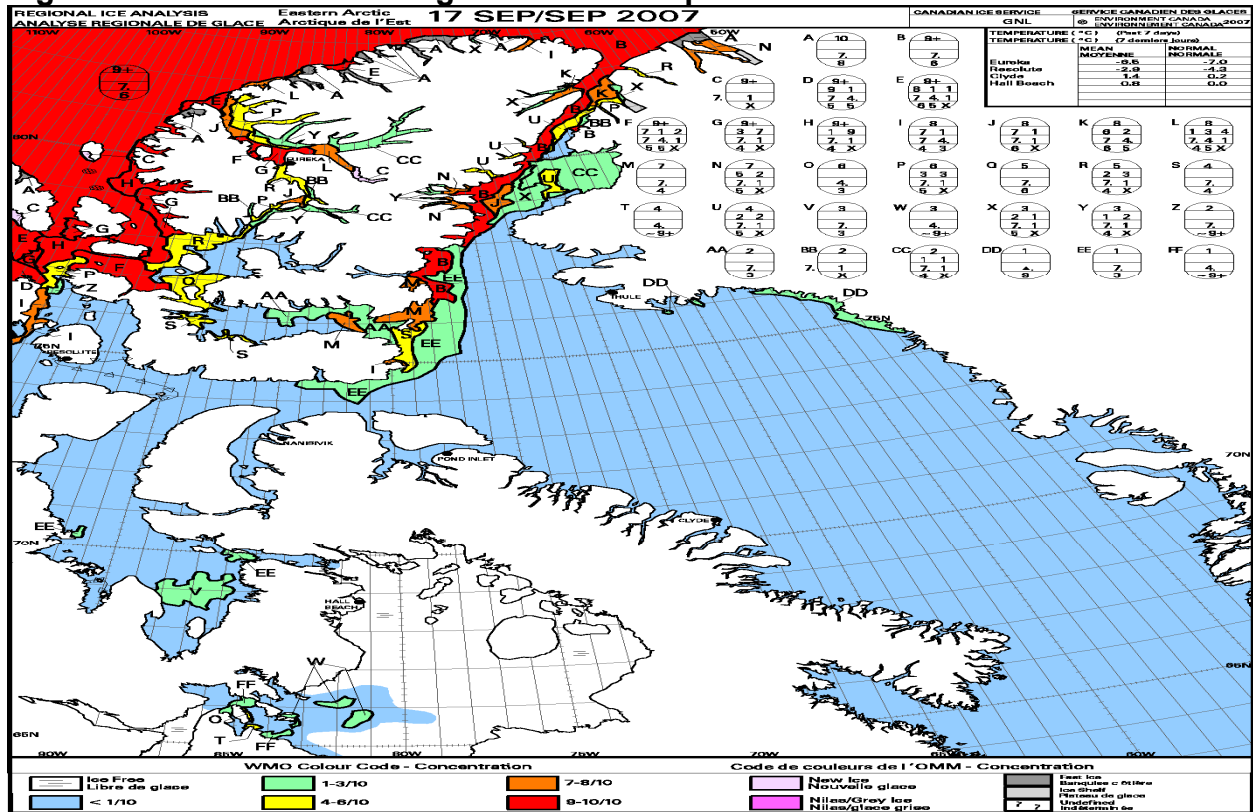
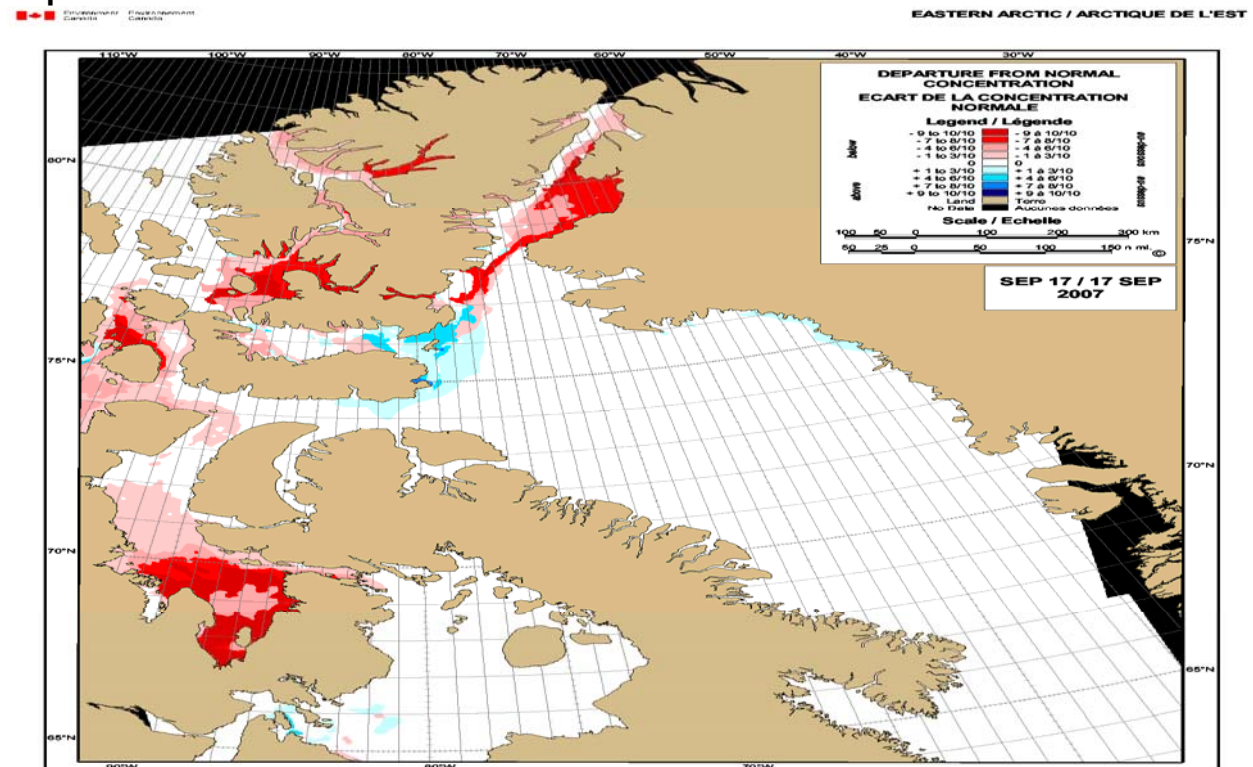


Figure 18: Departure from normal ice concentration for Eastern Arctic - September 17<sup>th</sup>



## **Western Arctic**

Mean air temperatures were below normal values over the entire area during the month of May. At the end of May, ice conditions were 2 to 3 weeks earlier than normal from Amundsen Gulf westward except near normal over the rest of the Western Arctic. However, the extent of the old ice pack was in its normal position over the Beaufort Sea except much farther north than normal along the Alaskan Coast. Old ice concentrations were much less than normal along the shipping route from Victoria Strait to Peel Sound. Amundsen Gulf was already mobile at the start of the spring season.

### **June 2007**

Near normal temperatures prevailed over most locations during the month of June except for above normal temperatures over eastern Beaufort Sea and in Coronation Gulf as indicated in Table 3. Moderate northeasterly winds developed over the Central Arctic during the first half of June, while moderate southeasterly winds prevailed over the Beaufort Sea and along the Alaskan Coast. Light and variable winds dominated over the whole area during the last two weeks of June as indicated in Figure 29. The ice melted at a rapid pace during the period.

Large areas of open water were already developing in eastern Amundsen Gulf, west of Banks Island and west of Point Barrow in early June. At the start of the month, very close pack ice conditions with a trace of old ice dominated over the southern Beaufort Sea, along the Alaskan Coast and in western Amundsen Gulf. The southern extent of the old ice pack was lying 150 to 180 miles north of the shore over the southern Beaufort Sea. Ice concentrations started to decrease rapidly over the Beaufort Sea and in the old ice pack west of Banks Island. The ice cleared in Mackenzie Bay and Kugmallit Bay during the third week of June. At the end of June, areas of open water were wider in Amundsen Gulf and west of Banks Island. North of Tuktoyaktuk Peninsula, open drift to close pack ice conditions dominated over the area, while the old ice pack was becoming looser farther north. However little change in the ice conditions was observed along the Alaskan Coast during the period. The rest of the Western Arctic remained consolidated throughout June. Ice conditions were 2 to 3 weeks earlier than normal over the southern Beaufort Sea, Amundsen Gulf and west of Point Barrow and near normal elsewhere.

Ice conditions as well as departure from normal ice concentration for mid-June are shown in Figure 21 and Figure 22, respectively.

### **July 2007**

Above normal temperatures prevailed over the whole area during the month of July as indicated in Table 3. Light to moderate northeasterly winds developed over the Central Arctic during July, while light to moderate southeasterly winds prevailed over the

Beaufort Sea and along the Alaskan Coast as indicated in Figure 30. The ice melted at a moderate to rapid pace during the period.

In early July, fast ice fractured completely along the Tuktoyaktuk Peninsula. At that time, large areas of open water persisted in eastern Amundsen Gulf, west of Banks Island and west of Point Barrow. Very open to open drift ice conditions prevailed just north of Tuktoyaktuk Peninsula, from Mackenzie Bay to Barter Island and in western Amundsen Gulf. Close to very close pack ice conditions persisted in Liverpool Bay, Franklin Bay, Darnley Bay and along the Alaskan coast from Barter Island to Point Barrow. Elsewhere, little change in the ice conditions was observed at the start of the month. Ice concentrations decreased rapidly over the whole Western Arctic during the month of July. An open water route formed from Mackenzie Bay to Cape Bathurst just before mid-July. At that time, the consolidated ice started to fracture in Dolphin and Union Strait, Coronation Gulf, Dease Strait and Victoria Strait. During the third week of July, most of the consolidated ice fractured along the shipping route from Queen Maud Gulf to Peel Sound. A week later, most of the area in the southern Beaufort Sea and from Amundsen Gulf to Dease Strait was free of ice. In addition, most of the ice along the Alaskan Coast melted completely except for an isolated patch of close pack ice north of Prudhoe Bay. Close to very close pack ice with up to 1 tenth of old ice was present from central Queen Maud Gulf to Larsen Sound, while open drift to close pack ice conditions dominated over Peel Sound. Loose ice conditions was observed over the old ice pack west of Banks Island indicating an unusual ice melt over the Arctic Ocean during the month. At the end of the month, the southern extent of the old ice pack was lying 60 to 90 miles north of the shore over the southern Beaufort Sea and along the Alaskan Coast. Ice conditions were 2 to 3 weeks earlier than normal over the whole Western Arctic.

Ice conditions as well as departure from normal ice concentration for mid-July are shown in Figure 23 and Figure 24, respectively.

## **August 2007**

Near normal temperatures prevailed over most locations during the month of August except for above normal temperatures along the Alaskan Coast as indicated in Table 3. Light to moderate northerly winds developed over the Central Arctic during August, while light to moderate southeasterly winds prevailed over the Beaufort Sea and along the Alaskan Coast as indicated in Figure 31. The ice melted at a rapid pace during the period.

The ice melt over the Western Arctic continued to progress at a moderate to rapid pace over the area. As a result, an open water route developed along the shipping route from Amundsen Gulf to Taloyoak during the first week of August. At the start of August, close to very close pack ice conditions with 1 tenth of old ice persisted in southern Larsen Sound, while very open drift ice remained in southern Peel Sound and Victoria Strait. At that time, open water conditions existed as well in northern Peel Sound and in the southern Beaufort Sea. However an area of very open to open drift ice

persisted north of Prudhoe Bay. Elsewhere ice concentrations continued to decrease at a moderate to rapid pace during the month of August even in areas where ice melt rarely occurs. At the end of August, most of the shipping routes in the Northwest Passage, in the southern Beaufort Sea and along the Alaskan Coast were clear of ice. However areas of very open drift old ice were present in western Queen Maud Gulf and along southern Banks Island. During the period, the southern extent of the old ice pack retreated northward and lay 120 to 150 miles north of the shore in the Beaufort Sea and along the Alaskan Coast. The ice continued to decay over Arctic Ocean which resulted in the ice concentrations to decrease to open drift to close pack old ice conditions.

Ice conditions as well as departure from normal ice concentration for mid-August are shown in Figure 25 and Figure 26, respectively.

## **September 2007**

Near to slightly below normal temperatures prevailed over most areas during the month of September except for above normal temperatures along the Alaskan Coast as indicated in Table 3. Light to moderate northwesterly winds developed over the Central Arctic during September, while moderate southeasterly winds prevailed over the Beaufort Sea and along the Alaskan Coast as indicated in Figure 32. The ice continued to melt over the Western Arctic during the month of September. Freeze-up over the Western Arctic was delayed by 2 to 3 weeks.

During the period, the ice continued to decay from southwestern Larsen Sound to western Queen Maud Gulf and along southern Banks Island. At the end of September, patches of very open to open drift old ice persisted over these areas. Ice free or open water conditions prevailed elsewhere over the Western Arctic. During the period, the southern extent of the old ice pack continued to retreat northward. At the end of month, the ice edge lay 150 to 180 miles north of the coast from Tuktoyaktuk Peninsula to Barter Island and 240 to 280 miles north of the Alaskan Coast. At the end of the summer season, the extent of the remaining ice was reaching near minimum record values this year due to the extensive ice melt experienced over the Western Arctic.

Ice conditions as well as departure from normal ice concentration for mid-September are shown in Figure 27 and Figure 28, respectively.



**Table 3: Temperatures and departures from normal (°C) for Western Arctic**

Stations	June		July		August		September	
	Temp.	Depart.	Temp.	Depart.	Temp.	Depart.	Temp.	Depart.
Gjoa Haven	1.4	-0.1	10.3	2.8	6.4	0.8	-0.2	0.1
Cambridge Bay	3.4	1.2	11.9	3.8	5.9	-0.3	-1.2	-0.6
Kugluktuk	5.8	0.9	11.8	1.4	8.6	0.0	1.4	-1.2
Tuktoyaktuk	7.3	1.1	12.9	1.9	9.3	0.2	3.3	0.6
Point Barrow	2.1	-0.2	6.7	2.4	7.3	4.2	3.3	4.0

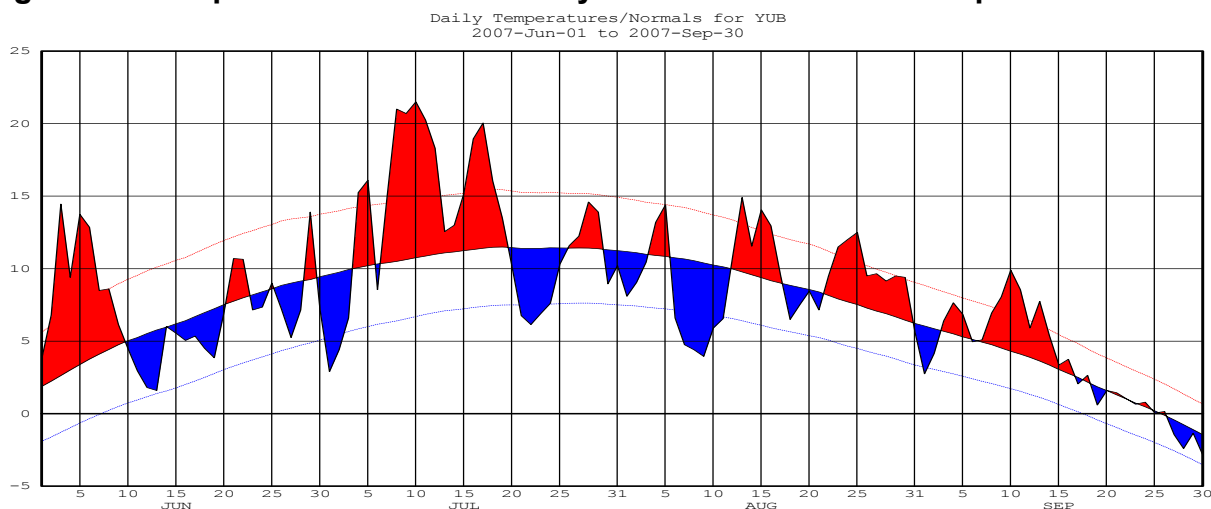
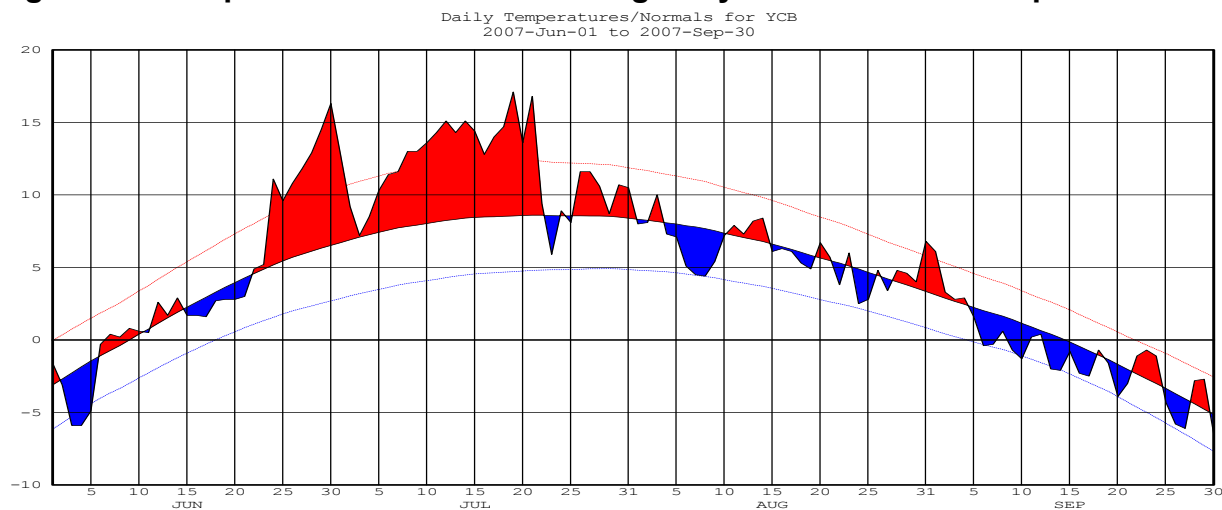
**Figure 19: Temperature trend for Tuktoyaktuk from June 1<sup>st</sup> to September 30<sup>th</sup>****Figure 20: Temperature trend for Cambridge Bay from June 1<sup>st</sup> to September 30<sup>th</sup>**

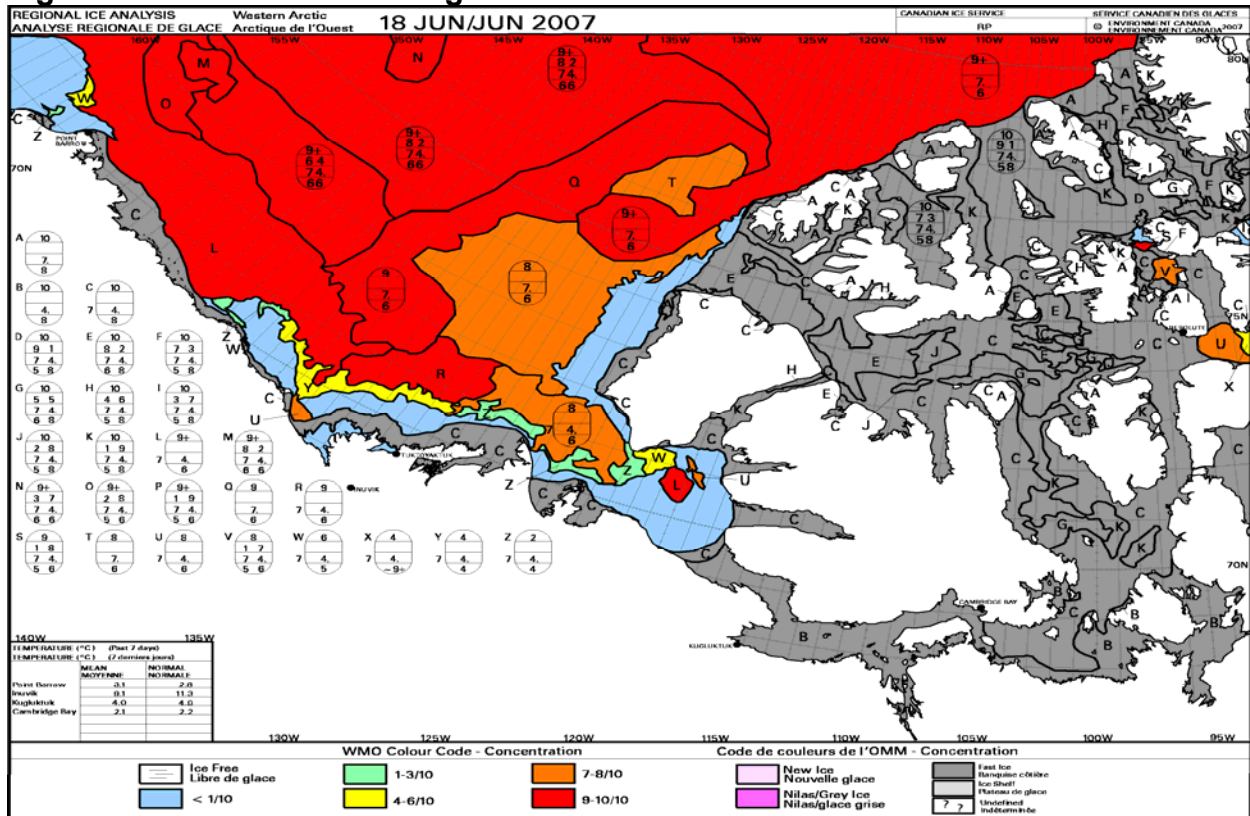
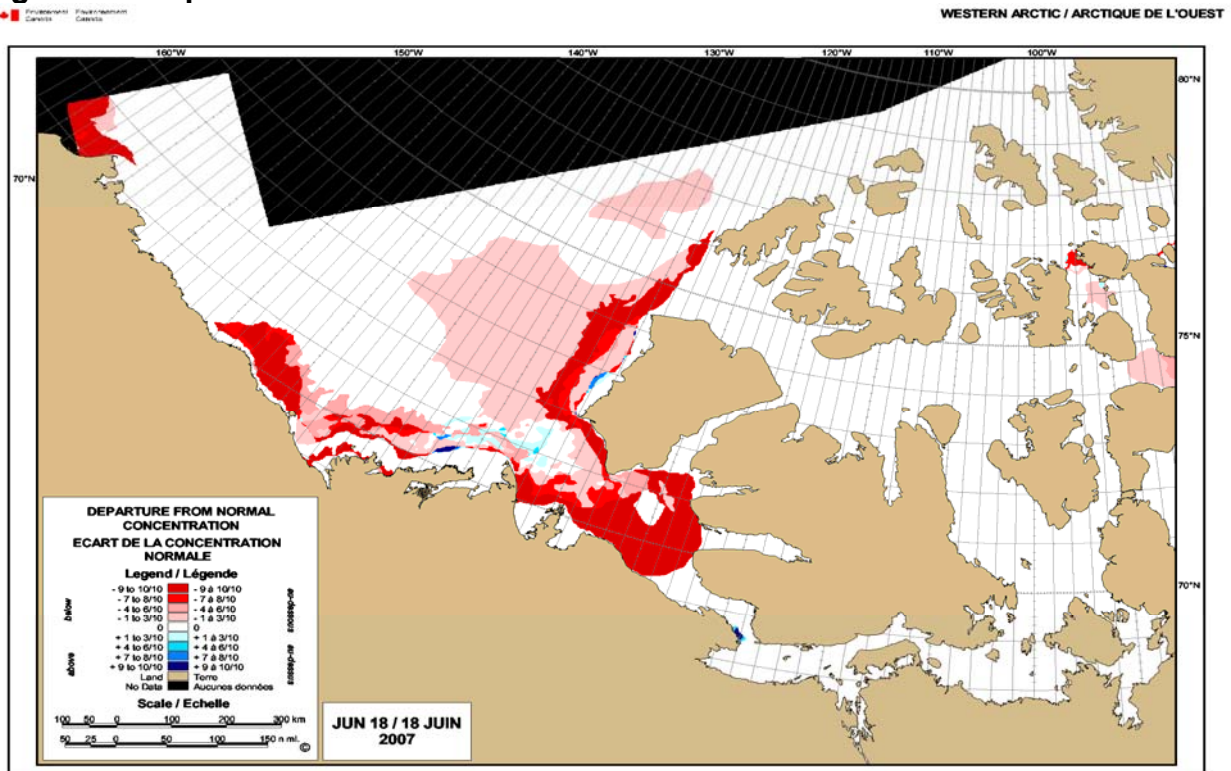
Figure 21: Western Arctic Regional chart - June 18<sup>th</sup>Figure 22: Departure from normal ice concentration for Western Arctic - June 18<sup>th</sup>

Figure 23: Western Arctic Regional chart - July 16<sup>th</sup>

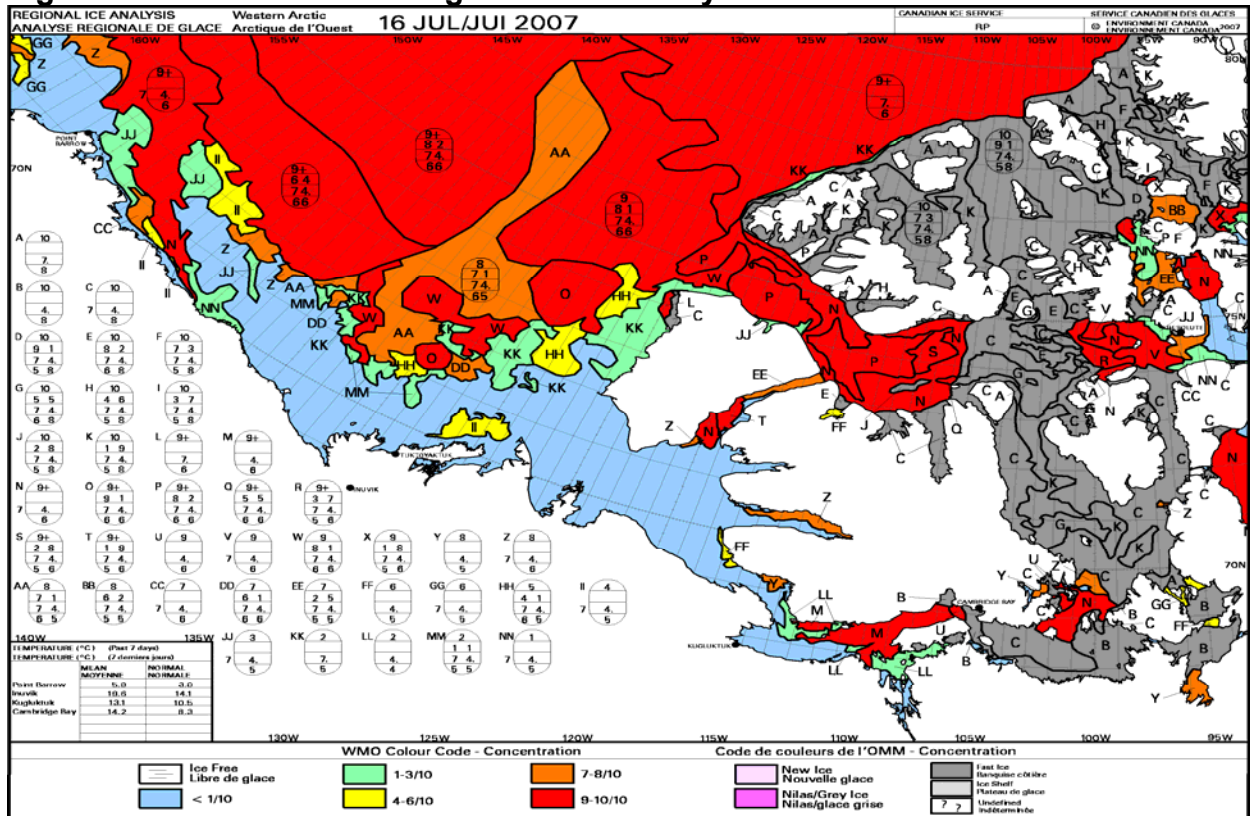


Figure 24: Departure from normal ice concentration for Western Arctic - July 16<sup>th</sup>

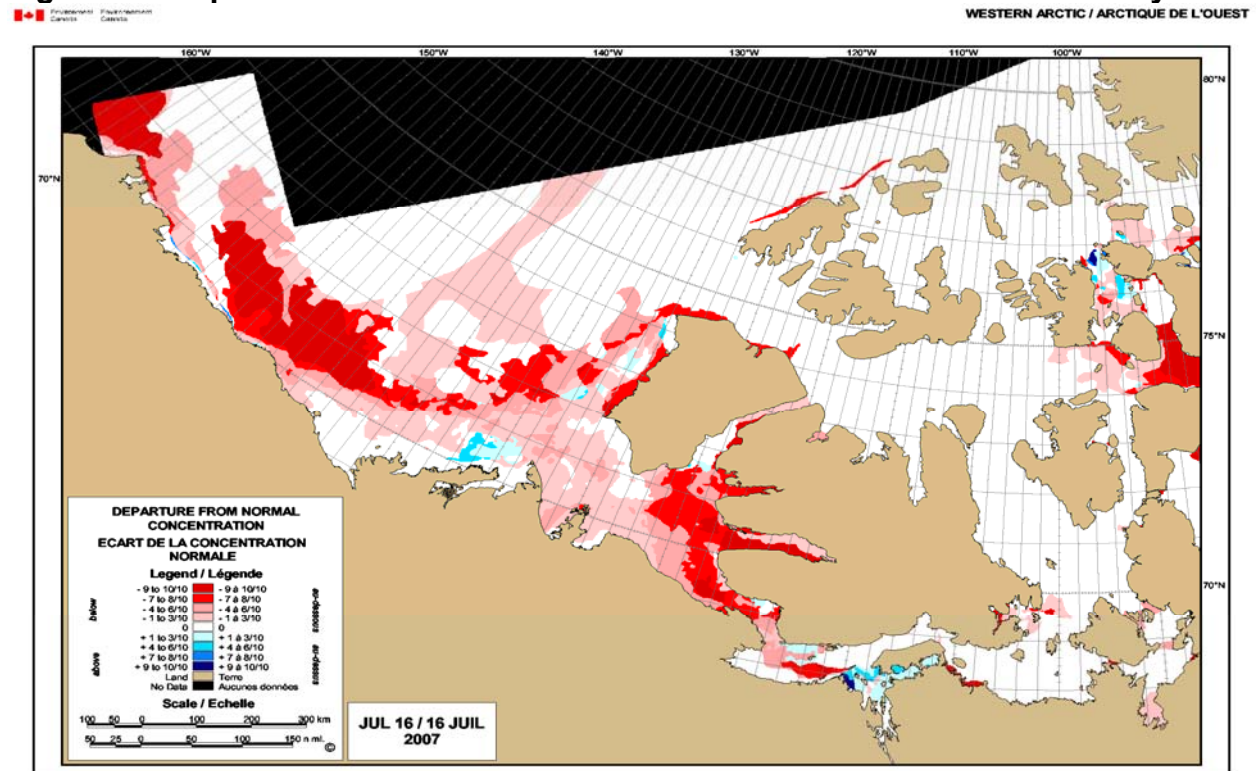




Figure 25: Western Arctic Regional chart - August 13<sup>th</sup>

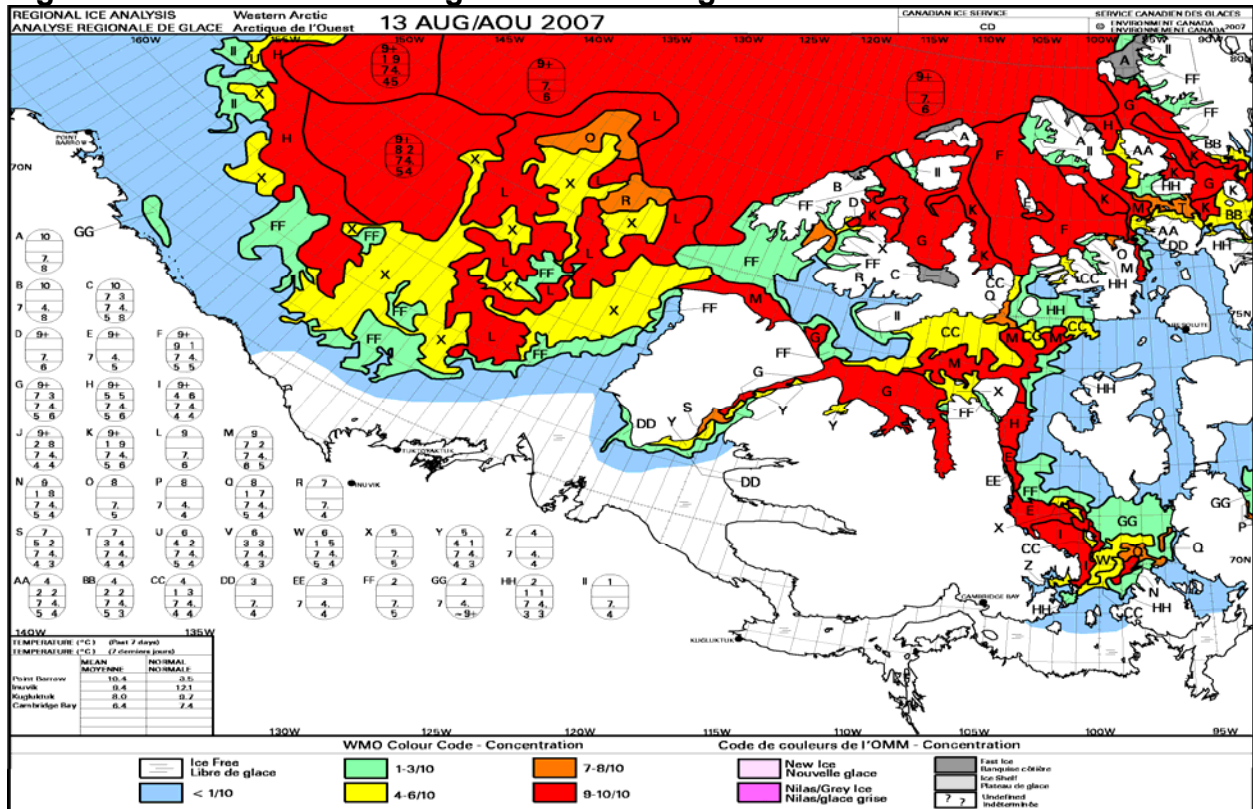


Figure 26: Departure from normal ice concentration for Western Arctic - August 13<sup>th</sup>

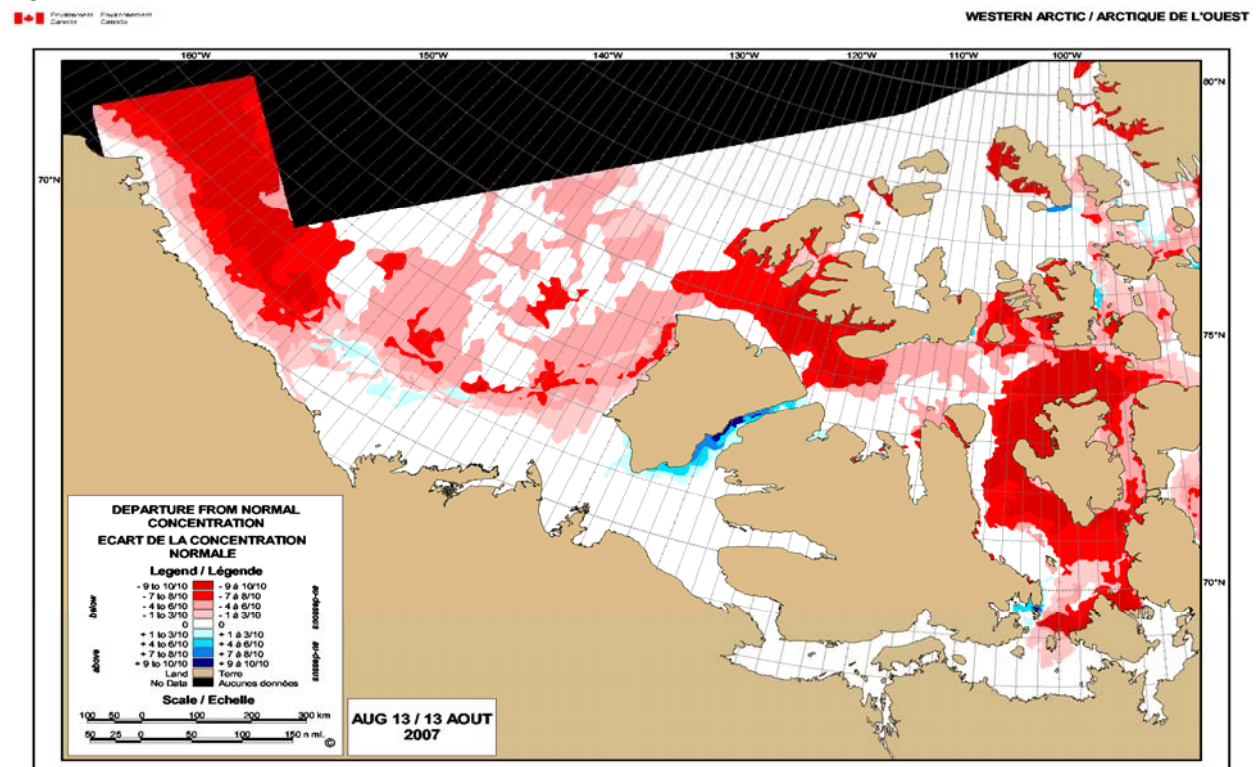


Figure 27: Western Arctic Regional chart - September 17<sup>th</sup>

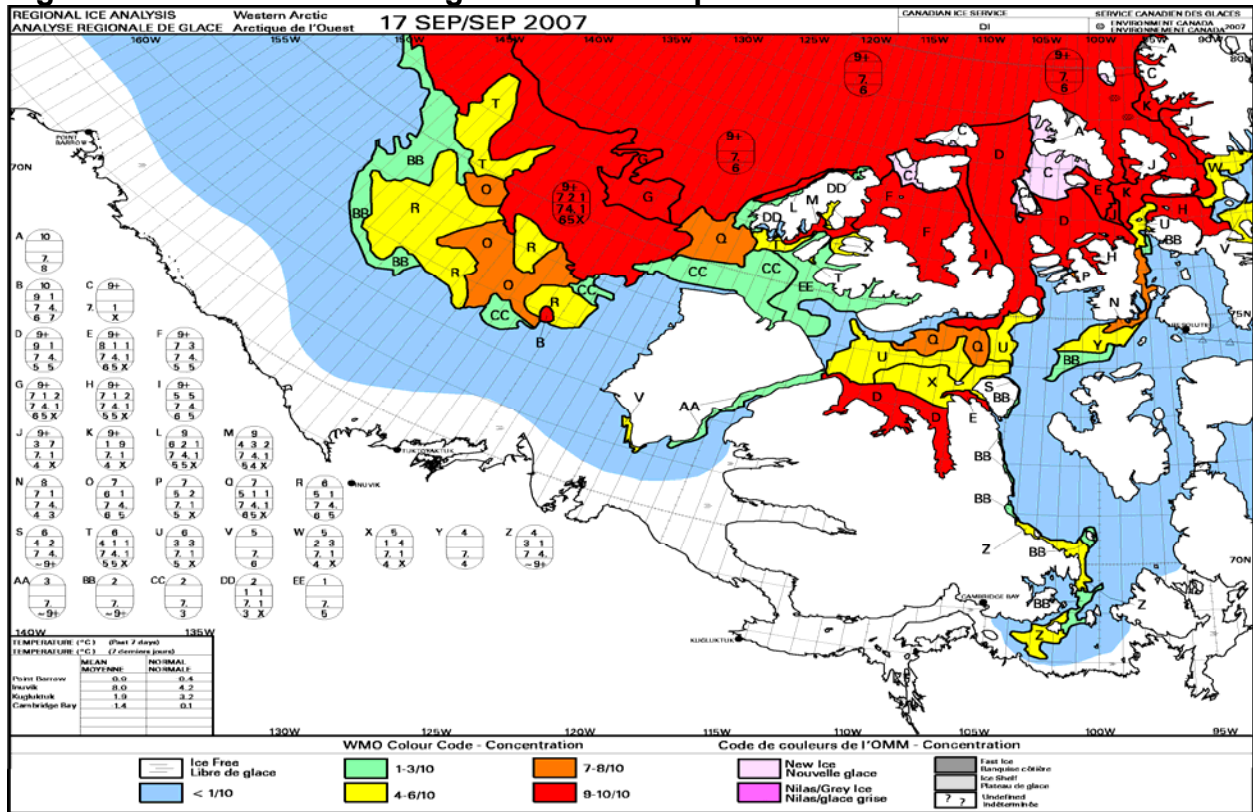
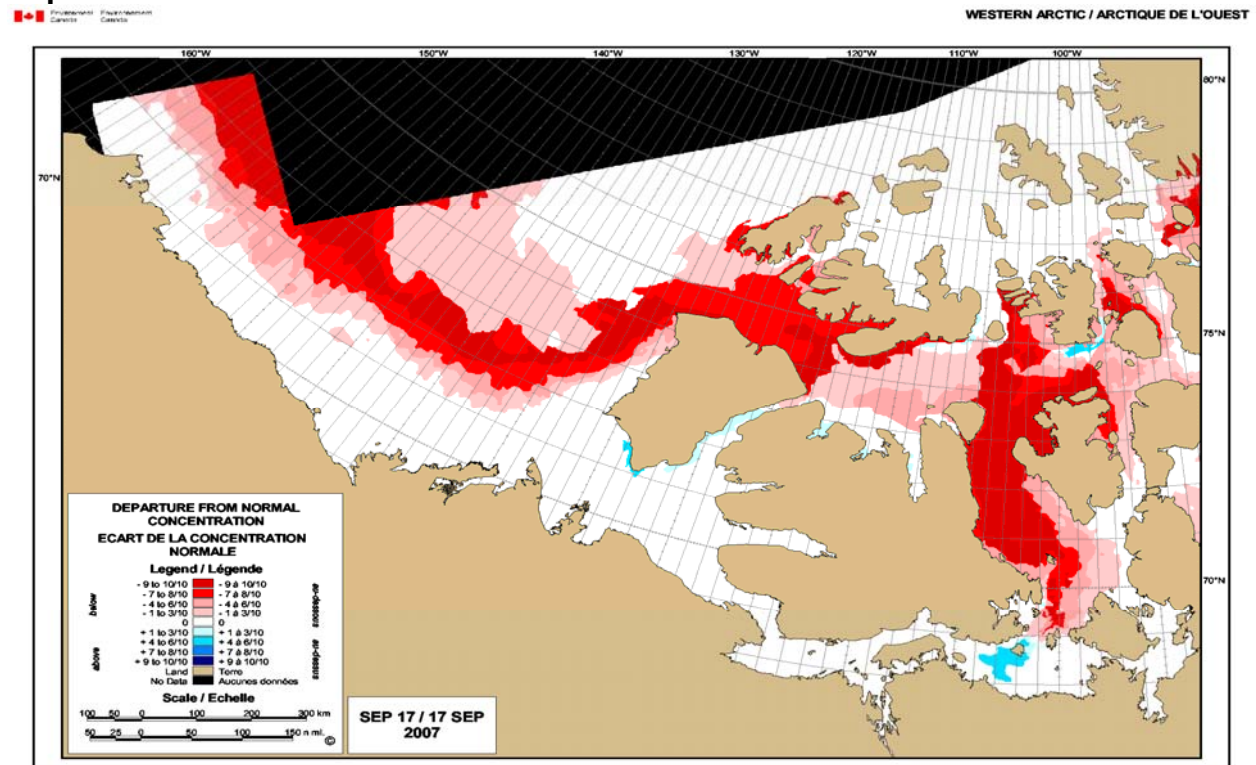
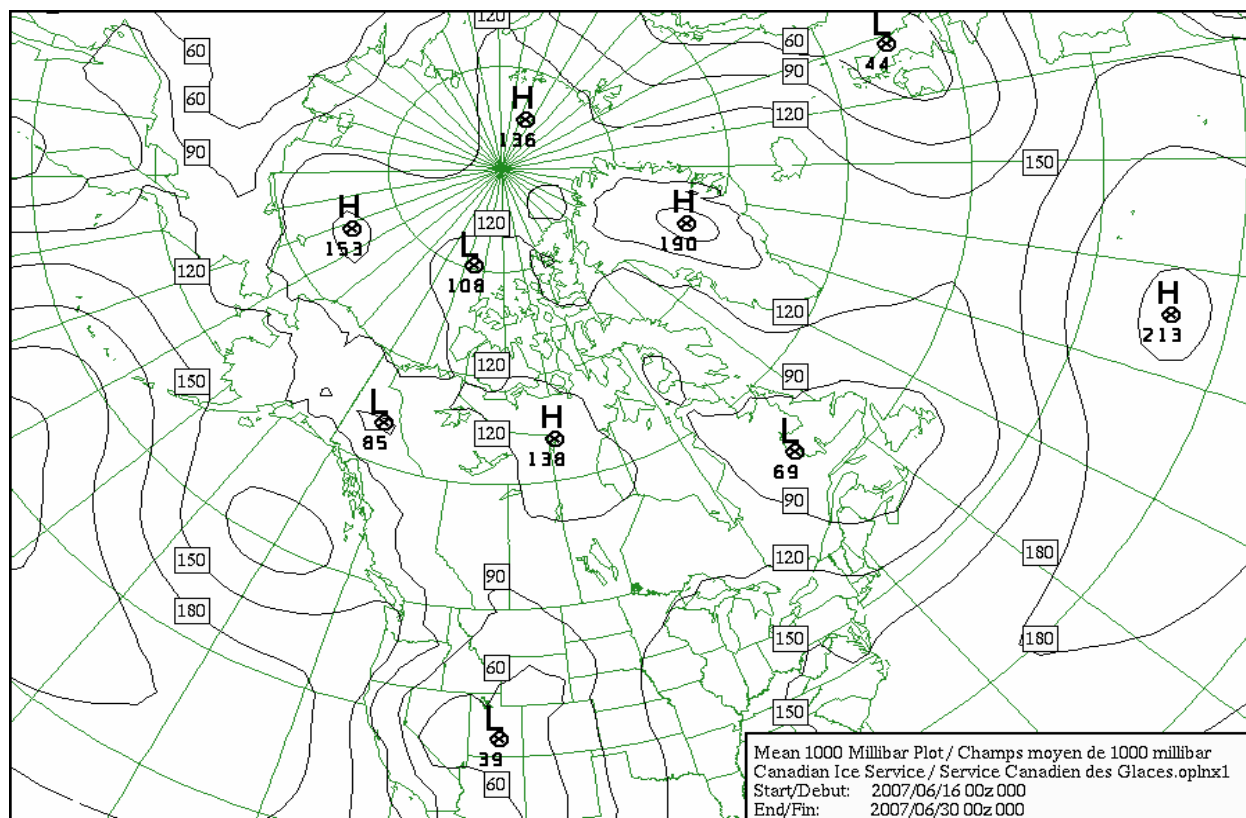
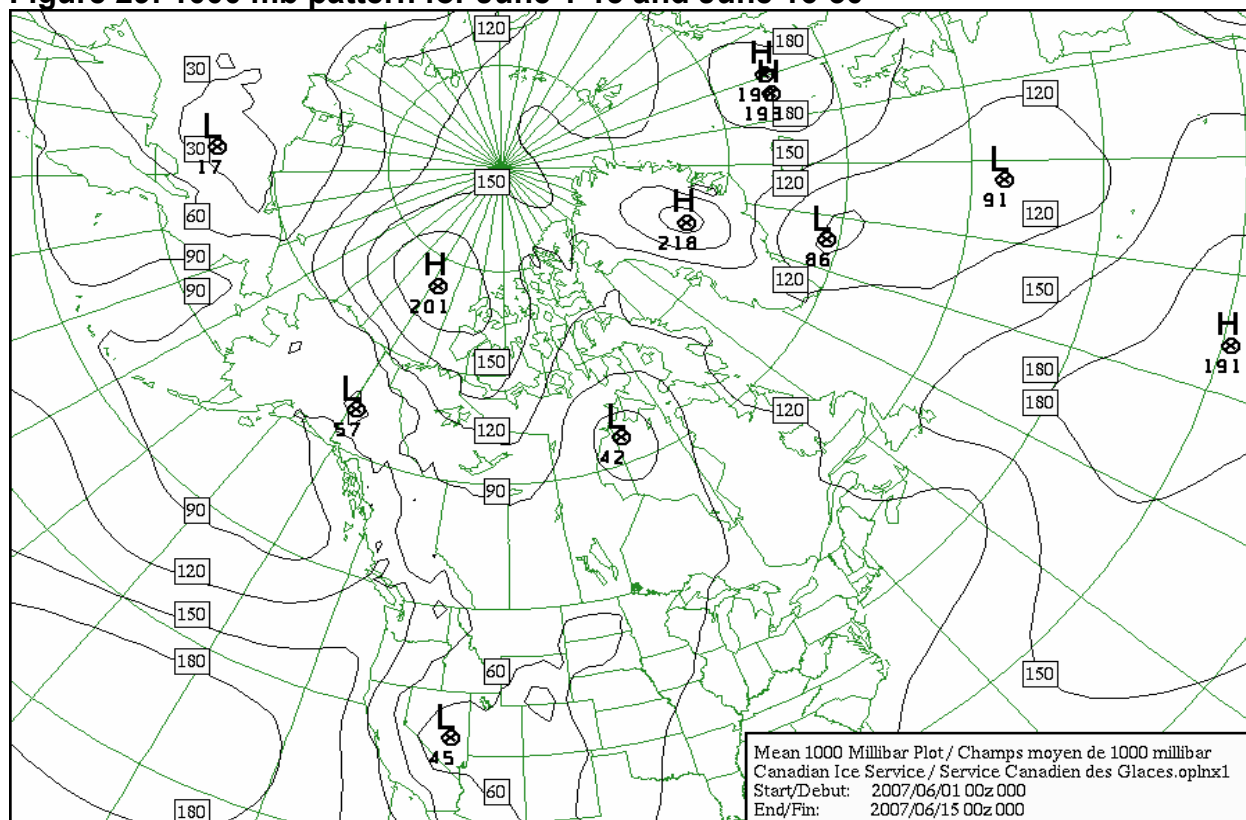


Figure 28: Departure from normal ice concentration for Western Arctic - September 17<sup>th</sup>



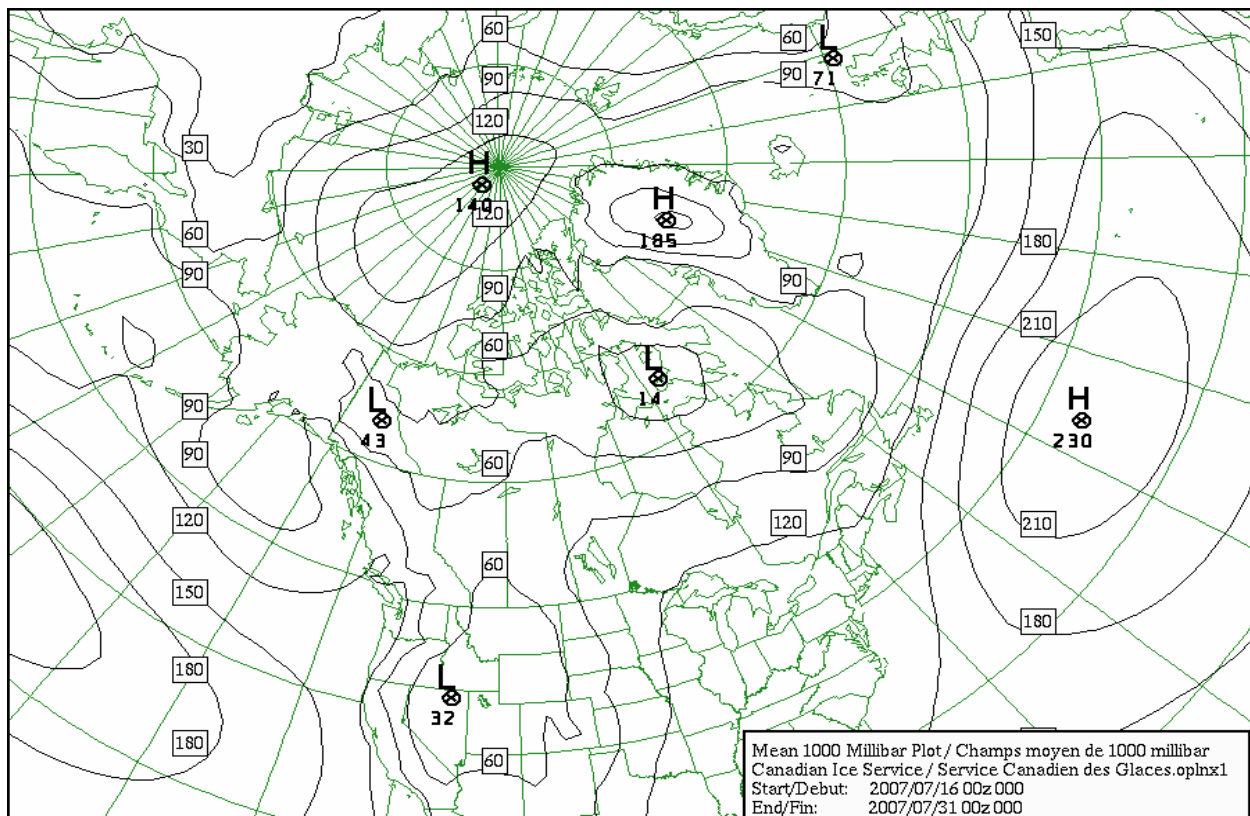
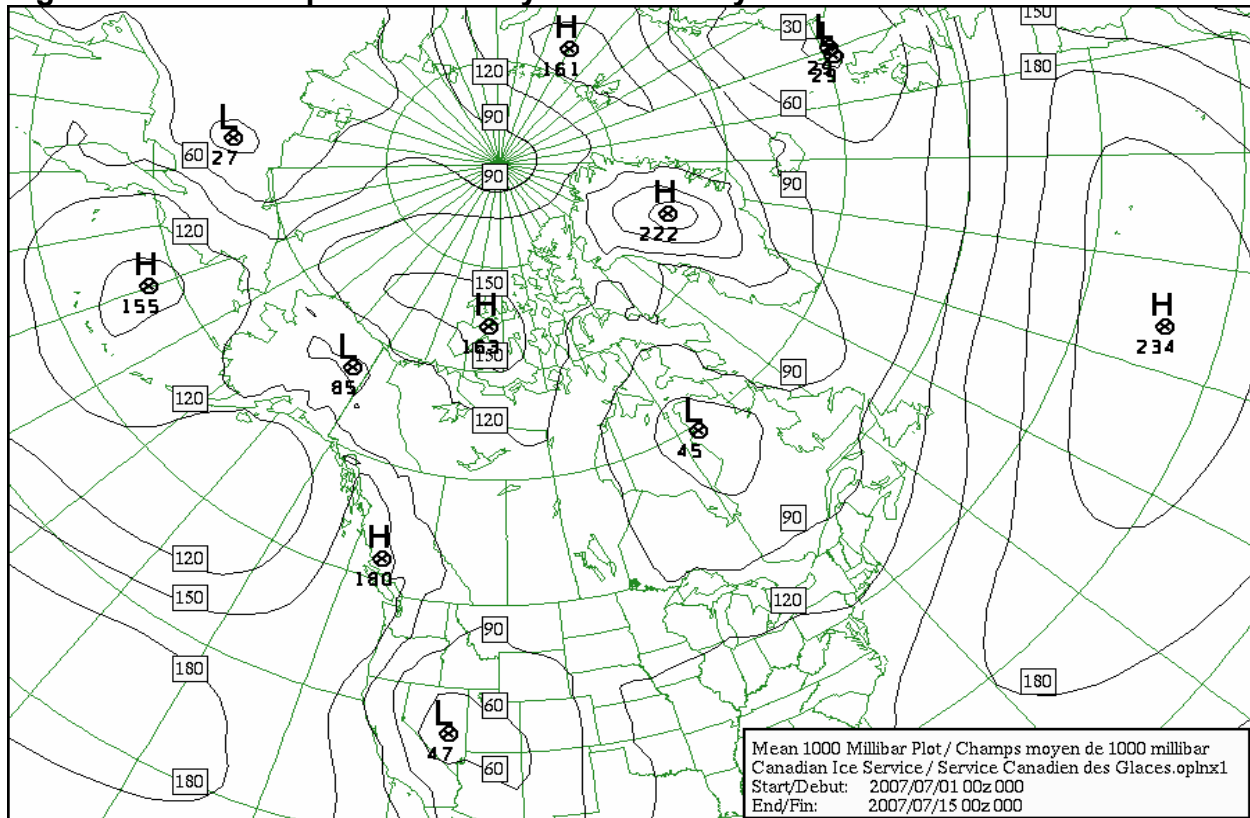


**Figure 29: 1000 mb pattern for June 1-15 and June 16-30**

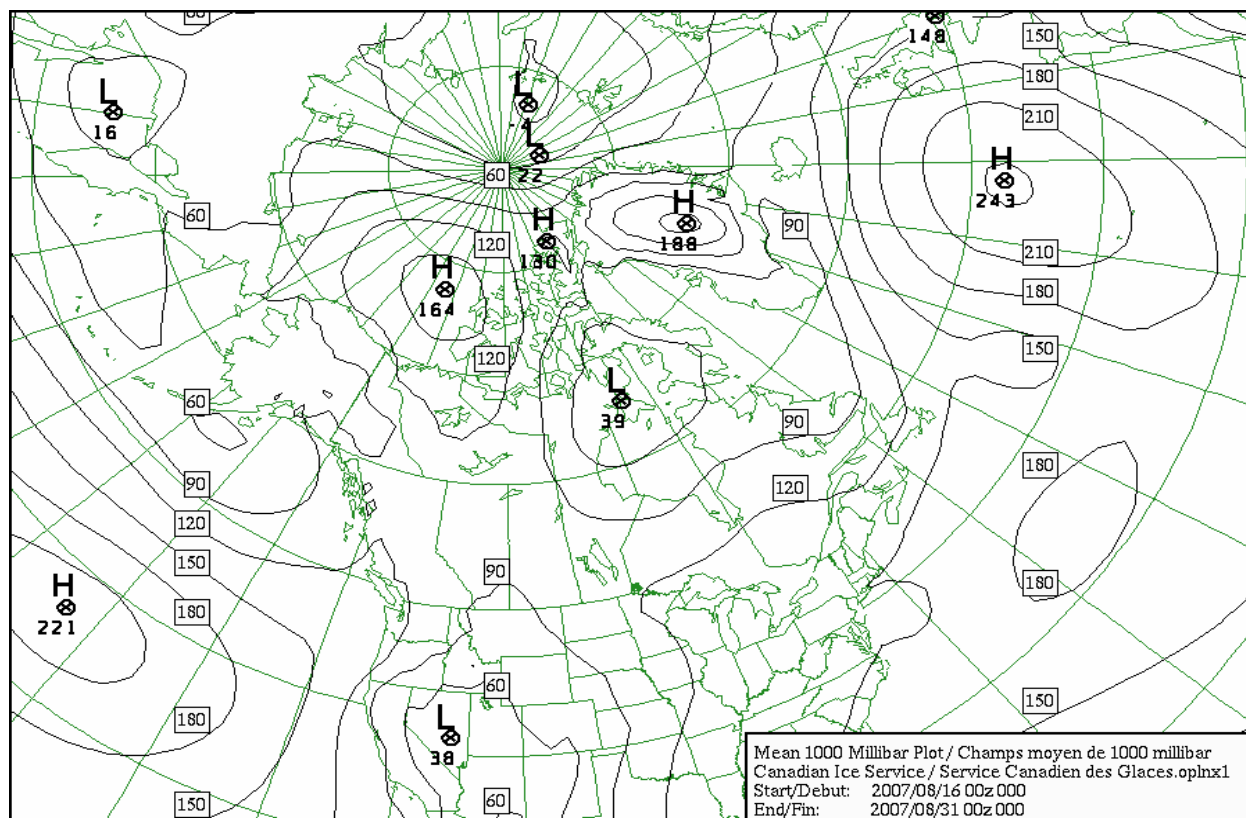
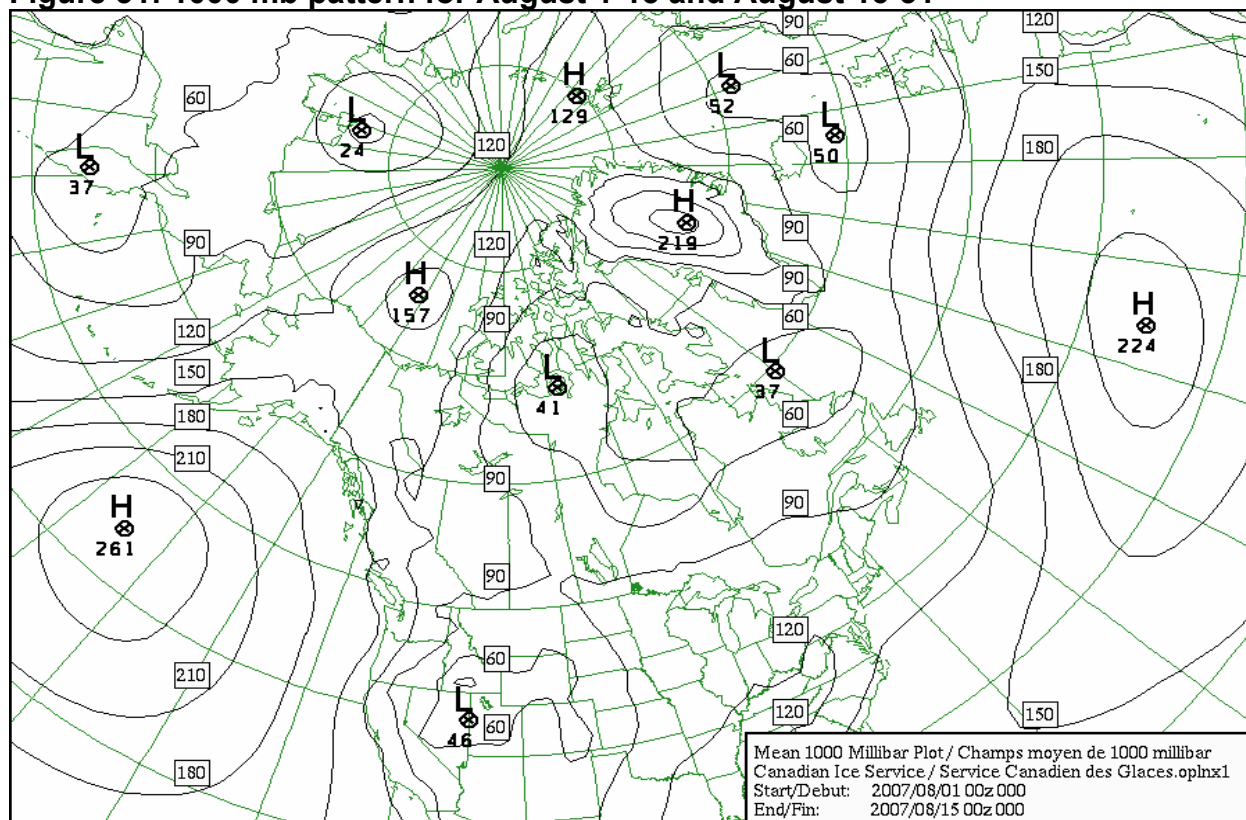




**Figure 30: 1000 mb pattern for July 1-15 and July 16-31**



**Figure 31: 1000 mb pattern for August 1-15 and August 16-31**



**Figure 32: 1000 mb pattern for September 1-15 and September 16-30**