Climatic Perspectives

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CLIMATIC HIGHLIGHTS

July 1994

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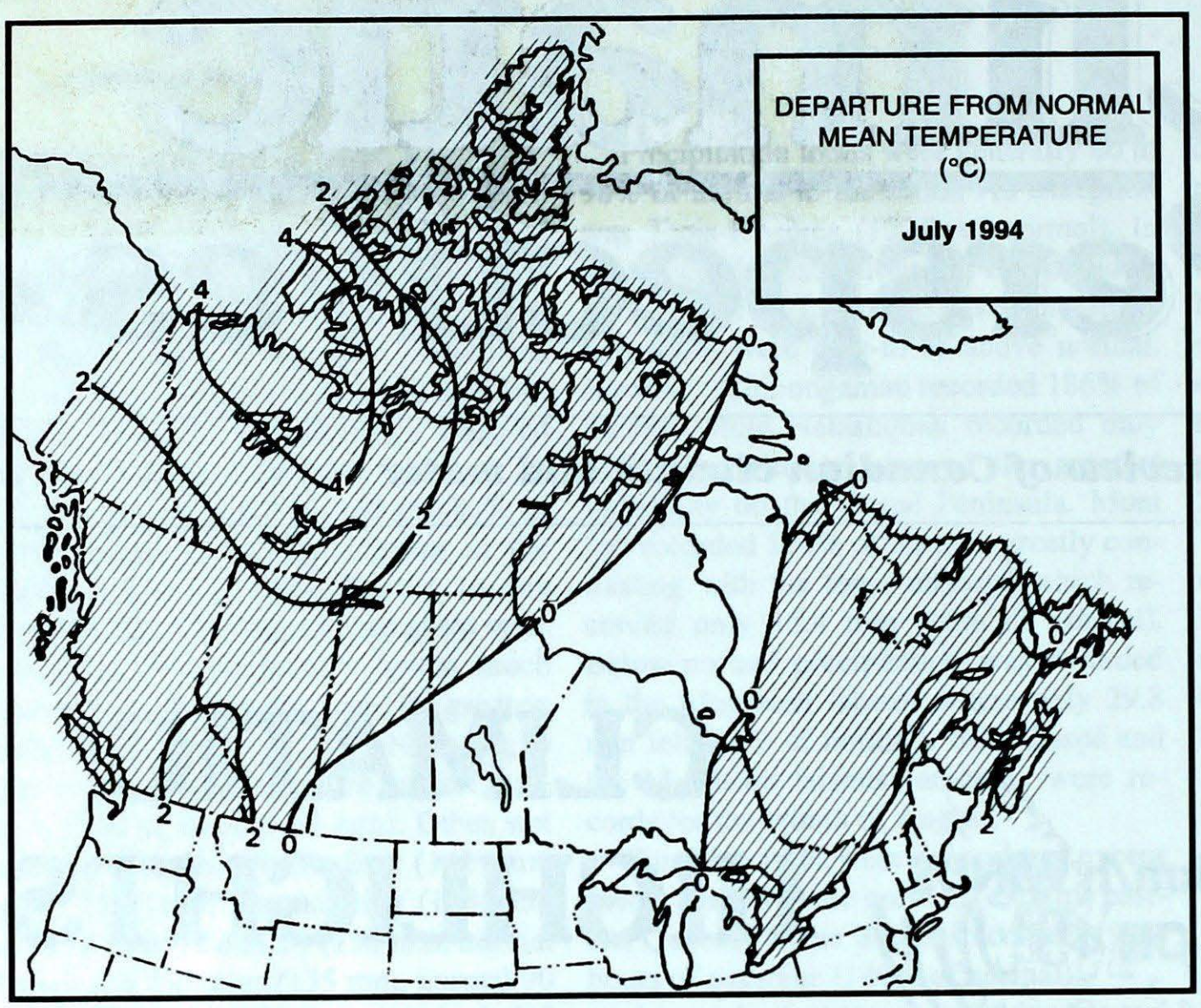

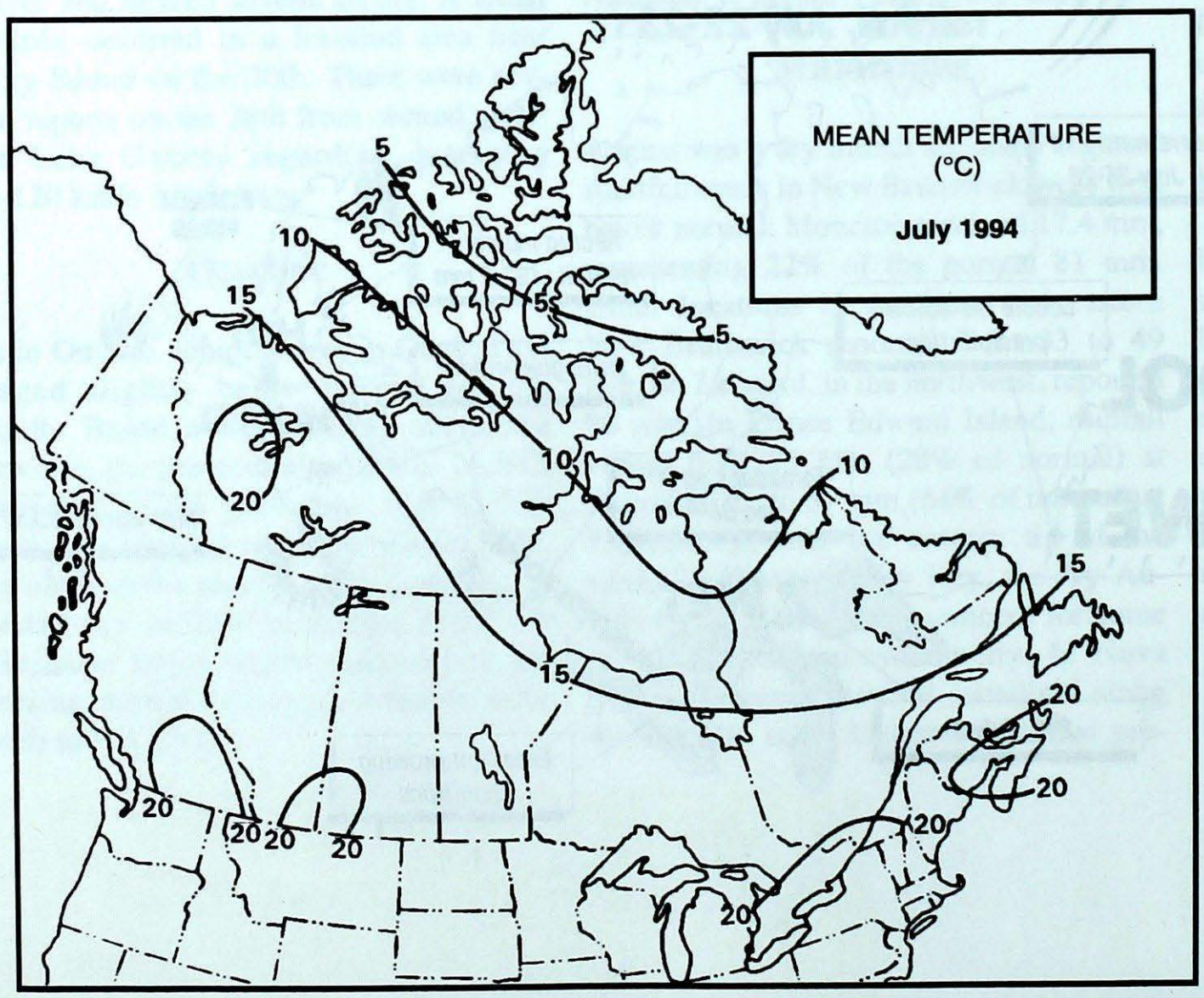

CLIMATIC PERSPECTIVES
VOLUME 16

Managing editor . . *Andrej Saulesleja*
Editor English version . *Brian Taylor*
French version . *Alain Caillet*
Associate editor . . . . *Jenny Reycraft*
Long-range forecasts . *Aaron Gergye*
Data manager . *Mike Skarpathiotakis*
Computer support . . . . . *Robert Eals*
Art layout . . . . . *Krystyna Czaja*
Translation . . . . . *Daniel Pokorn*
Cartography . . . . . *Tom Chivers*

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☎ **(416) 739-4438/4330**
InterNet (Email):
CP@dow.on.doe.CA
Fax: (416) 739-4446
FTP (anonymous):
142.97.22.42/climate

The purpose of the publication is to make topical information available to the public concerning the Canadian climate and its socio-economic impact.

The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of Atmospheric Environment Service.

Annual Subscriptions and changes:

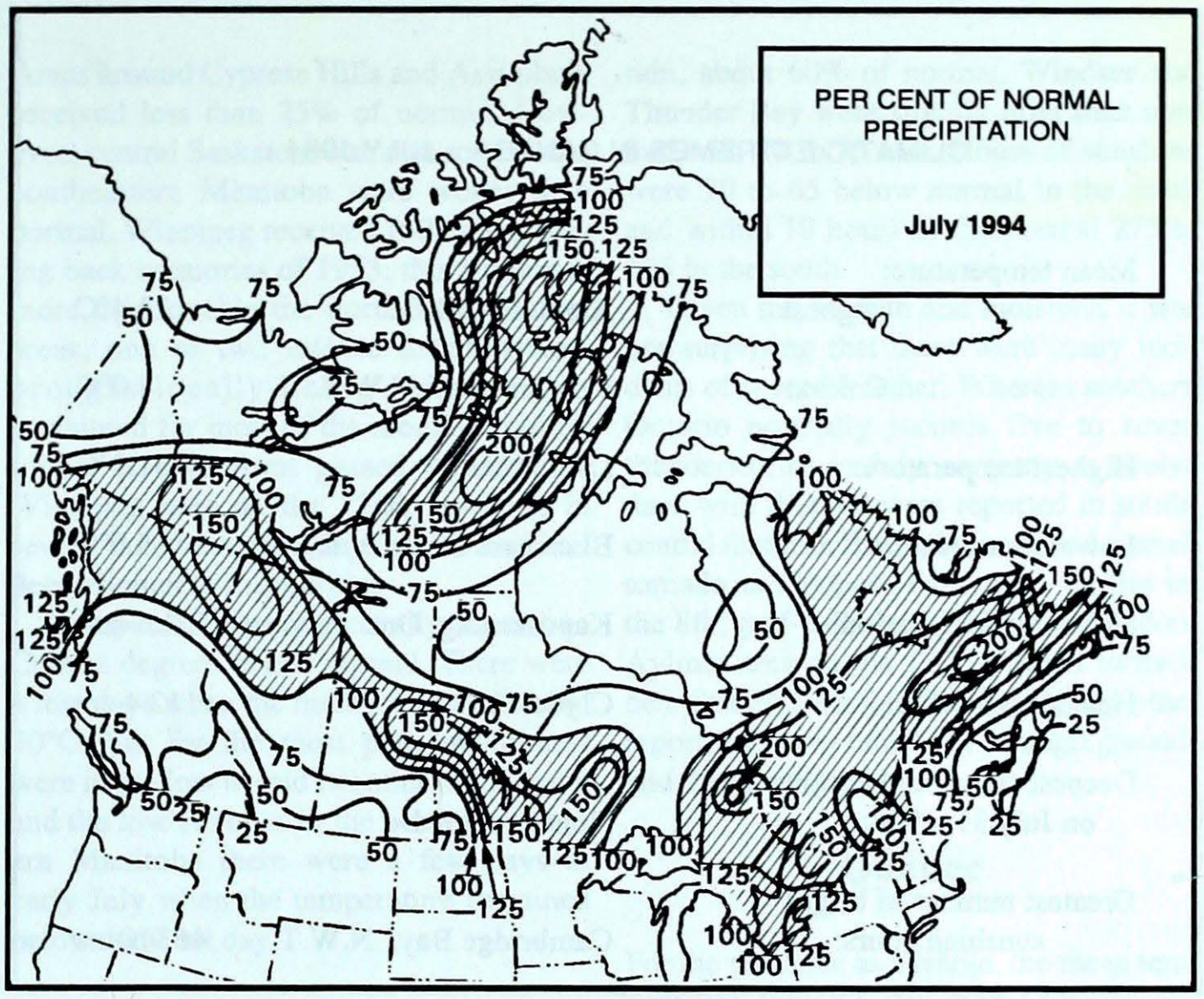
Albert Wright (416) 739-4156
Fax: (416) 739-4264

Across the country

Yukon

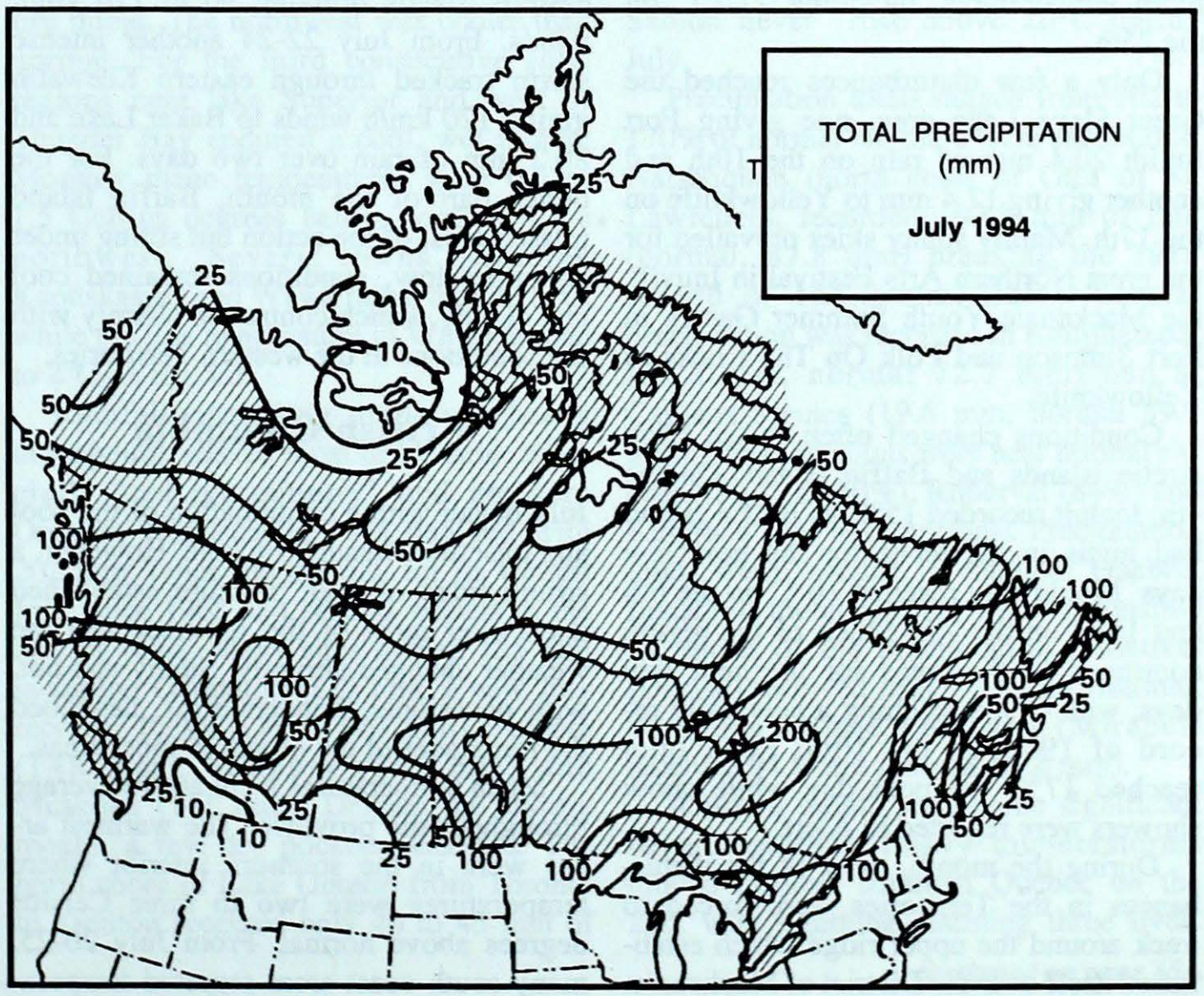
Almost the entire Yukon had above-normal temperatures for the month of July. Old Crow had the warmest mean, 18.0°C (3.8 Celsius degrees above normal). Whitehorse recorded a mean of 15.5°C (1.5 degrees above normal). Most locations approached a monthly maximum of 30°C. However, Blanchard River, on the Haines Road was colder than normal, recording the coldest monthly mean, 10.6°C (3.0 degrees below normal) and also the coldest temperature, -5.0°C on the 22nd.

Precipitation totals were split, with above-normal amounts following a line along the Yukon-British Columbia border and in an area northwest of a line running northeast from Beaver Creek. Elsewhere, rainfall totals were below normal. The driest spot in the Yukon was Drury Creek with 19.8 mm, 37% of normal. Whitehorse received 29.4 mm, 76% of normal. The lack of rain in the central Yukon was a concern to the Yukon Forest Service. There have been 173 forest fires this year with 59 still burning at the end of the month. Above-normal precipitation locations included Watson Lake, 114.8 mm (191% of normal) and along the Dempster Highway where amounts greater than 100 mm were reported.



Northwest Territories

An upper ridge of high pressure remained over the District of Mackenzie for the entire month. Yellowknife, Fort Simpson, Norman Wells, Inuvik and Coppermine had the warmest July on record. Daytime highs consistently ranged from the mid-twenties to low thirties throughout the Mackenzie, with several daily records being broken. Canada's hot spot was claimed by Inuvik on the 3rd (29.0°C, a daily record) and at Fort Simpson on the 25th (36.6°C) which was the highest temperature observed at this station in its 97-year history. The Mackenzie heat wave brought a fair amount of convective activity, leading to one of the worst forest fire seasons on record and locally severe thunderstorms. Fort Simpson recorded 53.2 mm of rain July 8-9, including 3-cm diameter hail on the 9th.



CLIMATIC EXTREMES IN CANADA - JULY 1994

Mean temperature:		
Highest	Kamloops, B.C.	23.4°C
Coldest	Resolute Bay, N.W.T.	4.0°C
Highest temperature:	Lytton, B.C.	41.3°C
Lowest temperature:	Blanchard River, Yukon	-5.0°C
Heaviest precipitation:	Kapuskasing, Ont.	201.5 mm
Heaviest snowfall:	Clyde, N.W.T.	12.4 cm
Deepest snow on the ground on July 31, 1994:	None recorded	
Greatest number of bright sunshine hours:	Cambridge Bay, N.W.T.	463 hours

At times, a broad surface high pressure area formed east of the persistent upper ridge in the west, giving warm temperatures to the District of Keewatin. Several stations recorded daily maximum temperatures. Baker Lake broke four daily maximum temperatures, including 27.2°C on the 25th.

Only a few disturbances reached the Great Slave Lake area, one giving Fort Smith 20.4 mm of rain on the 10th and another giving 17.4 mm to Yellowknife on the 17th. Mainly sunny skies prevailed for the great Northern Arts Festival in Inuvik, the Mackenzie Youth Summer Games in Fort Simpson and Folk On The Rocks in Yellowknife.

Conditions changed often in the High Arctic islands and Baffin Island. On the 4th, Iqaluit recorded 15°C as Baffin Island had highs in the teens for the next few days. Mould Bay reached 16°C on the 6th and 15°C on the 7th. Much of the region continued in the teens for the next few days, with Clyde reaching a new daily record of 19°C on the 10th. Pond Inlet reached 17°C the next day while snow showers were reported in Alert.

During the month, most of the disturbances in the Territories were forced to track around the upper ridge which established itself over the District of Mackenzie. This resulted in a series of lows attacking the Arctic islands before descending towards Foxe Basin. The first one brought 110 km/h winds to northern Ellesmere Island on the 4th and from July 11-14, a major storm swept southwards over the eastern islands bringing 90 to 110 km/h winds. From July 22-24 another intense storm tracked through eastern Keewatin giving 120 km/h winds to Baker Lake and 80.2 mm of rain over two days. For the better part of the month, Baffin Island missed most of the action but sitting under an upper low, conditions remained cool and cloudy, which contrasted sharply with the conditions in the western Territories.

British Columbia

July began with a continuation of the cool and unsettled weather of June. However, a strong ridge of high pressure established itself over most of the province and the weather changed abruptly. Sunny and hot, with occasional thunderstorms, described the remainder of the month in most areas.

Mean temperatures were above average throughout the province. The warmest areas were in the southern interior where temperatures were two to three Celsius degrees above normal. From July 20-25, many south coast areas reported temperatures in the upper twenties and low to middle thirties. In the southern interior, temperatures ranged to the upper thirties and occasionally into the low forties while the central interior reached into the middle thirties. A number of record July maximum temperatures were broken; Kelowna at 39.5°C established an all-time record maximum.

Precipitation in summer months can be quite variable due to the showery nature of much of the precipitation. The north coast reported near-average precipitation except the Queen Charlotte Islands where amounts were near 150% of average. Values of 125 to 150% of average were reported in the northeast corner of the province. In much of the remaining areas precipitation was 50 to 75% of average except in the southern interior where most areas recorded only 15 to 40% of average. High winds associated with local thunderstorms knocked down trees in the Prince George area on the 20th and in the Fort St. John area on the 29th where flooding also occurred due to heavy rain.

Very high temperatures and little precipitation in most areas boosted the forest fire hazard during the month. By mid-month most areas had extreme ratings and campfire bans were in effect. Logging operations had to be curtailed in many areas. Major forest fires burned near Penticton and Kamloops, Lillooet and Barriere. In the Penticton fire, several houses were destroyed. These fires were still not fully under control at the end of the month. Smoke reduced visibility over most southern interior areas.

Sunshine was plentiful with most regions reporting 110 to 125% of average. Only the central section of northern B.C. from Dease Lake to Prince George recorded near-to-below-normal sunshine totals.

Alberta

Temperatures were above normal across the province, with the exception of slightly below-normal values in the extreme southeast. While the south was much drier than normal, central areas had near-normal precipitation totals. Central and northern regions lacked sunshine in the first half of the month, but with abundant sunshine later in the month, sunshine totals for the month averaged near normal. Southern Alberta had slightly-above-normal sun-

shine hours. Smoke from forest fires in the Northwest Territories reduced visibility in the south at the beginning of July and in the north during the last week of July.

The month began with well-below-normal temperatures and showers and thundershowers in central and northern regions. A cool northerly flow developed over the province as the disturbance moved off to the east. Early morning temperatures approached the freezing mark on the 6th. Numerous disturbances crossed the province during the next ten days. Severe thunderstorms associated with a cold front produced golf-ball-sized hail in central Alberta on the 8th. On the 11th, golf-ball-sized hail was reported in the Red Deer, Calgary and Lethbridge areas along with wind gusts to 100 km/h.

During the third week of July, a ridge of high pressure from British Columbia spread across the mountains to give more typical summer conditions; the southwesterly flow aloft brought warmer air along with smoke from forest fires in B.C. This pattern persisted for the remainder of the month. Medicine Hat reached 36°C on the 21st and ended the month with nine consecutive days over 30°C. Temperatures climbed to the low thirties in the mountain parks, setting a new maximum record for the day at Jasper (33.5°C), on the 24th. Banff had a record eight consecutive days (old record, 5) with a maximum of 30°C or greater, while Jasper had six consecutive days (record, 8). The warm, moist conditions triggered many severe thunderstorms. A girl was struck and injured by lightning on a golf course, near Grande Prairie, on the 21st. Later that day, baseball-sized hail was reported near Rocky Mountain House causing extensive damage. Hail, 1 to 2.5 cm in diameter was reported in the Grande Prairie and Edson regions on the 25th. On the 27th, 2.2-cm hail was reported just north of Calgary. Thundershowers with 40 mm of rain were recorded on the 31st at High Level.

Saskatchewan and Manitoba

July, for the most part, was both cooler and drier than normal. In general, conditions were dry and soil moisture was low. Parts of southwestern Saskatchewan recorded less than half the normal amount of rain. Areas around Cypress Hills and Assiniboia received less than 25% of normal. However, central Saskatchewan and central and southeastern Manitoba were wetter than normal. Winnipeg received 150 mm, bringing back memories of 1993; this amount is more than double the normal. In the wet areas, one or two intense thunderstorms brought locally-heavy rainfall that accounted for most of the monthly rainfall totals. A cold front passed through the Winnipeg area on the 22nd, resulting in severe thunderstorms, high winds and hail deep enough to form drifts.

Temperatures were generally one to two Celsius degrees below normal. There were a few days when the mercury soared above 30°C, but for the most part, maximums were in the low to mid twenties in the south and the low twenties in the north. In northern Manitoba there were a few days in early July when the temperature remained below 10°C all day.

Ontario

Monthly mean temperatures were pleasantly warm throughout much of Ontario although there was an abundance of rain showers in many areas. Agricultural growing conditions were excellent in the south and the frequent rain minimized the forest fire threat. The northwest was cooler than normal. For the third consecutive July, regions near lake Superior and west of Thunder Bay endured a cool, wet month. Monthly mean temperatures were 0.5 to 1.5 Celsius degrees below normal in the northwest. Several towns including Kapuskasing and Wawa failed to top 25°C, while the low temperature in Wawa dipped to 2°C on the 3rd.

Rainfall, including numerous heavy downpours, soaked most of Ontario, especially "cottage country" and northern Ontario. Kapuskasing was deluged with 202 mm, twice the normal, for its wettest July since 1968 and second wettest in the last 58 years. Many sites topped 125 mm including Geraldton (173 mm, a new July record), Pickle Lake (170 mm), Kenora (148 mm), Sudbury (145 mm) and Muskoka (141 mm). Despite the stormy month, a few dry pockets persisted. The north shore of Lake Ontario from Toronto to Trenton received only 40 to 45 mm of rain, about 60% of normal. Windsor and Thunder Bay were slightly drier than normal with 70 to 75 mm. Hours of sunshine were 20 to 65 below normal in the north and within 10 hours of the normal 275 to 285 in the south.

Given the warmth and moisture, it was not surprising that there were many incidents of severe weather. Whereas southern Ontario normally records five to seven thunderstorms in July, as many as twelve days with thunder were reported in south-central Ontario. Examples included a small tornado at Coopers Falls, near Orillia on the 8th; golf-ball-sized hail in the London-Aylmer area on the 12th; a small tornado near Stratford on the 22nd; and many other reports of heavy rain, hail, damaging winds and intense lightning.

Quebec

For the province as a whole, the mean temperature was 17.2°C, compared to the normal of 16.6°C. Cap-aux-Meules (Îles-de-la-Madeleine) had a monthly mean of 19.1°C (normal, 16.4°C), breaking the July 1967 record of 19.0°C. Dorval recorded the highest temperature, 32.7°C on the 21st. In the north, Kuujjuarapik had a monthly maximum of 28.0°C, on the 23rd, whereas in the extreme east, Blanc Sablon never rose above 20°C during July.

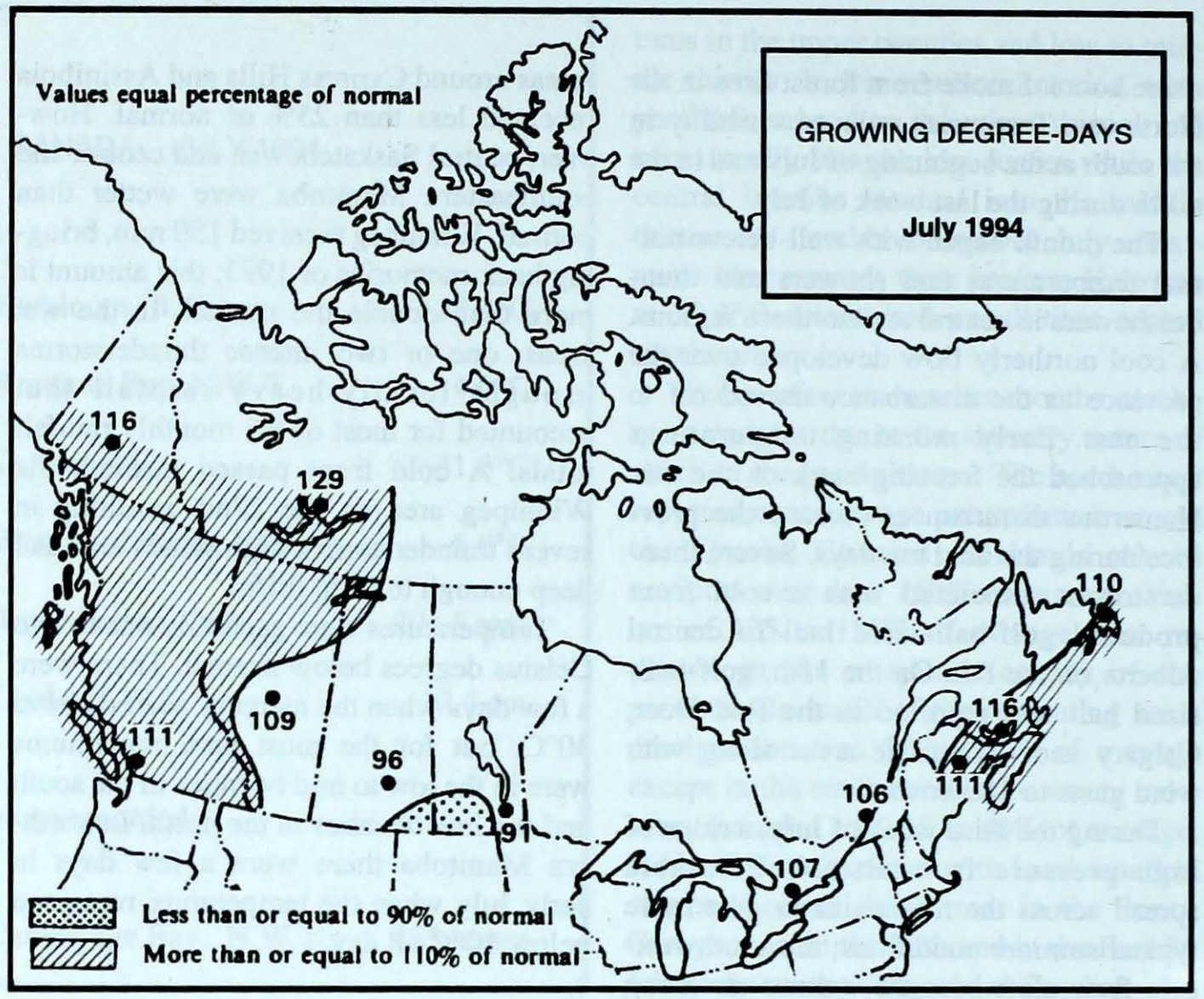
Precipitation totals ranged from 102 to 170% of normal but there were exceptions. Natashquan (north coast of Gulf of St. Lawrence), recorded 192.2 mm of rain (normal, 87.8 mm) breaking the 1918 record of 186.9 mm. Below-normal precipitation was recorded in Kuujjuarapik (30.2 mm, normal 72.7 mm) and at Cap-aux-Meules (19.6 mm, normal 59.7 mm). Sunshine totals were near normal except Val-d'Or (80%), Roberval (84%) and Kuujjuaq (131% of normal). Precipitation totals were variable in southern Quebec. Localised thunderstorms were responsible for much of the precipitation. Montréal (Dorval) received only 50.6 mm (normal, 85.6 mm) while Montréal (Mirabel) received 94.8 mm (normal 89.8 mm).

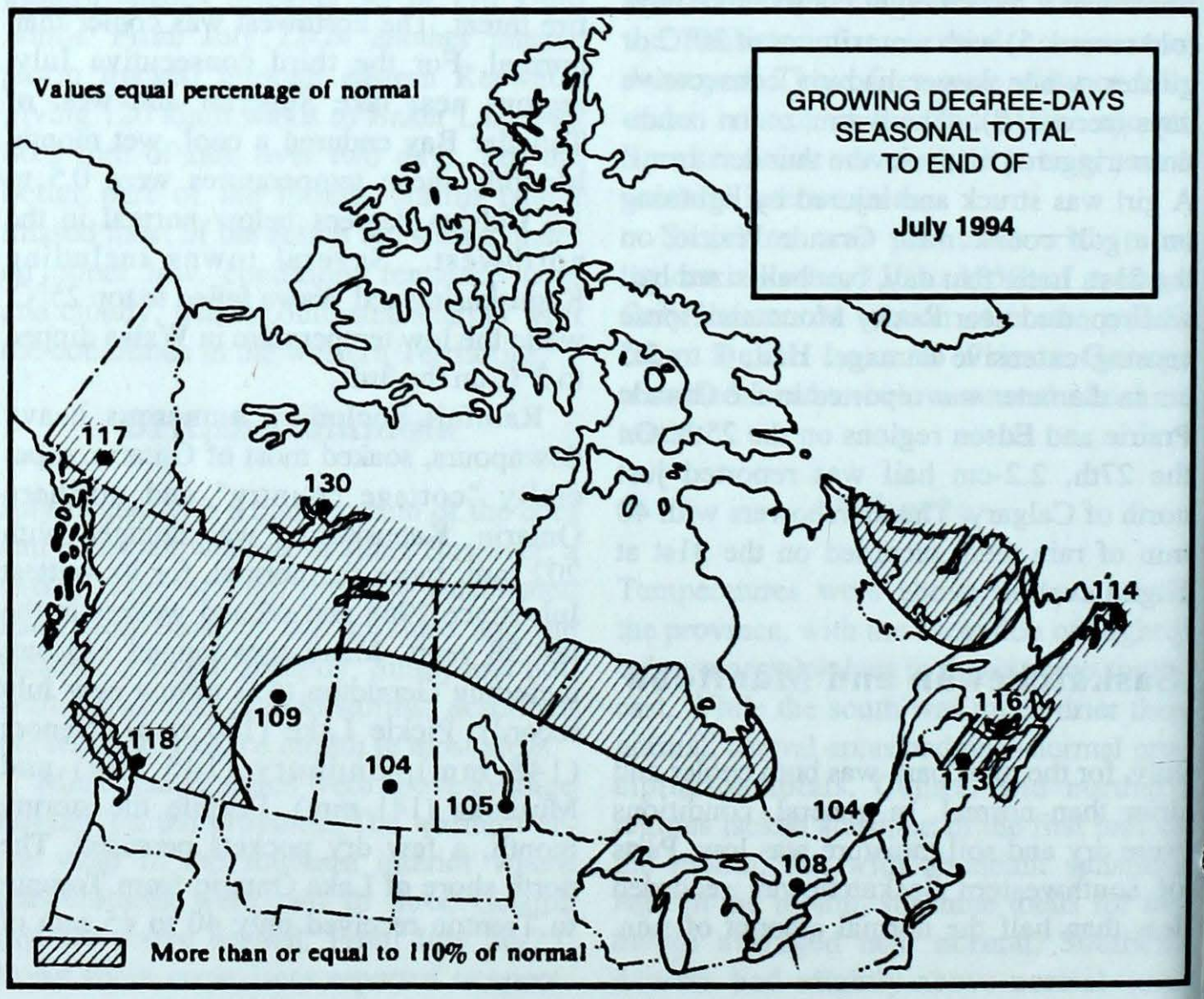
It was a month with some significant severe weather. Heavy thunderstorms moved through southern Quebec on the 2nd, with lightning claiming three lives.

continued on page 15...

SEASONAL TOTAL OF GROWING DEGREE-DAYS TO END OF JULY

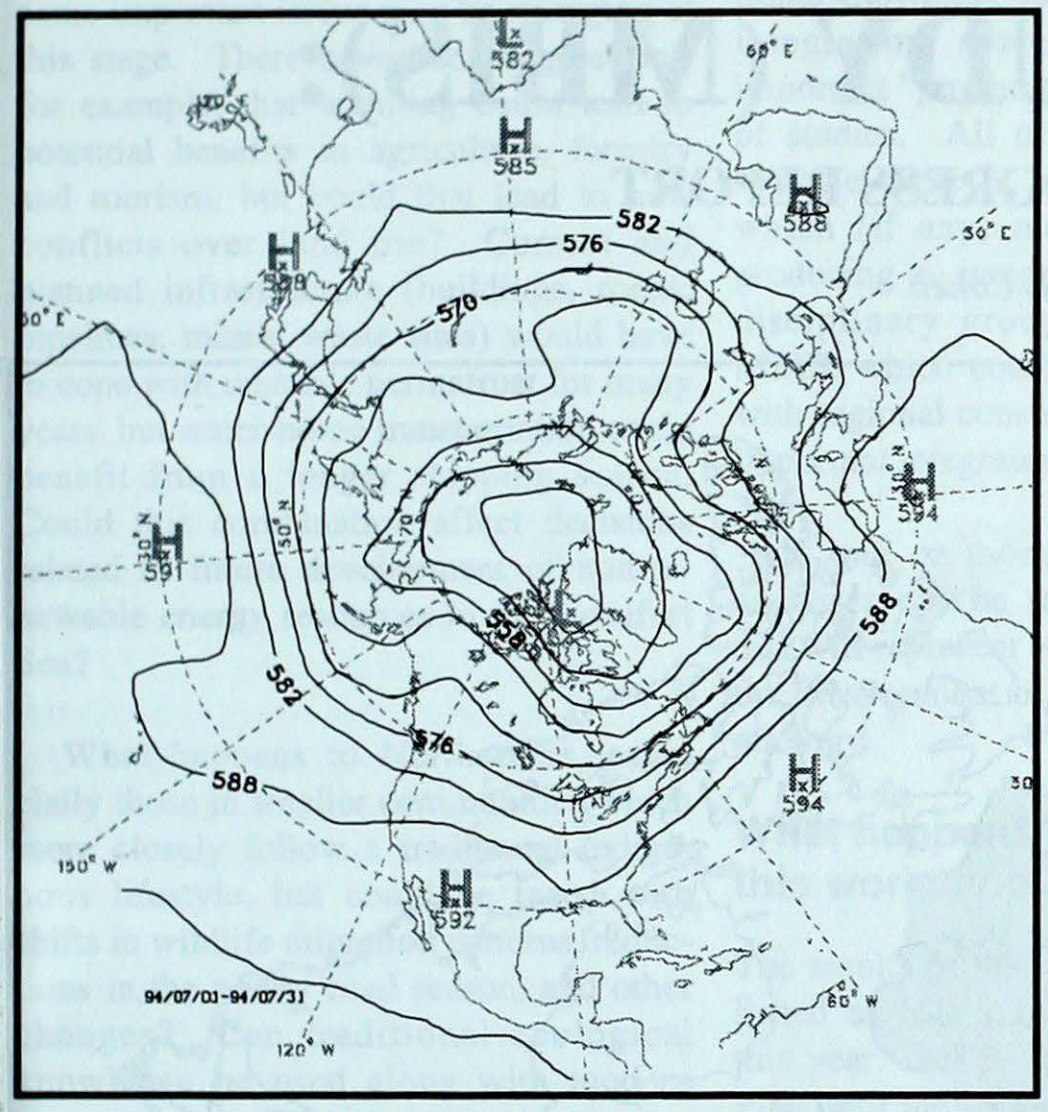
	1994	1993	NORMAL
BRITISH COLUMBIA			
Abbotsford	1244	1048	994
Kamloops	1427	1132	1245
Penticton	1396	1172	1205
Prince George	831	848	691
Vancouver	1201	1039	1022
Victoria	1111	967	941
ALBERTA			
Calgary	684	704	642
Edmonton Mun.	968	892	887
Grande Prairie	831	780	752
Lethbridge	805	853	794
Medicine Hat	1070	939	1023
Peace River	850	803	731
SASKATCHEWAN			
Estevan	938	791	965
Prince Albert	815	760	801
Regina	955	826	914
Saskatoon	875	779	894
MANITOBA			
Brandon	882	766	902
Churchill	341	162	248
Winnipeg	1007	756	964
ONTARIO			
London	1040	1107	1029
North Bay	872	951	803
Ottawa	1142	1149	1083
Thunder Bay	769	642	764
Toronto	1143	1103	1060
Trenton	1104	1088	1081
Windsor	1291	1320	1238
QUEBEC			
Baie Comeau	591	590	577
Montréal	1167	1139	1124
Québec	953	1007	876
Sept-Îles	529	462	501
Sherbrooke	939	923	808
NEW BRUNSWICK			
Fredericton	873	859	770
Moncton	854	729	762
NOVA SCOTIA			
Yarmouth	816	719	704
PRINCE EDWARD ISLAND			
Charlottetown	750	665	637
NEWFOUNDLAND			
Gander	509	231	492
St. John's	501	249	438
Stephenville	496	582	478



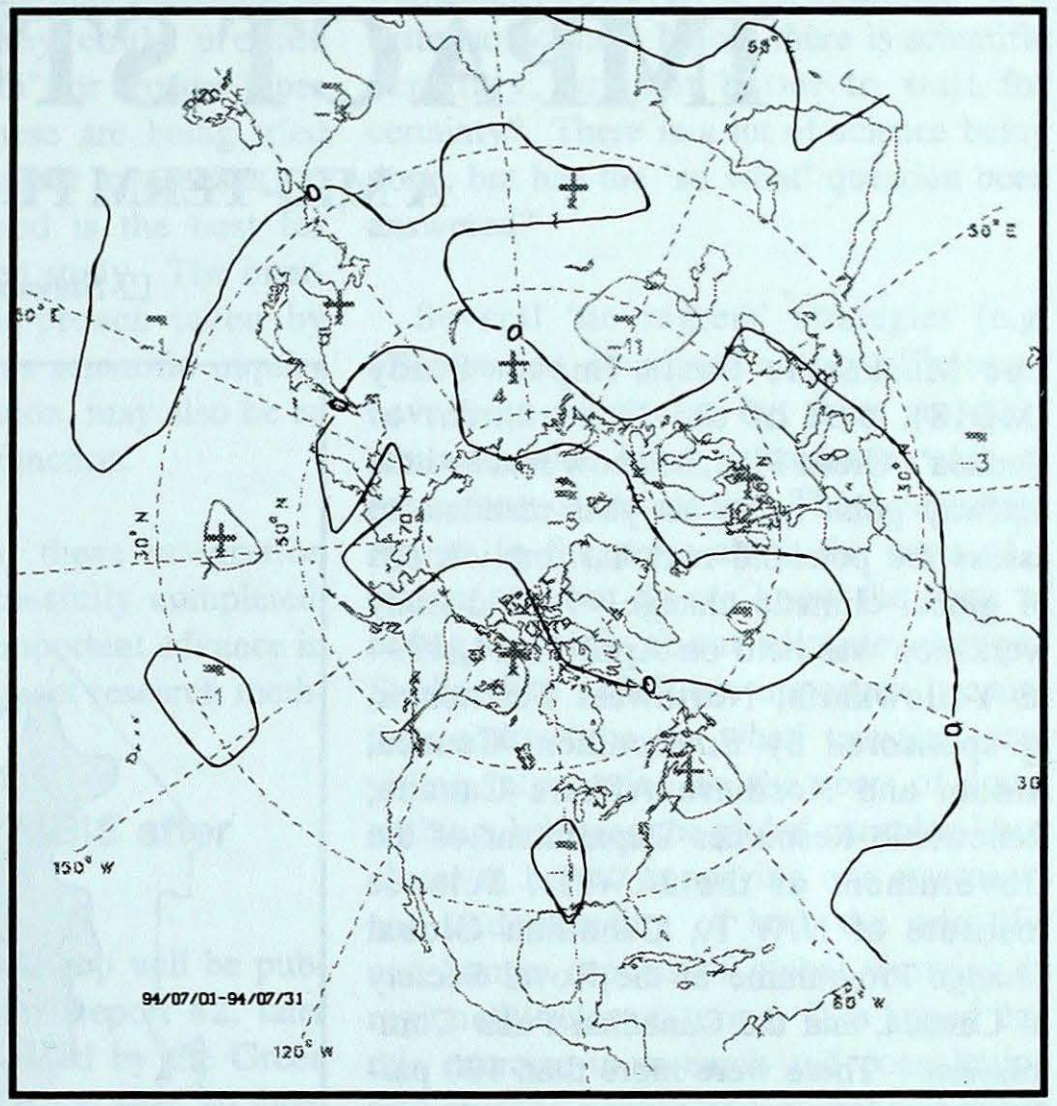


50-kPa ATMOSPHERIC CIRCULATION

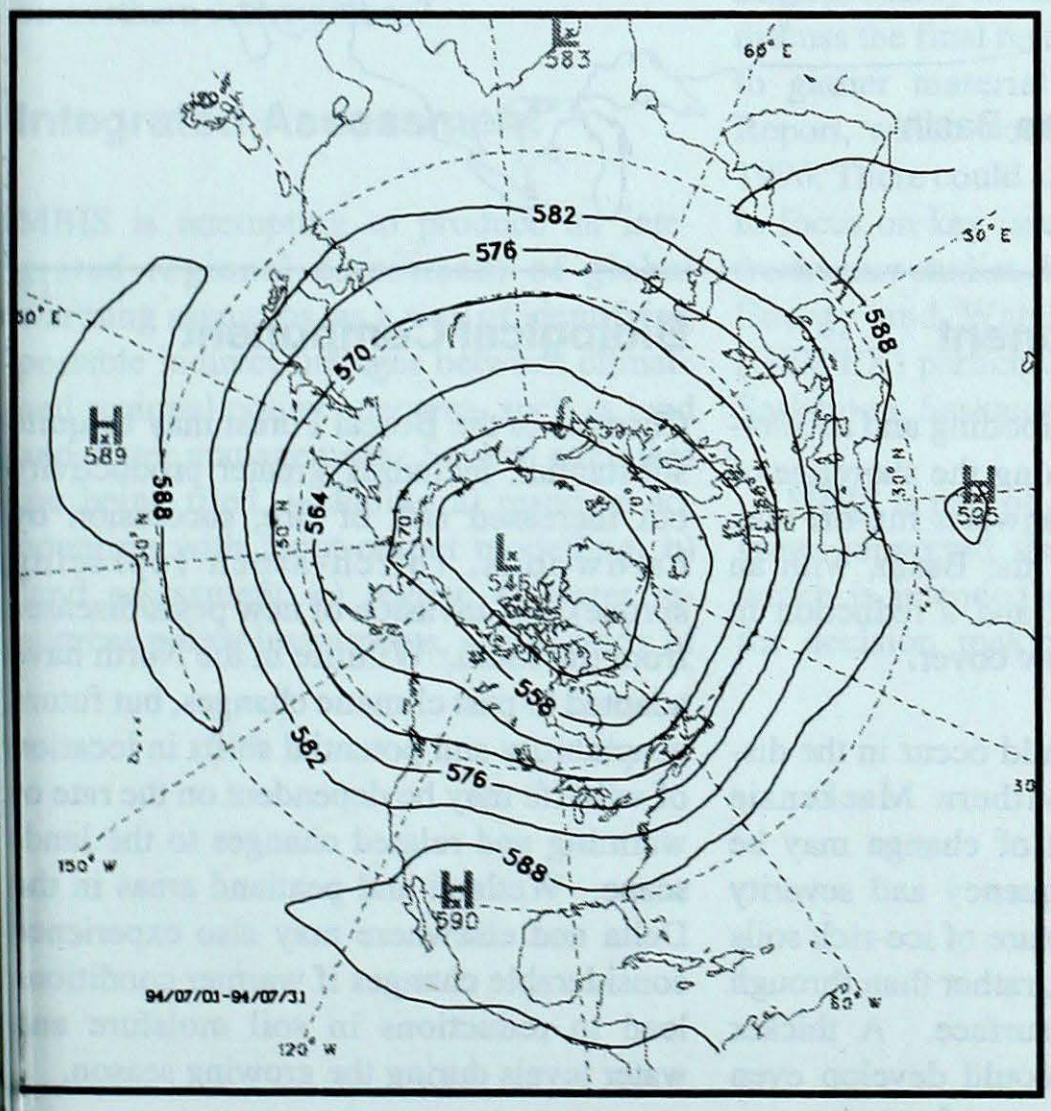
July 1994



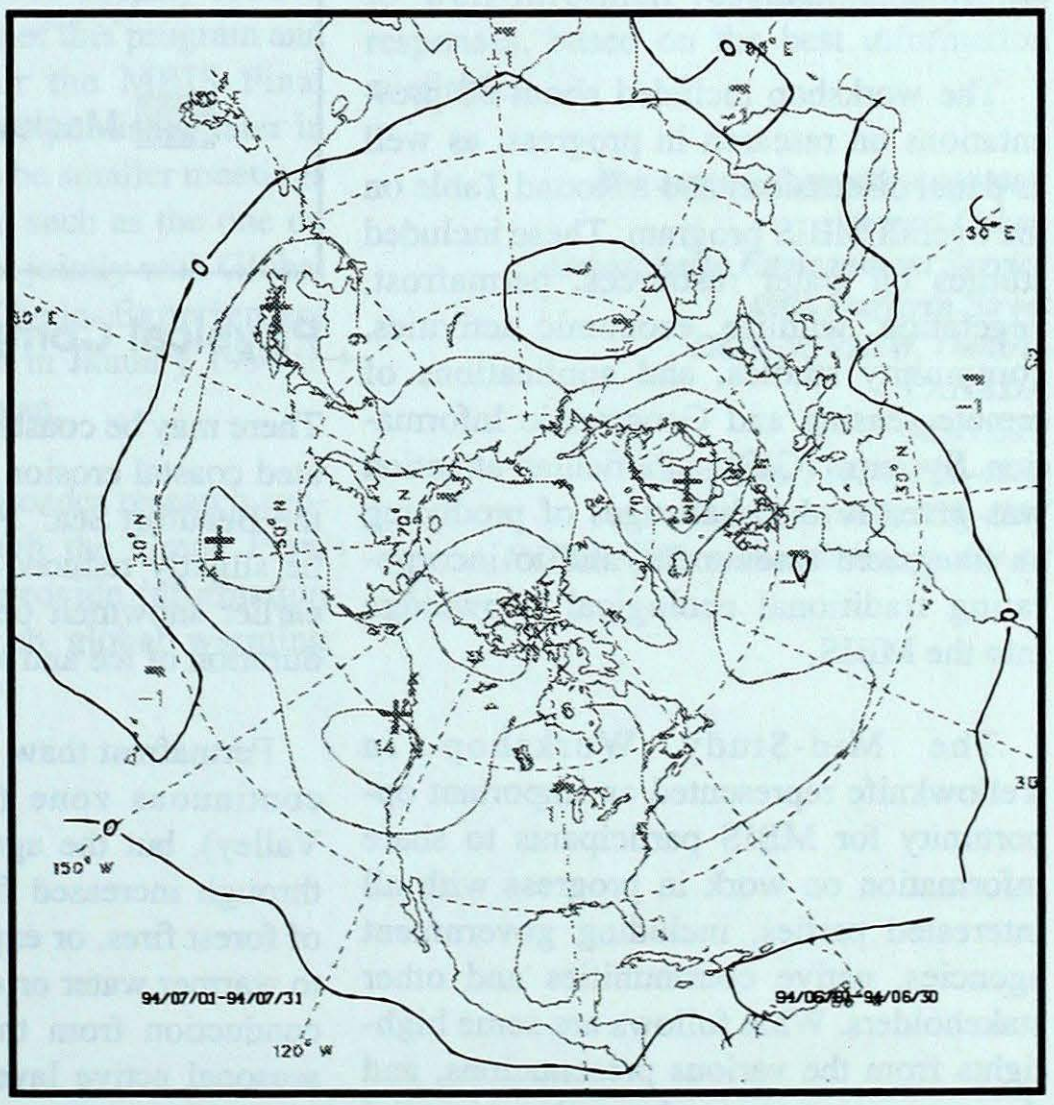
Mean geopotential heights
6 - decametre interval



Mean geopotential height anomaly
6 - decametre interval



Normal geopotential heights for the month
6 - decametre interval



Mean heights difference w/r to previous month
6 - decametre interval

THE MACKENZIE BASIN IMPACT STUDY (MBIS):

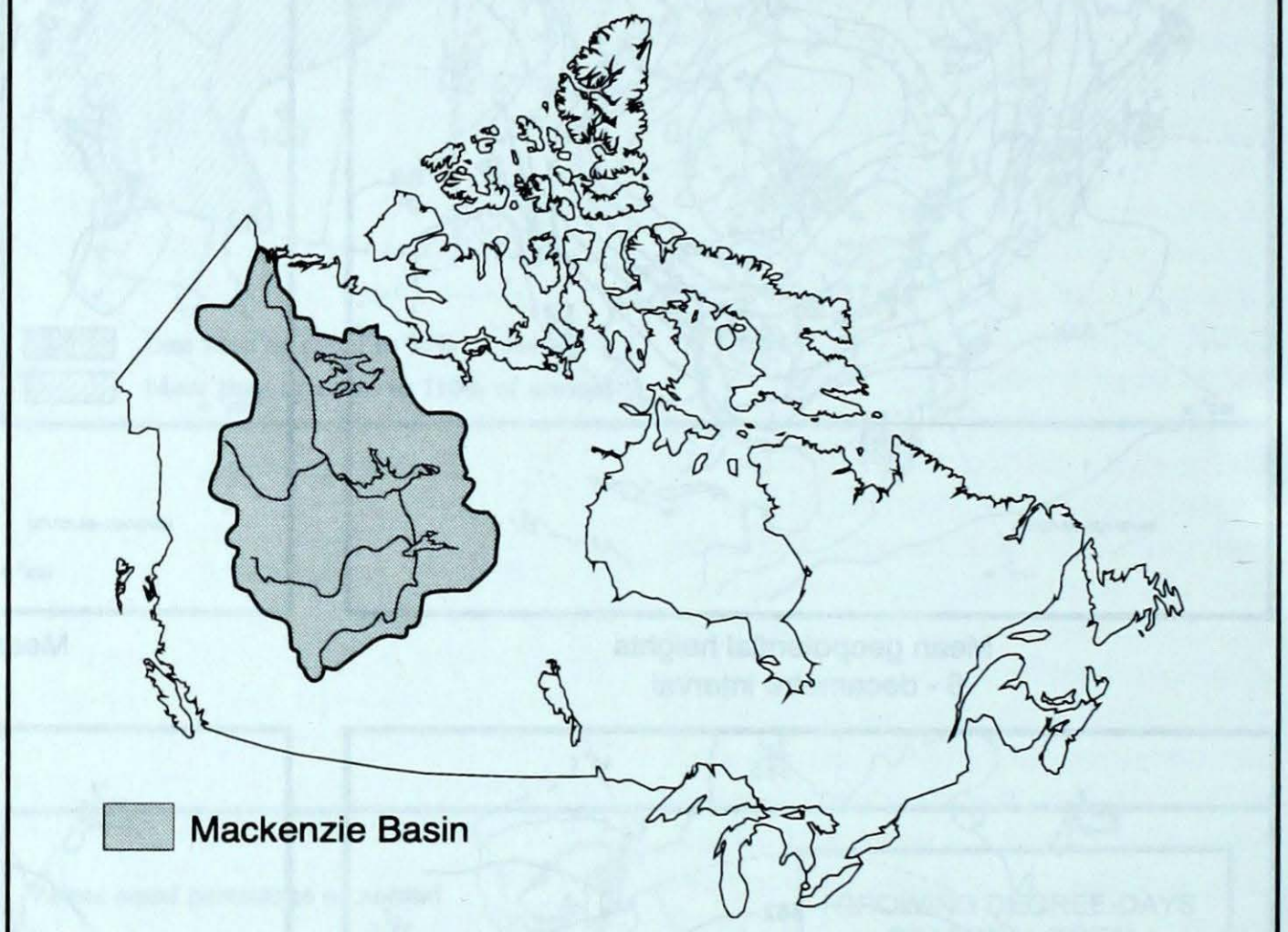
A MID-TERM PROGRESS REPORT

□ *Stewart J. Cohen*

The Mackenzie Basin Impact Study (MBIS), part of the Government of Canada's Green Plan, has now reached the halfway point in its six-year mandate to assess the potential regional implications of global climatic change. A mid-study workshop was held on April 11-14, 1994 in Yellowknife, Northwest Territories, co-sponsored by Environment Canada, Indian and Northern Affairs Canada, Renewable Resources Department of the Government of the N.W.T., Science Institute of N.W.T., Canadian Global Change Programme of the Royal Society of Canada, and the Canadian Polar Commission. There were more than 100 participants from governments, academia, non-government organizations and northern communities.

The workshop included about 60 presentations on research in progress, as well as panel discussions and a Round Table on the overall MBIS program. These included studies on water resources, permafrost, vegetation, wildlife, economic activities, community studies, and applications of remote sensing and Geographic Information Systems (GIS). Particular attention was given to the challenges of producing an integrated assessment, and to incorporating traditional ecological knowledge into the MBIS.

The Mid-Study Workshop in Yellowknife represented an important opportunity for MBIS participants to share information on work in progress with all interested parties, including government agencies, native communities and other stakeholders. What follows are some highlights from the various presentations, and the many questions about the potential regional impacts of global warming scenarios that are still unanswered.



Physical Component

There may be coastal flooding and accelerated coastal erosion along the shoreline of the Beaufort Sea. Freshwater run-off may be slightly reduced in the Basin, with an earlier snowmelt peak and a reduction in duration of ice and snow cover.

Permafrost thaw could occur in the discontinuous zone (southern Mackenzie Valley), but the agent of change may be through increased frequency and severity of forest fires, or exposure of ice-rich soils to warmer water or air, rather than through conduction from the surface. A thicker seasonal active layer could develop even within the continuous permafrost zone.

Biological Component

Changes in the Boreal Forest may be quite substantial, including greater productivity but increased risk of fire, succession by hardwoods, (birch-aspen replacing spruce), and invasion of new pests/diseases from the south. Wildlife in the North have adapted to past climatic changes, but future adaptability and potential shifts in location of wildlife may be dependent on the rate of warming and related changes to the landscape. Wetland and peatland areas in the Delta and elsewhere may also experience considerable changes if warmer conditions lead to reductions in soil moisture and water levels during the growing season.

Socio-Economic Component

It is too early in the MBIS exercise to outline specific socio-economic impacts, but some important issues may be emerging at this stage. There have been suggestions, for example, that warming could lead to potential benefits in agriculture, forestry and tourism, but could that lead to new conflicts over land use? Current and planned infrastructure (buildings, roads, pipelines, mines, waste sites) would have to cope with unstable permafrost for many years, but water-borne transportation could benefit from a longer shipping season. Could this combination affect decisions related to future development of non-renewable energy resources in the Beaufort Sea?

What happens to Northerners, especially those in smaller communities which more closely follow a traditional indigenous lifestyle, but could be faced with shifts in wildlife migration patterns, reductions in the winter road season, and other changes? Can traditional ecological knowledge be used along with modern science to help address questions related to possible impacts of future climatic changes on northern communities?

Integrated Assessment

MBIS is attempting to produce an integrated regional assessment of global warming scenarios, as a way of identifying possible indirect linkages between climate and regional policy concerns, such as land and water management. Several exercises are being tried, including a) resource accounting with input-output modelling, b) land assessment, c) review of water resources policy instruments, and d) study of settlement patterns. Each of these utilize the outputs of various sectoral studies in order to address some of the human dimensions of climatic change. In addition, traditional knowledge studies may contribute to integration, since they could provide important "ground truth" for broader types of studies. All of these are being tried because there is no clear consensus on which (if any) method is the best for producing an integrated study. The interdisciplinary group approach taken by MBIS, which combines scientific inquiry with regional consultation, may also be an important integrating function.

If one or more of these integration exercises can be successfully completed, this will represent an important advance in the development of impact research methodology.

What happens to MBIS after this workshop?

The results of this workshop will be published as MBIS Interim Report #2, later this year. MBIS is funded by the Green Plan until the 1996/97 fiscal year, so there will likely be one more gathering of this kind, probably in late 1995 or early 1996 to discuss the final results of this program and to gather material for the MBIS Final Report, which would be published later in 1996. There could also be smaller meetings to focus on key issues, such as the one on freshwater studies, held jointly with Global Energy and Water Cycle Experiement (GEWEX) participants in January 1994 in Saskatoon, Saskatchewan.

MBIS is part of a broader research program supported through the Green Plan, which is intended to provide information for decision making on global warming and how Canada should respond to it. This effort exists because scientists are trying to reduce the uncertainties associated with global warming. The question for Canadians, however, is far-reaching: is it better to act now before there is scientific certainty, or is it better to wait for certainty? There is a lot of science being done, but has the 'so what' question been answered?

Several 'no regrets' strategies (e.g. afforestation, improved energy efficiency) have been suggested, but there are other measures also being considered, such as some form of carbon tax. There have been reports in the press about the costs of a carbon tax, but do we know the costs of doing nothing about climate change? Studies like MBIS are important because they address the 'so what' question, providing information on the costs of doing nothing, bringing the global warming issue closer to home, improving our awareness and understanding of both the scientific and human aspects of global warming in regionally-relevant terms. It is hoped that this exercise in research and consultation will provide a sense of regional ownership in the results of MBIS and ultimately lead to well-informed research and policy responses, based on the best information available.

For more information contact:
Stewart Cohen
Atmospheric Environment Service
4905 Dufferin Street
DOWNSVIEW, Ontario
CANADA
M3H 5T4
telephone: (416) 739-4389
fax: (416) 739-4297
INTERNET: scohen@dow.on.doe.ca

The Indian Monsoon

A three-week heat wave, starting in late May of this year, resulted in more than 400 deaths in India and Pakistan. The deaths were attributed to heatstroke and other related health problems brought on by the excessive heat. Temperatures soared to 45°C in Delhi, the capital city of India. On June 19, showers from the advancing monsoon brought some relief from the searing heat wave as temperatures dropped to a 32.6°C.

The seasonal change in weather associated with monsoons over the Indian subcontinent is more than a curiosity to meteorologists. The livelihood of one-half of the world's population depend upon summer monsoon rains for food production and cash crops. Any failure, or late arrival of the summer monsoon causes widespread starvation and economic disaster. May through to the end of September is the standard summer monsoon season.

During the summer period, temperatures over the sub-continent begin to rise such that the land surface is considerably hotter than the surrounding oceans. Since the air over the land is hotter, it is less dense, creating what is termed a 'thermal' low pressure system over northwestern India. The counter-clockwise flow of air around the low pushes moisture up from the Indian Ocean. As the warm moist air ascends and cools over the mountains, heavy rains occur over Pakistan, northern India and Myanmar (Burma). Extreme rainfalls of 800 inches have been recorded in one season, and over 400 inches in a single month have fallen on the southwest slopes of Myanmar.

The concept of the thermal low over India is an over-simplification of the process that leads to the summer monsoon. The large mountains and highlands of the Tibetan and Himalayan areas contribute to the system by feeding warm air from the semi-permanent high pressure cell situated over the Tibetan Plateau into India.

The monsoon may be delayed if areal snow cover over the Himalayas during the preceding winter and spring is above normal. This results in a slower heating of the Tibetan Plateau, and consequently, a delay in the establishment of the high pressure cell over the Plateau.

Studies indicate that sea surface temperatures (SST's) in the equatorial tropical Pacific may influence the Indian monsoon. Major droughts/floods in the Indian monsoon are associated with El-Niño/La Niña events before, during and after the monsoon season. There are also indications that the years of Indian monsoon droughts (El Niño) generally favour subsequent spring wheat and corn yields in North America. Conversely, the years of Indian monsoon floods (La-Niña) lower North America's yields of spring wheat and corn.

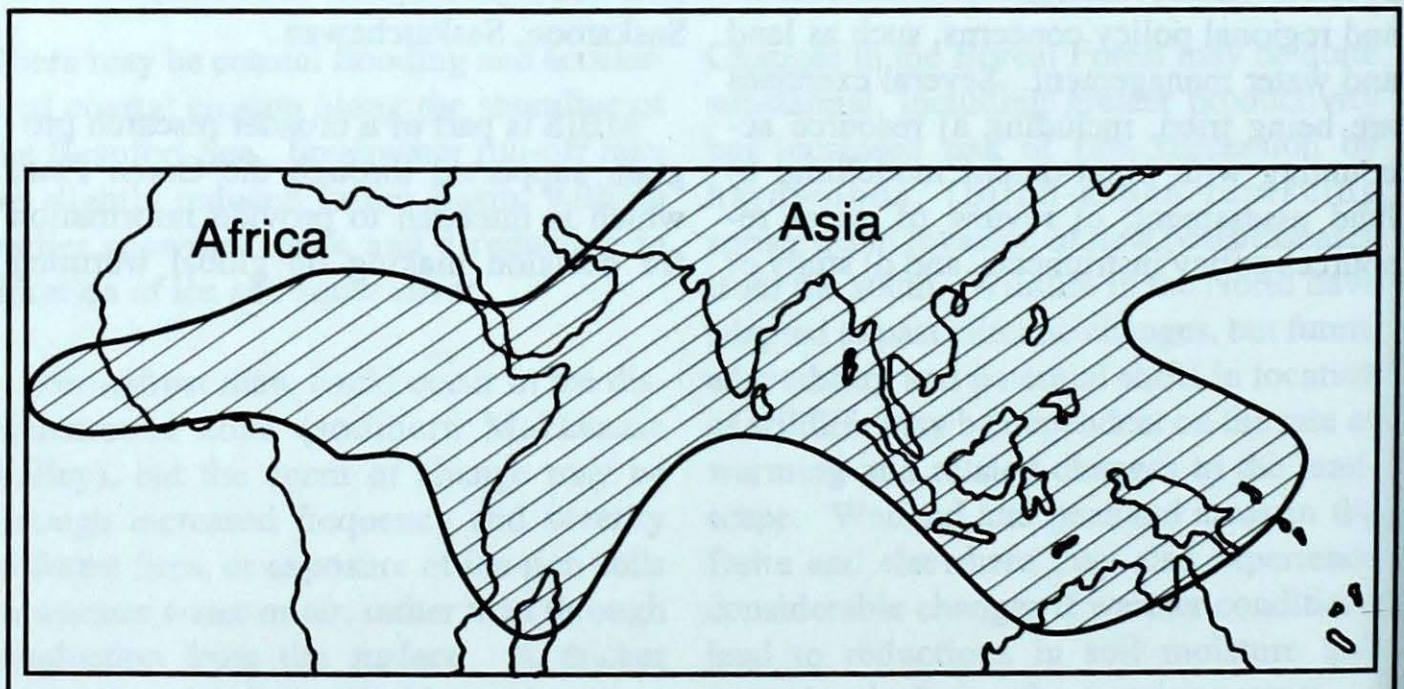
Tropical Atlantic hurricane frequencies are also influenced by Pacific SST's. During El Niño/La Niña phases, storm activity is lower/higher than normal. Thus, during Indian monsoon droughts/floods, storm activity is lower/higher than normal. The tropical Atlantic storm season starts in early August and ends in late October.

The summer monsoon frequently exhibits a pulsating character, with changes at intervals of about 3 to 10 days between a very active monsoon rainfall and an almost complete break in the weather. During the breaks in the monsoon, temperatures can soar into the mid-40°C range.

So far in 1994, there has been a surplus of rain in India, particularly the central parts, where flooding has occurred. The lack of Eurasian snow cover this past winter is a possible explanation as to why the surplus has occurred this summer.

Australia and South Africa have experienced drought conditions so far this year. Two months remain until the end of the 1994 summer monsoon season.

Aaron Gergye



Monsoon regions of the world

JULY 1994

STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
BRITISH COLUMBIA													
ABBOTSFORD A	18.7	1.7	36.0	8.9	0.0	*	34.4	83	0	4	345	118	18.7
AMPHITRITE POINT	14.2	0.3	25.2	9.4	0.0	*	43.4	60	0	5	*	*	119.0
BLUE RIVER A	17.7	1.2	35.8	4.0	0.0	*	52.4	72	0	7	264	108	*
CAPE SCOTT	13.7	0.7	17.4	10.1	0.0	*	42.0	46	0	9	*	*	133.6
CASTLEGAR A	22.1	2.0	39.8	7.7	0.0	*	5.8	15	0	3	356	113	10.2
COMOX A	19.1	1.7	33.0	10.2	0.0	*	24.6	88	0	1	365	*	15.4
CRANBROOK A	20.7	2.4	36.0	6.6	0.0	*	4.6	17	0	2	344	104	17.0
FORT NELSON A	18.4	1.8	34.5	8.6	0.0	*	130.2	154	0	13	302	*	33.1
FORT ST JOHN A	17.4	1.8	29.5	8.4	0.0	*	95.5	124	0	11	327	*	50.1
HOPE A	18.8	0.3	34.3	8.0	0.0	*	52.1	141	0	5	352	136	27.7
KAMLOOPS A	23.4	2.6	39.9	11.0	0.0	*	9.0	40	0	3	355	112	7.0
KELOWNA A	21.7	3.1	39.5	8.1	0.0	*	8.0	29	0	2	356	115	9.1
PENTICTON A	23.0	2.7	38.3	6.4	0.0	*	12.6	60	0	1	338	109	5.3
PORT ALBERNI A	18.3	1.2	35.5	6.5	0.0	*	7.3	26	0	1	317	*	30.0
PORT HARDY A	14.3	0.7	23.7	7.4	0.0	*	36.6	70	0	5	218	110	115.9
PRINCE GEORGE A	16.4	1.3	31.7	3.4	0.0	*	41.9	70	0	7	290	99	67.4
PRINCE RUPERT A	13.3	0.6	22.3	7.1	0.0	*	116.8	105	0	14	195	136	140.6
PRINCETON A	19.9	2.1	39.1	6.5	0.0	*	6.6	29	0	2	359	*	*
REVELSTOKE A	20.7	2.5	37.2	9.1	0.0	*	27.2	49	0	3	281	105	14.3
SANDSPIT A	15.0	1.0	21.0	10.0	0.0	*	62.8	145	0	9	230	123	94.3
SMITHERS A	15.9	1.2	34.6	4.1	0.0	*	30.0	65	0	8	225	93	78.0
TERRACE A	17.4	1.3	33.5	8.3	0.0	*	49.2	87	0	12	239	136	59.7
VANCOUVER INT'L A	18.5	1.2	29.0	8.7	0.0	*	27.4	86	0	3	365	119	17.9
VICTORIA INT'L A	17.1	0.8	30.9	7.7	0.0	*	6.0	33	0	3	374	114	40.9
WILLIAMS LAKE A	16.8	1.4	32.8	5.8	0.0	*	27.6	57	0	6	311	100	66.2

STATION	Temperature C Mean	Difference from Normal	Maximum	Minimum	Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
YUKON TERRITORY													
DAWSON A	16.6	*	30.8	3.5	0.0	*	52.6	*	*	*	*	*	*
MAYO A	17.3	2.1	30.8	6.0	0.0	*	24.7	48	0	*	*	*	*
WHITEHORSE A	15.5	1.4	29.2	2.6	0.0	*	29.4	87	0	8	297	119	83.7
NORTHWEST TERRITORIES													
BAKER LAKE A	12.3	1.3	27.2	1.6	0.0	*	80.2	210	0	2	424	141	177.1
CAMBRIDGE BAY A	10.5	2.6	22.2	1.5	0.0	0	8.2	42	0	1	463	152	231.4
CLYDE A	4.7	0.6	18.5	−2.2	12.4	999	27.2	119	0	8	*	*	414.0
COPPERMINE A	14.2	4.5	29.1	3.8	0.0	0	3.6	14	0	2	461	145	118.3
CORAL HARBOUR A	9.2	0.5	23.5	0.2	0.0	0	23.0	56	0	9	340	119	273.6
EUREKA	5.6	0.2	17.6	0.1	0.4	36	17.5	145	0	4	317	93	384.0
FORT SIMPSON A	19.9	3.3	36.6	7.1	0.0	*	63.6	135	0	5	353	122	12.4
FORT SMITH A	18.5	2.5	32.0	3.9	0.0	*	30.2	53	0	4	338	112	23.4
IQALUIT	7.3	−0.3	21.8	0.8	0.2	67	37.8	60	0	12	238	118	332.0
HALL BEACH A	7.3	1.9	20.5	0.0	0.0	0	31.8	92	0	7	*	*	337.1
HAY RIVER A	17.5	1.7	32.6	5.5	0.0	*	30.8	64	0	5	*	*	47.9
INUVIK A	18.3	4.7	30.5	7.5	0.0	0	26.0	77	0	5	401	118	30.1
NORMAN WELLS A	20.0	3.7	30.6	8.8	0.0	0	30.0	53	0	4	324	112	1.6
RESOLUTE A	4.0	−0.1	14.8	−1.7	7.5	227	42.2	188	0	7	308	112	432.8
YELLOWKNIFE A	19.3	3.0	28.2	11.3	0.0	*	28.0	83	0	5	428	112	10.4
ALBERTA													
BANFF	15.9	1.1	32.0	0.5	0.0	*	18.0	42	0	7	*	*	88.7
CALGARY INT'L A	17.4	1.0	33.5	4.9	0.0	*	38.0	58	0	7	323	100	52.6
COLD LAKE A	17.5	0.6	29.6	7.6	0.0	*	80.7	94	0	13	252	80	42.6

JULY 1994

STATION	Temperature C				Snowfall (cm)	% of Normal Snowfall	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	% of Normal Bright Sunshine	Degree Days below 18 C
	Mean	Difference from Normal	Maximum	Minimum									
EDMONTON INT'L A	17.3	1.5	30.3	7.3	0.0	*	76.4	83	0	12	331	106	48.8
EDMONTON MUNICIPAL	18.2	0.8	30.2	8.2	0.0	*	88.4	100	0	13	307	100	38.0
EDMONTON NAMAO A	17.4	0.5	29.8	7.5	0.0	*	74.8	98	0	10	*	*	47.4
FORT MCMURRAY A	17.8	1.4	33.4	5.6	0.0	*	94.6	125	0	13	276	97	42.2
GRANDE PRAIRIE A	16.9	1.0	29.5	4.0	0.0	*	71.1	109	0	13	317	*	56.0
HIGH LEVEL A	18.0	2.0	32.0	4.8	0.0	*	89.8	143	0	10	309	105	33.8
JASPER	17.1	2.0	33.5	5.1	0.0	*	20.2	41	0	8	269	*	57.3
LETHBRIDGE A	18.3	−0.3	35.2	2.2	0.0	*	28.8	66	0	7	353	102	36.4
MEDICINE HAT A	20.2	0.3	35.7	4.4	0.0	*	21.0	52	0	2	385	111	19.7
PEACE RIVER A	17.1	1.4	30.3	5.0	0.0	*	115.5	191	0	13	*	*	52.2
RED DEER A	16.7	0.6	30.4	3.3	0.0	*	77.0	99	0	9	*	*	66.5
ROCKY MTN HOUSE A	16.1	0.8	29.8	4.0	*	*	110.6	119	0	13	*	*	*
SUFFIELD A	20.1	*	35.7	3.8	0.0	*	17.2	*	0	5	372	*	22.1
WHITECOURT A	16.7	1.6	27.9	6.8	0.0	*	112.0	110	0	12	*	*	58.7
SASKATCHEWAN													
BROADVIEW	16.8	−0.9	30.5	4.8	0.0	*	45.6	89	0	8	327	98	50.4
ESTEVAN A	17.8	−2.1	32.6	5.1	0.0	*	32.2	60	0	9	359	101	31.1
KINDERSLEY	18.3	0.0	32.1	3.8	0.0	*	27.2	57	0	6	347	*	37.7
LA RONGE A	17.4	0.8	30.7	5.0	0.0	*	85.7	94	0	13	*	*	48.4
MEADOW LAKE A	16.9	*	30.3	3.6	0.0	*	40.0	*	0	8	286	*	52.0
MOOSE JAW A	18.8	−0.9	33.7	7.8	0.0	*	14.5	27	0	2	370	108	20.9
NIPAWIN A	16.9	*	29.5	5.0	0.0	*	145.2	*	0	10	291	*	49.9
NORTH BATTLEFORD A	17.7	−0.4	29.4	5.5	0.0	*	62.3	96	0	9	*	*	35.9
PRINCE ALBERT A	17.1	−0.3	30.0	5.8	0.0	*	94.6	145	0	11	298	101	46.7
REGINA A	18.2	−0.7	31.9	7.4	0.0	*	54.2	102	0	5	355	104	28.0
SASKATOON A	*	*	*	*	*	*	*	*	*	*	*	*	*
SWIFT CURRENT A	18.1	−0.2	34.0	6.9	0.0	*	22.4	48	0	4	394	115	35.7
YORKTON A	16.9	−1.4	29.6	5.1	0.0	*	32.4	57	0	7	306	93	48.1
MANITOBA													
BRANDON A	17.0	−1.8	31.9	4.3	0.0	*	47.2	71	0	5	311	*	48.7
GILLAM A	14.4	−0.5	20.9	7.9	0.0	*	64.4	71	0	7	*	*	116.7
ISLAND LAKE	17.1	−0.1	27.2	8.2	0.0	*	79.0	78	0	10	*	*	46.3
LYNN LAKE A	16.2	0.6	31.2	4.2	0.0	*	34.2	45	0	6	287	103	75.4
NORWAY HOUSE A	17.2	*	28.1	6.8	0.0	*	160.8	*	0	10	*	*	46.6

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	Mean	Difference from Normal	Maximum	Minimum									
THE PAS A	17.0	−0.7	28.5	5.9	0.0	*	134.4	191	0	11	260	86	48.0
THOMPSON A	15.0	−0.3	29.4	1.5	0.0	*	63.0	65	0	5	274	108	100.9
WINNIPEG INT'L A	18.2	−1.4	30.3	8.6	0.0	*	148.3	195	0	9	269	85	28.8
ONTARIO													
EARLTON A	18.0	0.3	28.4	6.4	0.0	*	58.6	73	0	15	*	*	25.5
GERALDTON A	16.4	*	28.3	2.8	0.0	*	172.6	*	0	14	*	*	57.9
HAMILTON RBG	22.6	*	34.0	10.5	0.0	*	60.6	*	0	8	297	*	*
HAMILTON A	20.9	0.4	31.5	10.3	0.0	*	98.0	139	0	8	*	*	3.6
KAPUSKASING A	17.2	0.4	23.2	11.1	0.0	*	201.5	209	0	19	*	*	49.0
KENORA A	18.1	−1.1	27.6	8.6	0.0	*	147.9	161	0	14	*	*	29.1
KINGSTON A	21.0	0.9	28.6	12.2	0.0	*	76.2	128	0	6	270	96	0.5
LONDON A	20.3	0.0	31.4	8.8	0.0	*	90.6	125	0	13	230	84	7.1
MUSKOKA A	18.9	0.6	29.5	5.7	0.0	*	140.5	181	0	15	*	*	18.5
NORTH BAY A	19.0	0.7	28.2	9.5	0.0	*	126.0	123	0	11	240	88	16.1
OTTAWA INT'L A	21.4	0.8	32.2	11.4	0.0	*	114.6	133	0	9	*	*	0.8
PETAWAWA A	19.4	0.5	32.0	6.7	0.0	*	143.9	183	0	11	*	*	20.5
PETERBOROUGH A	19.8	0.4	31.7	6.2	0.0	*	87.8	114	0	10	*	*	10.7
PICKLE LAKE	16.9	−0.2	27.8	7.8	0.0	*	170.0	153	0	13	*	*	51.1
RED LAKE A	17.0	−1.2	28.1	6.2	0.0	*	96.9	109	0	10	228	*	47.9
ST CATHARINES A	22.2	0.5	32.5	11.9	0.0	*	85.8	131	0	8	286	*	0.2
SARNIA A	20.9	0.2	31.2	9.3	0.0	*	106.0	157	0	9	285	97	7.9
SAULT STE MARIE A	17.2	−0.3	28.0	5.1	0.0	*	86.0	125	0	10	245	85	51.2
SIOUX LOOKOUT A	17.6	−0.7	28.0	7.7	0.0	*	136.0	145	0	17	*	*	40.1
SUDBURY A	18.6	−0.1	27.4	9.8	0.0	*	144.6	174	0	15	223	77	21.6
THUNDER BAY A	16.4	−1.2	27.4	6.0	0.0	*	72.0	95	0	8	252	83	66.4
TIMMINS A	17.5	0.3	27.2	5.8	0.0	*	134.0	148	0	16	*	*	32.8
TORONTO	22.6	*	31.4	13.7	0.0	*	52.4	*	0	10	*	*	0.0
TORONTO INT'L A	21.5	0.9	32.0	10.5	0.0	*	83.0	116	0	11	*	*	2.4
TORONTO ISLAND A	21.1	*	30.9	12.8	0.0	*	42.0	*	0	9	*	*	0.0
TRENTON A	21.0	0.4	31.0	10.0	0.0	*	48.0	79	0	4	*	*	0.8
WATERLOO WELLINGTON	20.3	0.7	31.0	9.4	0.0	*	83.0	116	0	11	*	*	6.3
WAWA A	13.9	*	24.8	2.5	0.0	*	96.6	*	0	11	*	*	132.8
WIARTON A	18.5	0.0	28.3	6.9	0.0	*	84.5	113	0	12	271	92	22.2
WINDSOR A	22.4	0.2	32.8	12.0	0.0	*	78.2	94	0	8	*	*	0.0

JULY 1994

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QUEBEC													
BAGOTVILLE A	18.4	0.5	32.0	6.4	0.0	*	133.1	111	0	15	*	*	31.9
BAIE COMEAU A	15.8	0.0	25.9	6.6	0.0	*	128.4	151	0	12	215	93	75.4
BLANC SABLON A	11.5	0.2	20.0	7.9	0.0	*	99.6	112	0	14	142	*	198.7
CHIBOUGAMAU CHAPAIS	16.0	*	28.0	1.5	*	*	184.7	*	*	17	*	*	77.6
GASPE A	18.2	*	29.8	5.3	0.0	*	119.8	*	0	17	23	*	44.1
KUUJJUAQ A	11.8	0.4	27.6	0.6	0.0	*	68.6	119	0	8	261	133	195.3
KUUJJUARAPIK A	10.0	−0.5	28.0	1.4	0.0	0	30.2	37	0	7	195	115	250.8
LA GRANDE IV A	13.4	*	25.9	0.0	0.0	*	166.0	*	0	17	219	*	146.5
LA GRANDE RIVIERE A	13.8	*	26.8	1.0	0.0	*	77.8	*	0	15	247	*	137.9
MANIWAKI	19.2	0.9	31.6	6.1	0.0	*	119.0	129	0	17	*	*	16.1
MATAGAMI A	*	*	*	*	*	*	*	*	*	*	*	*	*
MONT JOLI A	18.0	0.7	29.2	8.7	0.0	*	110.4	147	0	11	245	97	33.2
MONTREAL INT'L A	21.8	0.9	32.7	11.5	0.0	*	50.6	56	0	11	261	95	0.4
MONTREAL MIRABEL I/	20.1	*	31.6	8.7	*	*	94.8	*	0	10	247	*	4.8
NATASHQUAN A	14.6	0.4	23.3	4.8	0.0	*	192.2	202	0	17	216	88	105.8
QUEBEC A	19.9	0.8	31.4	9.1	0.0	*	167.6	144	0	15	230	93	6.7
ROBERVAL A	18.2	0.3	30.7	5.4	0.0	*	149.9	126	0	15	221	*	32.4
SEPT-ILES A	14.9	−0.3	26.0	5.4	0.0	*	140.6	145	0	14	225	93	984.9
SHERBROOKE A	19.2	1.4	31.9	9.1	0.0	*	172.0	143	0	15	261	*	10.9
ST HUBERT A	*	*	31.7	10.1	*	*	*	*	0	9	*	*	*
VAL D'OR A	17.4	0.3	28.8	4.7	0.0	*	130.4	128	0	13	213	82	43.4
NEW BRUNSWICK													
CHARLO A	18.6	0.8	29.8	6.2	0.0	*	139.2	141	0	17	242	95	32.8
FREDERICTON A	20.9	1.6	32.5	6.9	0.0	*	45.8	52	0	10	*	*	3.0
MONCTON A	20.3	1.8	31.7	7.8	0.0	*	31.8	34	0	7	254	105	7.4
SAINT JOHN A	18.4	1.5	29.2	7.9	0.0	*	45.2	44	0	9	184	84	14.7

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NOVA SCOTIA													
GREENWOOD A	21.2	2.1	32.8	7.6	0.0	*	55.4	71	0	9	*	*	3.6
HALIFAX INT'L A	20.7	2.5	30.7	11.6	0.0	*	21.4	23	0	5	*	*	7.5
SABLE ISLAND	17.9	2.4	24.8	9.9	0.0	*	102.6	112	0	8	180	111	29.9
SHEARWATER A	19.9	2.5	30.1	12.2	0.0	*	24.8	26	0	5	210	96	11.1
SYDNEY A	20.1	2.4	33.2	6.3	0.0	*	23.8	29	0	6	289	119	20.2
YARMOUTH A	18.6	2.3	27.2	8.8	0.0	*	17.2	22	0	5	181	88	11.0
PRINCE EDWARD ISLAND													
CHARLOTTETOWN A	20.3	2.0	29.2	8.9	0.0	*	36.4	43	0	6	*	*	14.3
NEWFOUNDLAND													
BONAVISTA	16.1	1.4	26.8	6.3	0.0	*	100.4	165	0	12	*	*	79.3
BURGEO	14.2	0.7	22.2	7.0	0.0	*	104.8	75	0	13	*	*	114.8
CARTWRIGHT	13.5	0.8	28.2	1.0	0.0	*	69.1	83	0	13	229	115	142.9
COMFORT COVE	16.4	−0.1	28.3	5.8	0.0	*	103.6	127	0	12	*	*	74.6
DANIELS HARBOUR	14.7	0.3	28.8	3.6	0.0	*	147.2	165	0	19	168	82	107.0
DEER LAKE A	16.3	−0.1	27.1	4.0	0.0	*	144.1	182	0	15	*	*	77.6
GANDER INT'L A	16.6	0.1	27.3	5.2	0.0	*	126.2	183	0	14	243	113	66.6
GOOSE A	16.3	0.5	27.4	5.0	0.0	*	74.0	70	0	14	239	122	68.3
MARY'S HARBOUR	13.7	*	29.7	4.3	0.0	*	54.2	80	0	12	*	*	143.2
PORT AUX BASQUES	15.6	2.4	25.1	8.0	0.0	*	110.6	102	0	14	189	*	74.9
ST ANTHONY	13.5	0.6	24.8	5.0	0.0	*	77.9	77	0	14	*	*	140.6
ST JOHN'S A	16.8	1.3	27.2	6.0	0.0	*	87.8	117	0	9	248	*	64.2
ST LAWRENCE	15.4	3.3	25.2	6.6	0.0	*	67.2	68	0	8	*	*	82.3
STEPHENVILLE A	15.8	−0.2	24.0	6.6	0.0	*	132.4	138	0	15	163	*	75.2
WABUSH LAKE A	13.8	0.3	26.4	3.7	0.0	*	108.4	102	0	16	241	*	129.1

AGROCLIMATOLOGICAL STATIONS — JULY 1994

STATION	Temperature C				Snowfall (cm)	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	Degree days above 5 C	
	Mean	Difference from Normal	Maximum	Minimum							This month	Since jan. 1st
BRITISH COLUMBIA												
AGASSIZ	19.1	1.2	35.0	8.5	0.0	43.2	93	0	7	316	437.0	1425.7
SUMMERLAND	23.5	2.6	38.0	7.5	0.0	9.4	42	0	1	344	572.8	1466.1
ALBERTA												
BEAVERLODGE	16.6	1.4	29.0	4.0	0.0	73.2	114	0	12	321	357.8	850.3
LACOMBE	16.8	0.7	30.8	3.0	0.0	68.9	95	0	9	**	*.*	897.9
SASKATCHWAN												
INDIAN HEAD	17.5	−1.1	31.0	5.0	0.0	55.2	104	0	8	**	340.0	949.8
MELFORT	16.9	−0.5	30.0	5.5	0.0	78.2	121	0	12	238	*.*	918.5
SCOTT	17.1	−0.1	29.9	8.0	0.0	60.2	100	0	13	333	374.7	913.8
SWIFT CURRENT	18.2	−0.3	34.5	7.0	0.0	15.6	41	0	3	359	412.6	1024.0
MANITOBA												
BRANDON	17.4	−1.8	32.5	3.4	0.0	46.0	66	0	9	**	384.6	999.7
MORDEN	18.4	−1.2	30.0	8.0	0.0	87.6	119	0	9	301	422.5	1146.0
GLENLEA	24.1	3.9	29.0	4.5	0.0	96.7	132	0	17	272	409.8	1070.1
ONTARIO												
DELHI	21.4	0.7	33.0	8.5	0.0	172.2	244	0	9	**	*.*	1269.6
ELORA	19.3	0.2	29.7	7.4	0.0	102.6	141	0	12	**	*.*	1106.6
HARROW	21.9	−0.1	31.0	9.0	0.0	33.5	42	0	7	250	523.7	1366.0
OTTAWA	21.4	0.8	31.2	10.2	0.0	98.7	116	0	11	257	509.8	1245.8
SMITHFIELD	21.8	1.6	32.2	10.2	0.0	52.3	77	0	5	**	520.5	1247.9

Courtesy of Agriculture Canada

STATION	Temperature C				Snowfall (cm)	Total Precipitation (mm)	% of Normal Precipitation	Snow on ground at end of month (cm)	No. of days with Precip 1.0 mm or more	Bright Sunshine (hours)	Degree days above 5 C	
	Mean	Difference from Normal	Maximum	Minimum							This month	Since jan. 1st
QUEBEC												
LA POCATIERE	18.5	−0.2	31.0	6.0	0.0	123.8	130	0	17	243	420.7	922.7
L'ASSOMPTION	21.0	0.8	32.5	9.0	0.0	122.8	132	0	13	251	*.*	1176.3
NEW BRUNSWICK												
FREDERICTON	21.2	2.1	32.5	8.0	0.0	44.1	49	0	12	250	503.5	1088.8
NOVA SCOTIA												
KENTVILLE	24.3	5.1	32.5	9.5	0.0	41.0	58	0	10	238	511.9	1150.2
NAPPAN	20.7	2.7	30.0	7.0	0.0	92.3	109	0	10	217	484.8	1023.3
PRINCE EDWARD ISLAND												
CHARLOTTETWN	*.*	*.*	*.*	*.*	*.*	*.*	**	***	***	**	*.*	*.*
NEWFOUNDLAND												
ST.JOHN'S WEST	17.5	1.9	27.5	6.0	0.0	78.6	107	0	9	238	388.3	693.5

Courtesy of Agriculture Canada

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On the 9th, a tornado east of Montréal, in St-Charles-sur-Richelieu, killed one man, destroyed four homes, damaged 24 others and caused $2-3 million damage. Torrential rains, on July 21-22 in the Montréal area combined with 1.5-cm hail and winds to 100 km/h, flooding homes and businesses, uprooting trees and downing power lines. Thunderstorms crossed southern Quebec along a path from Montréal to Chaleur Bay on the 26th; winds gusted to 100 km/h, rainfall was intense and hail was reported up to 4 cm in diameter. A tornado south of Montréal, on the 30th, damaged two barns. In the Matagami area, up to 57 mm of rain fell in three to four hours on the 31st.

Maritimes

The month of July was hot and humid with generally low rainfall totals. Mean temperatures ranged from 0.8 to 2.5 Celsius degrees above normal. The mean monthly temperature of 19.9°C at Shearwater, Nova Scotia, set a record high July mean for that station. Charlottetown, Prince Edward Island, enjoyed the third-warmest July on record with record-daily temperatures of 29.1°C on the 21st and 29.2°C on the 22nd. Precipitation totals were substantially below normal for all of the Maritimes except northern New Brunswick and Sable Island. In New Brunswick, Moncton recorded 32 mm while Charlo, with thundershowers on 11 days, recorded 139 mm. In Nova Scotia, total precipitation ranged from 20% of normal at Yarmouth (17 mm) to 60% at Greenwood (55 mm). Charlottetown recorded 36 mm, compared to the normal of 85 mm.

Bright sunshine hours varied from 33 hours below normal at Saint John, New Brunswick, to 51 hours above at Sydney, Nova Scotia. Fog persisted along the Atlantic and Bay of Fundy coasts, moving inland during the nights and retreating to the coast in the mornings.

On the 13th, strong winds caused minor and localised damage on Île Lamèque, in northeastern New Brunswick. The event was reported unofficially as a tornado, although investigators could not confirm the report.

Newfoundland and Labrador

Pleasant summer weather prevailed across much of the Island. In eastern locations, temperature and sunshine values were above-normal, with less-than-or-equal-to normal rainfall. On the other hand, western locations reported below-normal sunshine and above-normal rainfall.

In general, temperatures were one to two Celsius degrees above normal. The July mean of 16.8°C at St. John's was the warmest since 1985. Rainfall totals in the west were near 145 mm, about 50 mm above normal. In the east, near 90 mm were recorded, most of which was associated with two systems in the latter part of the month. Thunderstorms were common with marble-sized hail on the 14th, in the Gander area. St. John's observed 248 hours of bright sunshine, about 30 hours above normal.

The warm, dry weather had an impact. Although good for tourism, farmers complained of poor growing conditions. Salmon rivers were closed due to low water levels and during mid-month, a forest fire burned out of control in the northeast Avalon Peninsula.

In Labrador, above-normal temperatures and below-normal precipitation highlighted the month's weather. Early in the month, near-normal conditions prevailed. In the latter part of the month, daily maximums near 30°C were reported, with overall monthly means from one to three degrees above normal. Monthly rainfall totals were near 70 mm with Goose Bay recording 74 mm - about 45 mm below normal. Sunshine totals were above normal with totals near 240 hours - about 45 hours above normal. Several forest fires were reported during the month, with a major fire burning out of control just south of Happy Valley/Goose Bay at month's end.