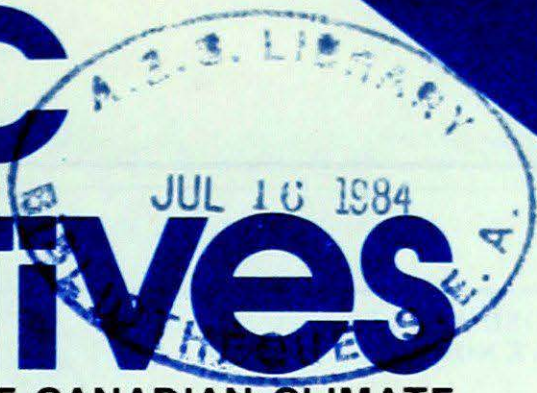


Climatic Perspectives



Canadian Climate Centre

A WEEKLY REVIEW OF CANADIAN CLIMATE

JULY 6, 1984

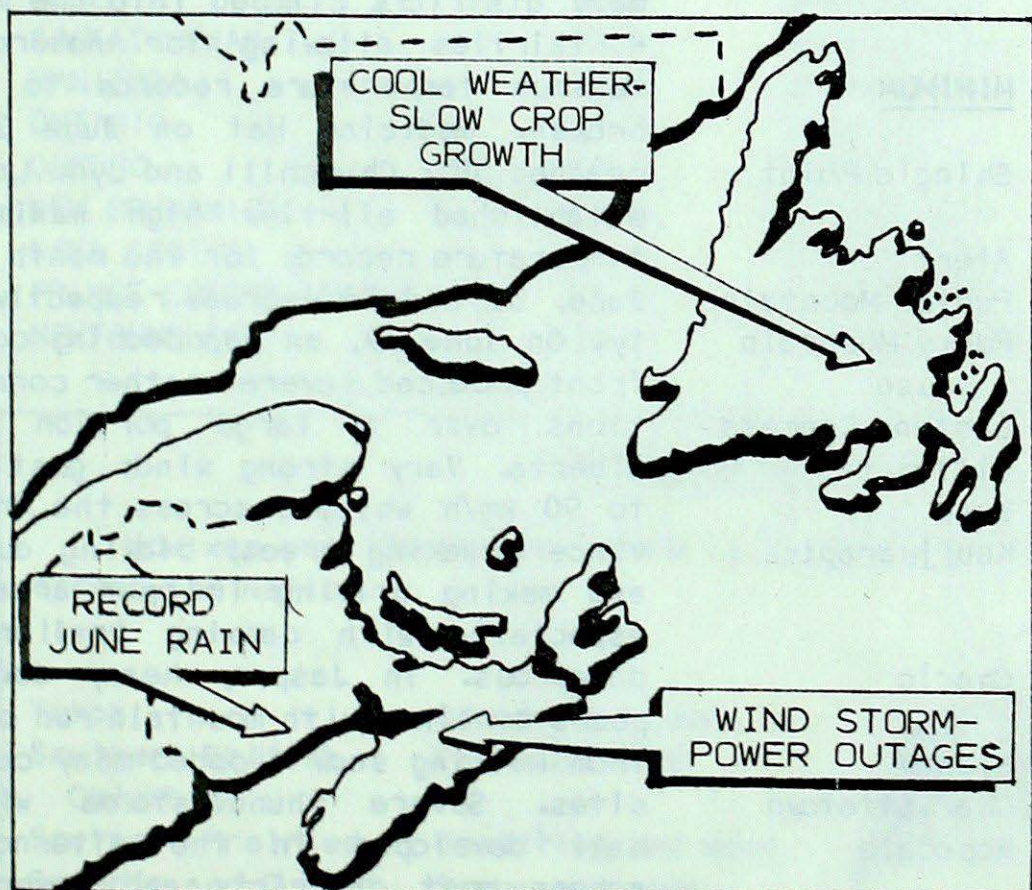
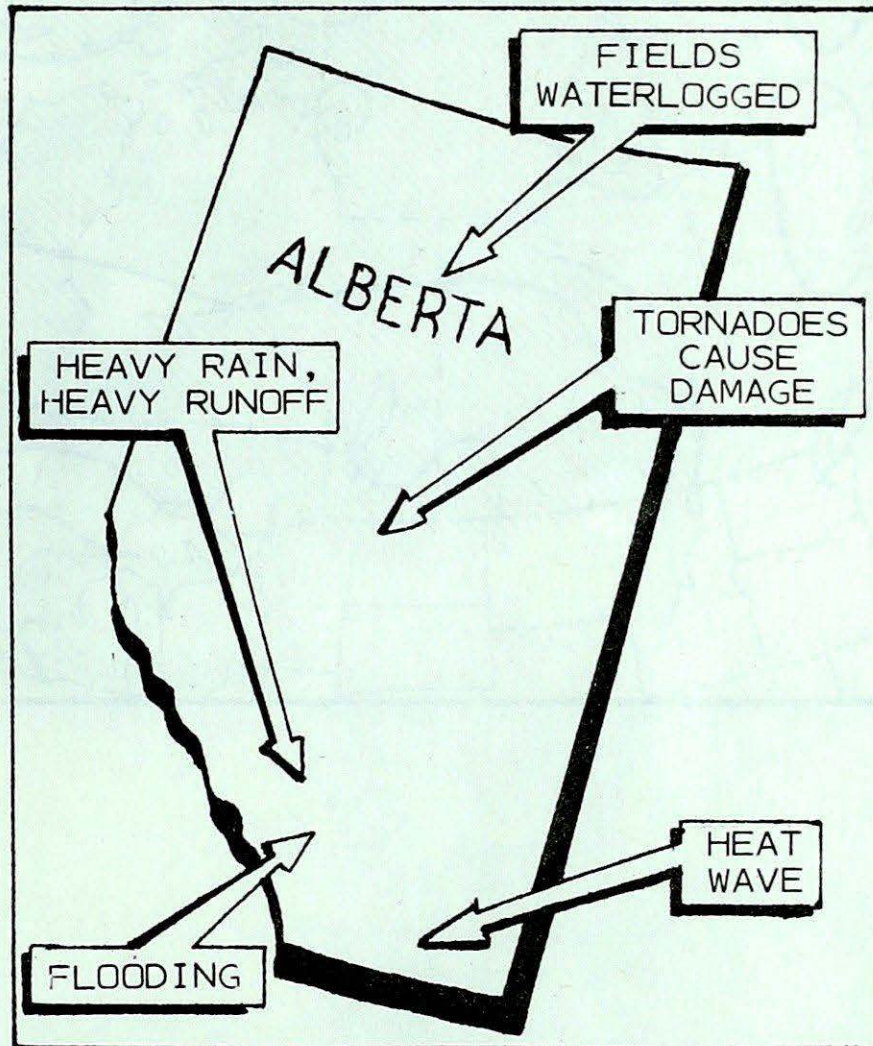
(Aussi disponible en français)

VOL. 6 NO. 26

FOR THE PERIOD JUNE 26 TO JULY 2, 1984

● **Outbreak of violent weather in Alberta**

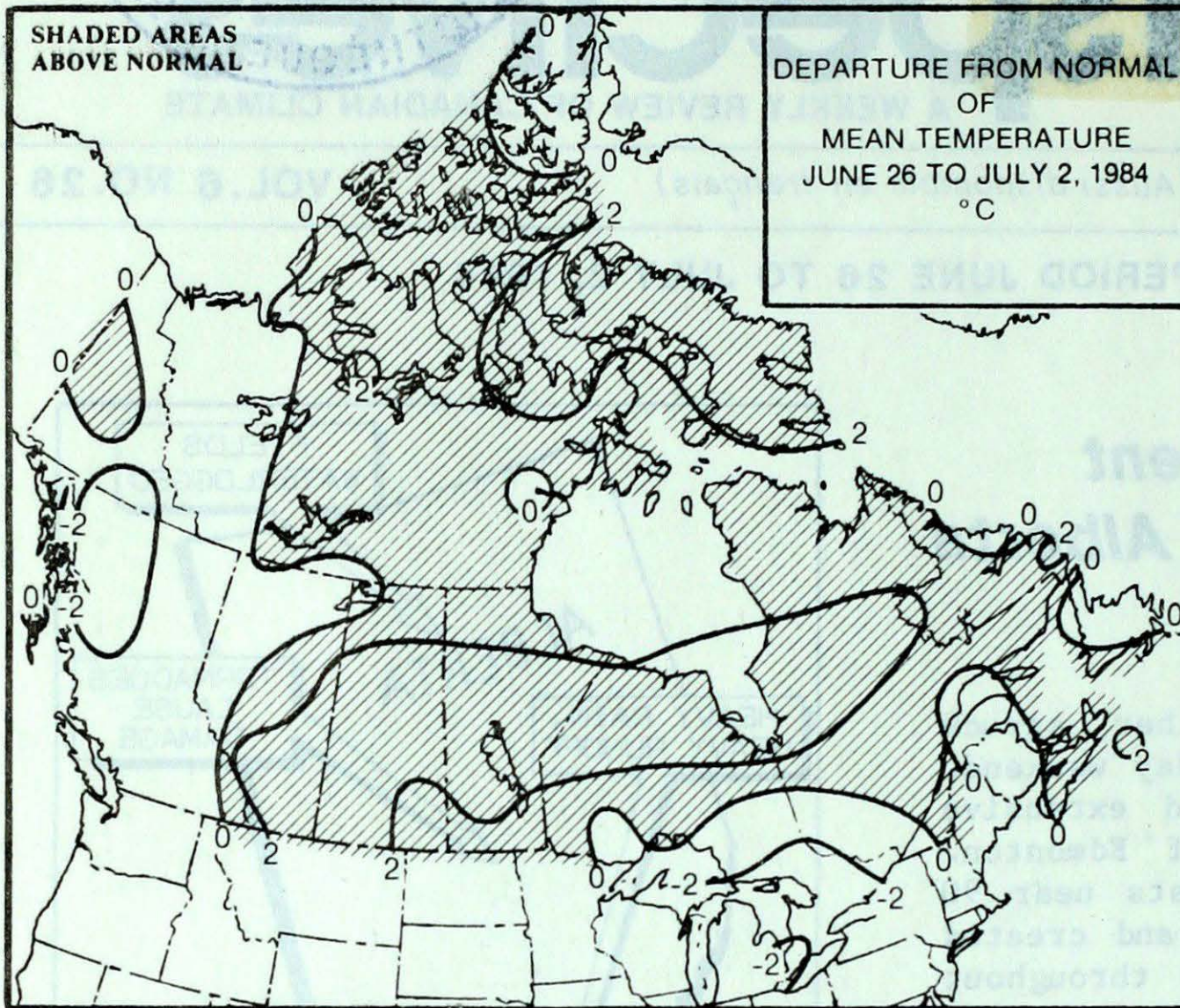
Severe summer weather struck Alberta on the long holiday weekend. Numerous tornadoes caused extensive property damage north of Edmonton. Gale-force winds with gusts near 90 km/h broke tree branches and created dust storm in open areas throughout most of the Province. Near the Foothills, a heat wave produced 35 to 38 degrees readings, and heavy rains combined with mountainous run off created flooding near Jasper.



● **Maritimes buffeted by strong winds and heavy rains**

A fierce wind storm struck the Maritimes on June 26. Strong winds with gusts near 90 km/h knocked down power lines and left many communities in Nova Scotia without electricity. In New Brunswick, deluges of rain in the 40 to 50 mm range saturated farmland where at least 10 per cent of the fields were under water.

ACROSS THE COUNTRY...



Yukon and Northwest Territories

The weather was cool and damp in the Yukon and in the Mackenzie District but mild and dry elsewhere. Mean readings were about 2° below the long-term average in the southern Yukon and an influx of moist Pacific air mass dumped 40 to 65 mm of rain over the western Arctic. Over the extreme eastern areas, the prolonged cold spell came to an end. Mean temperatures were about 3° above average over Baffin Island. The wet and cool weather has helped to control forest fires in the central Yukon. To date, this season, 87 forest fires were reported.

British Columbia

An onshore flow gave changeable and unseasonably wet weather to most areas of the Province. Mean temperatures ranged from near normal in the southeast to 3° below normal along the north shores. The cool and wet conditions hampered recreation, logging and farming.

Prairies

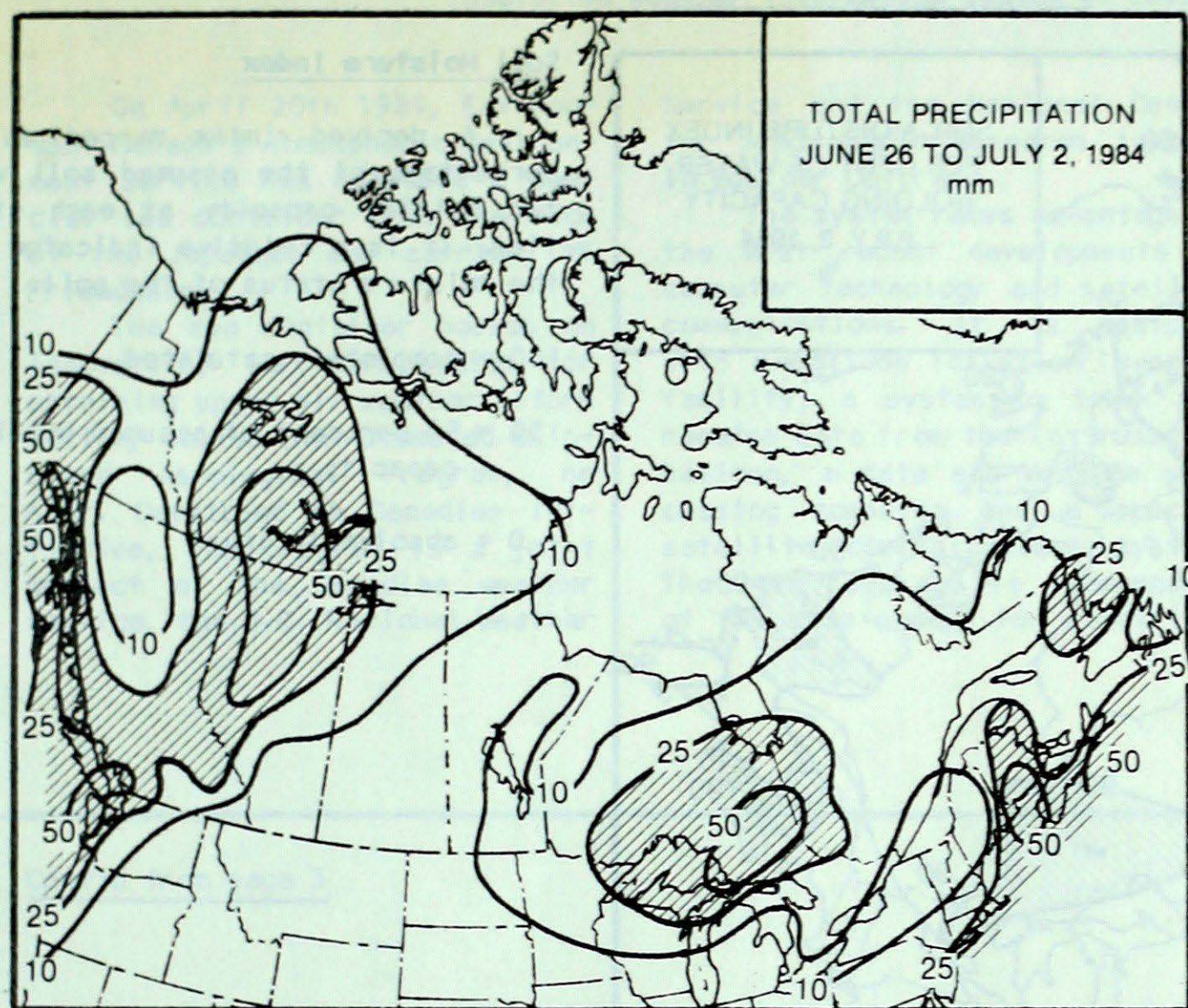
Pleasant summer weather returned to the eastern portions of the Prairies. Daytime temperatures in many districts climbed into the mid-thirties allowing for numerous maximum temperature records to be broken. Medicine Hat on June 29, reached 38°; Churchill and Lynn Lake established all-time high maximum temperature records for the month of June, 32 and 35 degrees respectively. On June 29, an approaching cold front produced severe weather conditions over a large portion of Alberta. Very strong winds gusting to 90 km/h whipped across the Province breaking trees, blowing dust and making driving in open areas, especially with camping trailers, dangerous. In Jasper, heavy downpours combined with mountain run off from melting snow flooded many camp sites. Severe thunderstorms with hail developed in the afternoon across most districts and several tornadoes cut a swath of destruction from Rochester north of Edmonton to Athabaska resulting in untold property damage. On June 30, 50 to 60 millimetres of rain in a 24 hour

WEEKLY TEMPERATURES EXTREMES (°C)

	<u>MAXIMUM</u>	<u>MINIMUM</u>
YUKON TERRITORY	24.5 Dawson	-1.4 Shingle Point
NORTHWEST TERRITORIES	25.5 Norman Wells	-4.6 Alert
BRITISH COLUMBIA	31.0 Penticton	-1.2 Puntzi Mountain
ALBERTA	38.2 Medicine Hat	2.5 Rocky Mountain House
SASKATCHEWAN	37.2 Kindersley	3.9 Eastend Cypress
MANITOBA	35.2 Lynn Lake	2.4 Gillam
ONTARIO	32.7 Moosenee	3.5 Wawa
QUEBEC	32.4 Bagotville Matagami Roberval	-0.6 Kuujuarapik
NEW BRUNSWICK	32.7 Fredericton	0.9 Charlo
NOVA SCOTIA	31.3 Greenwood	5.1 Sydney
PRINCE EDWARD ISLAND	28.1 Summerside	8.4 Charlottetown
NEWFOUNDLAND	26.7 Goose	1.1 Hopedale

ACROSS THE NATION

Warmest mean temperature	20.6	Moose Jaw, Sask
Coollest mean temperature	2.4	Alert, NWT



period fell on the already saturated field in the Peace River District.

Ontario

A sunny and pleasant Canada Day typified the weather over most of the Province. The temperatures soared into the low thirties in central and northern Ontario over the weekend. However, weekly mean readings in the South, were about 3° below normal. Showers were reported at mid-week, the heaviest falls occurred in the central areas. At Sault Ste. Marie, 43 mm fell on June 26. Sunny and dry weather has created extensive drying conditions in Northwestern Ontario, and according to the Ministry of Natural Resources the risk of forest fires was high at many northern locations. At the end of the week, 7 fires were burning - non of them major.

Quebec

A heat wave arrived over southern Québec for the long holiday weekend and daytime temperatures rose to near 30°. In the East, however, the weather was cool and 5 daily low records were set including 4° on June 28 at Baie Comeau. Precipitation was light in northwestern Québec but ranged from 10 to 30 mm elsewhere. Owing to the favourable weather, the strawberry crop was described as excellent, both in quality and quantity this season. Nearly 75 per cent of the hay crop was harvested and the yield was especially good in the Estrie and Nicolet regions.

Atlantic Provinces

The week started out cool and damp but ended with sunny and warm weather. On June 26, outbreak of violent storms produced gale-force winds throughout Nova Scotia. Wind gusts of 85 km/h uprooted large trees and fallen tree branches knocked down power lines leaving thousands of residents without electricity. The same storm system dumped deluges of rain in New Brunswick, most places received between 20 and 45 mm. At Saint John, 44 mm of rain increased the monthly accumulation to 241.2 mm - a record for June. The wet weather since May has caused at

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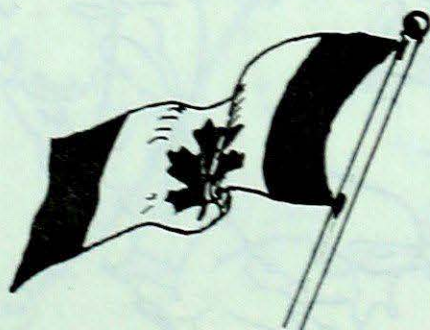
HEAVIEST WEEKLY PRECIPITATION (mm)

YUKON	36.5	Burwash
NORTHWEST TERRITORIES	66.5	Hay River
BRITISH COLUMBIA	74.2	Prince Rupert
ALBERTA	80.5	High Level
SASKATCHEWAN	23.9	Uranium City
MANITOBA	18.4	Gretna
ONTARIO	51.1	Timmins
QUEBEC	29.4	Gaspé
NEW BRUNSWICK	57.6	Fredericton
NOVA SCOTIA	53.6	Eddy Point
PRINCE EDWARD ISLAND	23.8	East Point
NEWFOUNDLAND	36.4	Daniels Harbour

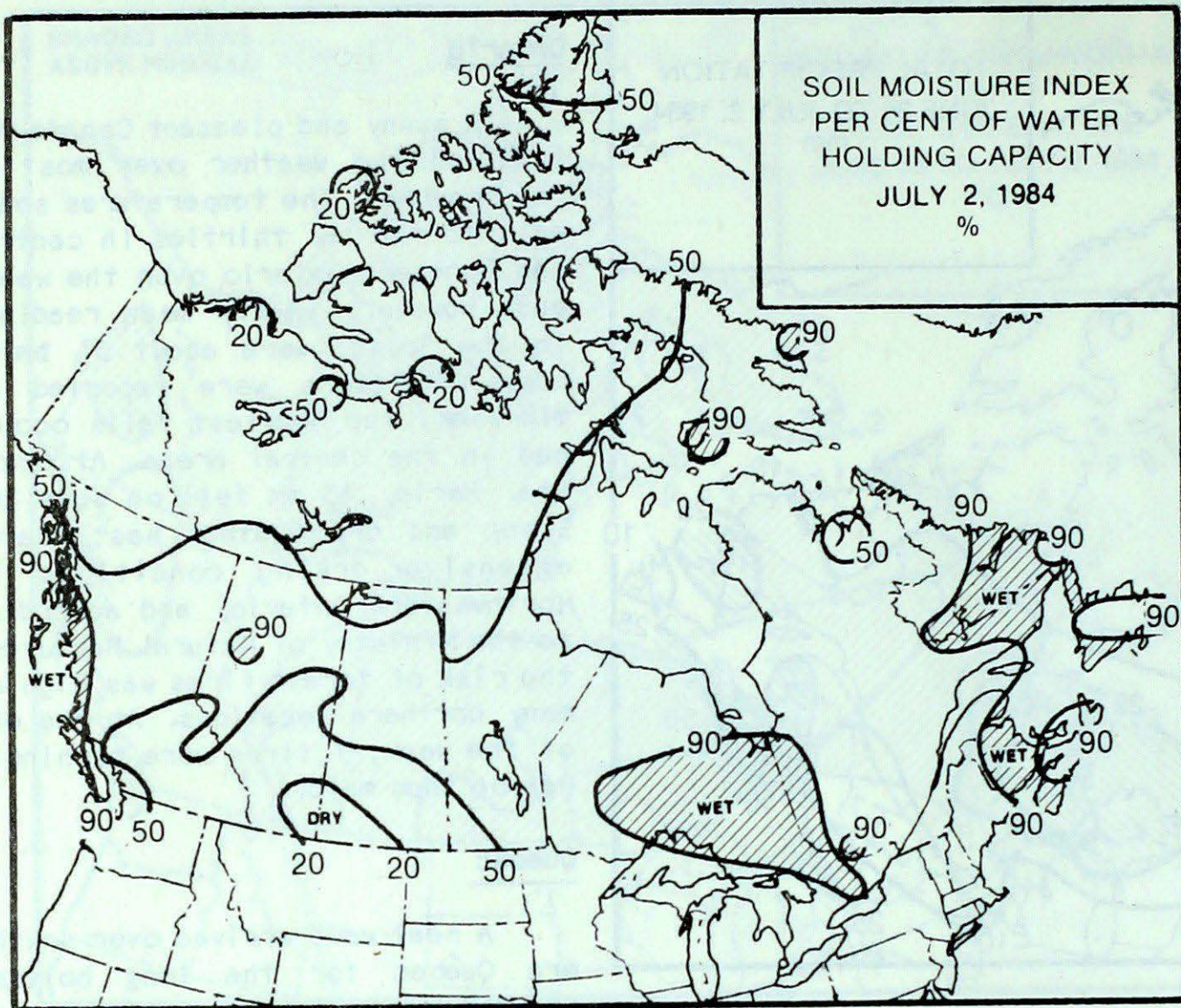
Canada Day Weather

How was your Canada Day? Here is a brief look at the weather across the Nation.

Yukon	Cloudy and cool
Southern British Columbia	Fair and mild
Southern Prairies	Unsettled and warm
Ontario and Québec	Sunny and warm
Atlantic Canada	Sunny and hot



SOIL MOISTURE



Soil Moisture Index

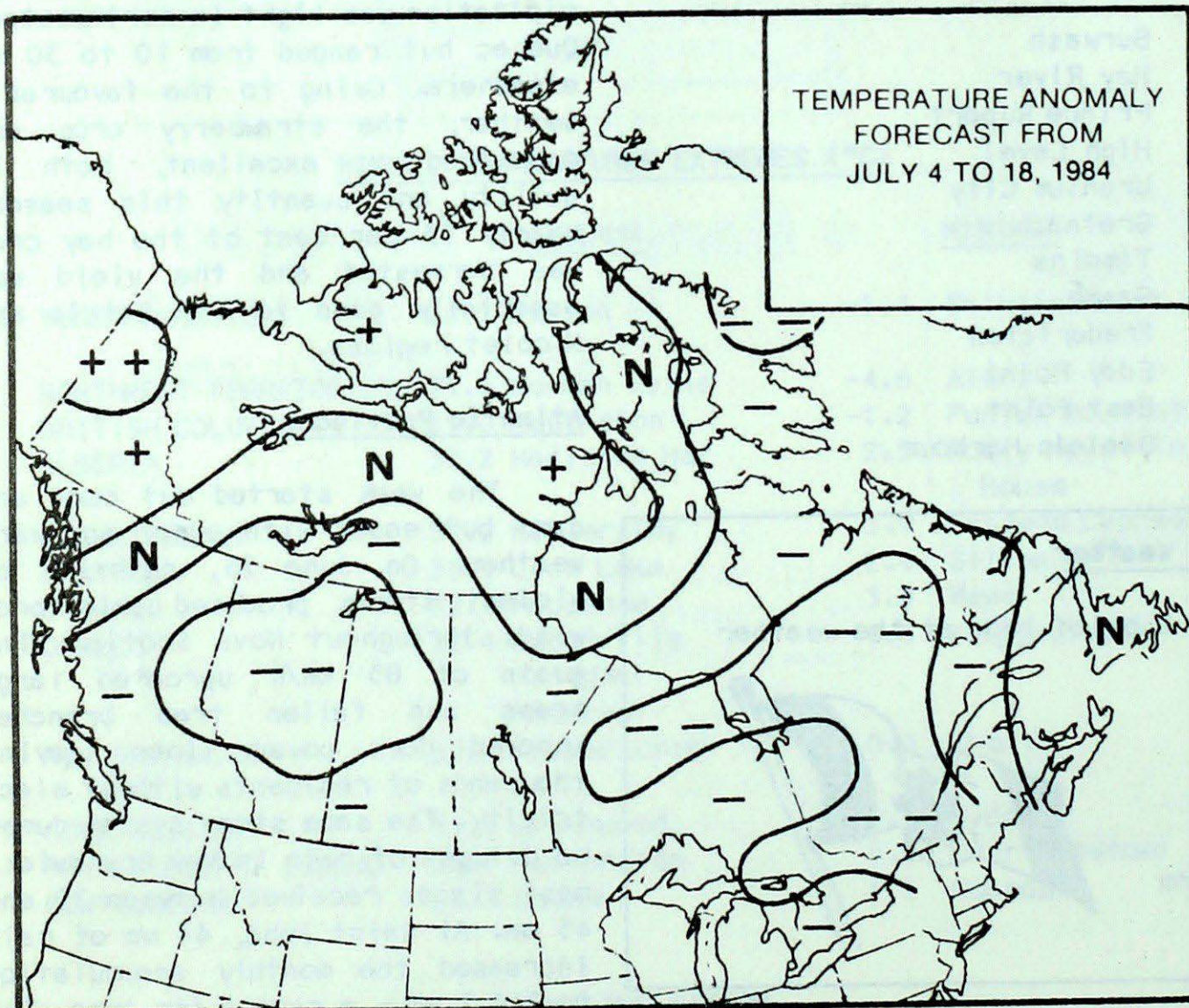
A derived index mapped as a percentage of the assumed soil water holding capacity at each station. It is a relative indicator of the moisture status of the soil.

100 = completely saturated

50 = 50 per cent of assumed holding capacity

0 = absolutely dry

TEMPERATURE ANOMALY FORECAST



Temperature Anomaly Forecast

The temperature anomaly forecast, for each of the 70 Canadian stations, is prepared by searching historical weather maps to find cases similar to the present one. The principle used is that a prediction for the next 15 days may be based on what is known to have actually happened during the 15-day anomaly periods. After the five best sets are selected, the surface temperature anomalies are calculated. This results in five separate forecasts, which are averaged to provide the consensus forecast depicted.

++ much above normal

+ above normal

N normal

- below normal

-- much below normal

Innovative Weather Information System at Environment Canada

On April 20th 1984, Environment Canada's Atmospheric Environment Service has released a special sea container from the deck of the Japanese car carrier, *MV Friendship*.

The sea container houses an innovative, low cost system for obtaining upper air weather information, called the Automated Shipboard Aerological Program, or ASAP. Developed on Canadian initiative, the program is a joint project of the Canadian weather service, the U.S. National Weather

Service and the National Centre for Atmospheric Research located in Boulder Colorado.

The system takes advantage of the most recent developments in computer technology and satellite communications. It is equipped with a balloon inflation/launcher facility, a system to track and receive data from the Instrumented balloon, a data and message processing computer and a special satellite communications system. The total package is independent of the ship except for electrical

power.

ASAP can be operated by a relatively inexperienced person, and replaces a large part of the data previously collected by the weatherships at a fraction of the cost: \$200,000 to \$250,000 versus \$6 million annually.

A second ASAP container is currently being completed in Boulder, Colorado, at the National Centre for Atmospheric Research. It will be used on a second ship on the North Pacific route next winter.

-Information
Directorate

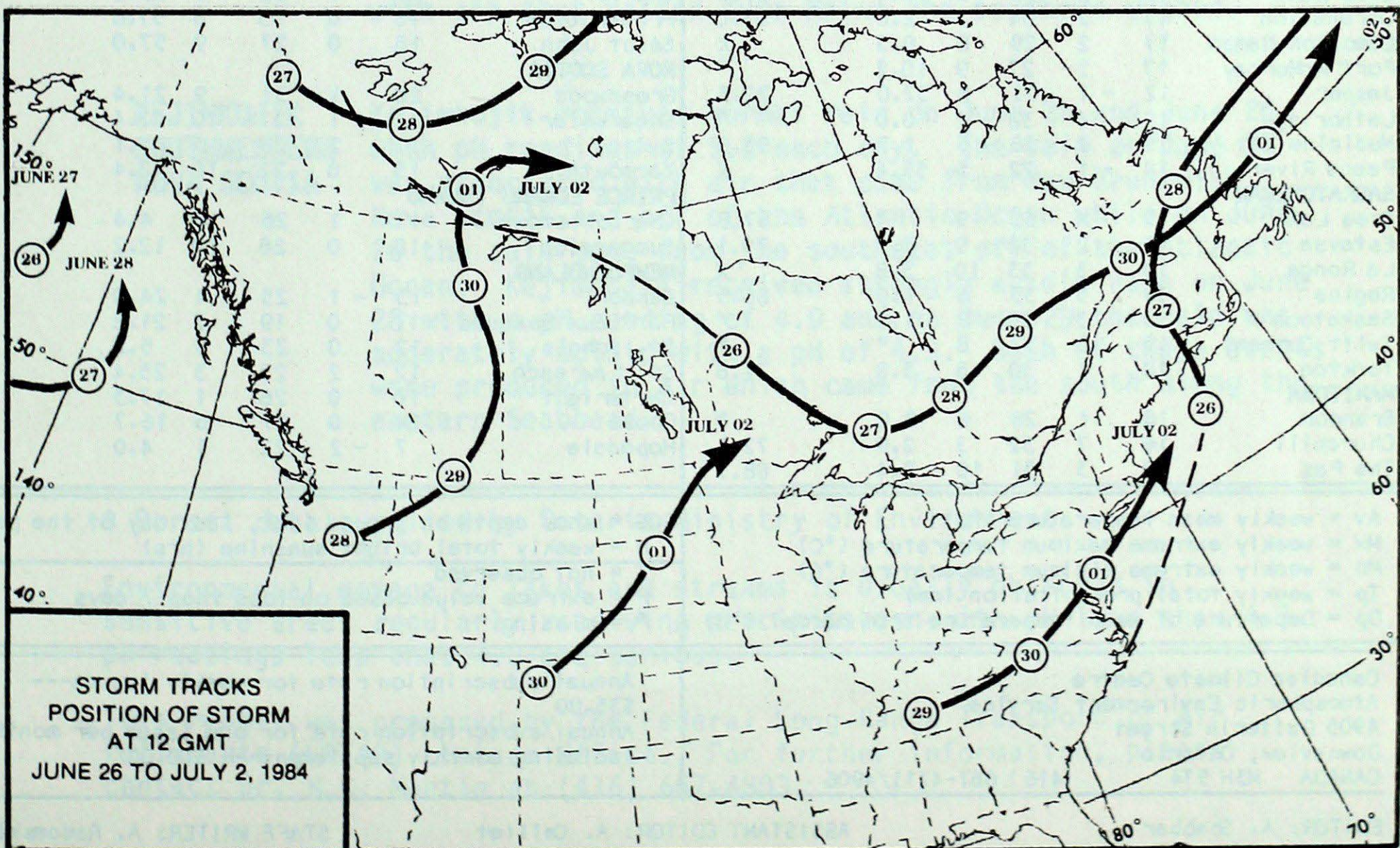
Cont'd from page 3

least 10 per cent of the farmland to be waterlogged in New Brunswick. The hard-freeze during the third week of June caused considerable crop damage, and in

Newfoundland cool weather slowed down crop growth. Over the weekend, record-warmth arrived in Atlantic Canada, and the temperatures climbed near 30°. At

Halifax, a record 32° reading produced the warmest day of the year to date.

STORM TRACKS



TEMPERATURE, PRECIPITATION AND BRIGHT SUNSHINE DATA FOR THE WEEK ENDING 0600 GMT JULY 2, 1984

STATION	TEMP				PRECIP		SUN	STATION	TEMP				PRECIP		SUN
	Av	Dp	Mx	Mn	Tp	SOG	H		Av	Dp	Mx	Mn	Tp	SOG	H
YUKON TERRITORY								Thompson	18	3	31	6	0.0		95.4
Dawson	15	0	25	4	5.2		X	Winnipeg	19	1	27	12	*		*
Mayo A	15	1	24	10	24.7		X	ONTARIO							
Watson Lake	12	-2	19	2	5.4		47.1	Big Trout Lake	17	2	29	6	3.2		X
Whitehorse	11	-2	19	3	5.3		*	Earlton	17	-1	30	9	*		X
NORTHWEST TERRITORIES								Kapuskasing	17	0	30	8	23.2		*
Fort Smith	15	0	24	7	35.1		*	Kenora	19	1	27	12	16.6		X
Inuvik	11	-2	21	3	*		*	London	19	-2	27	8	14.8		74.3
Norman Wells	15	-1	26	9	24.5		36.5	Moosonee	17	2	33	5	36.4		52.7
Yellowknife	15	0	22	9	34.0		56.6	Muskoka	16	-3	27	5	*		X
Baker Lake	8	0	24	2	9.3	0.0	34.3	North Bay	16	-2	26	9	32.6		*
Cape Dyer	6	3	13	1	5.6	7.0	X	Ottawa	20	-1	31	13	10.0		79.2
Clyde	5	2	12	0	0.0	0.0	118.7	Pickle Lake	18	2	29	8	17.6		X
Frobisher Bay	8	2	15	2	6.8		75.0	Red Lake	18	1	28	5	1.4		76.4
Alert	2	0	7	-5	1.8	0.0	84.7	Sudbury	16	-2	28	8	27.0		41.8
Eureka	4	-1	11	0	1.2		*	Thunder Bay	18	2	29	9	34.4		68.2
Hall Beach	4	1	11	1	0.6		X	Timmins	16	-1	30	9	51.1		X
Resolute	3	0	11	-3	1.4		91.6	Toronto	18	-3	28	6	15.8		X
Cambridge Bay	8	2	18	1	3.8		*	Trenton	18	-2	28	10	6.9		X
Mould Bay	3	0	11	-1	7.4	0.0	*	Warton	16	-2	25	5	8.5		59.2
Sachs Harbour	5	-1	12	-2	15.0		65.1	Windsor	19	-3	29	-2	2.9		X
BRITISH COLUMBIA								QUEBEC							
Cape St. James	11	-1	15	8	38.2		28.0	Bagotville	18	1	32	9	8.7		X
Cranbrook	15	0	29	1	4.6		75.4	Blanc-Sablon	10	1	18	4	*		*
Fort Nelson	15	-1	24	5	14.8		42.6	Inukjuak	13	6	23	6	1.2		58.9
Fort St. John	13	-2	20	7	*		X	Kuujuuaq	10	0	22	-1	1.8		41.4
Kamloops	17	-1	26	7	9.5		37.2	Kuujuuarapik	12	3	25	4	9.6		50.4
Penticton	17	-1	31	2	13.8		95.1	Maniwaki	17	-1	30	8	12.4		51.7
Port Hardy	12	-1	17	6	56.0		24.4	Mont-Joli	15	-2	26	4	15.0		49.9
Prince George	11	-2	19	4	19.4		39.1	Montréal	20	-1	31	12	1.0		*
Prince Rupert	11	-1	15	6	74.2		22.9	Natashquan	13	1	17	9	10.6		33.7
Revelstoke	15	-1	25	6	43.2		34.9	Nitchequon	15	2	21	10	12.4		*
Smithers	11	-3	19	2	10.8		24.9	Québec	19	0	31	10	7.5		74.6
Vancouver	15	-1	21	9	49.9		20.9	Schefferville	13	3	22	8	14.7		29.5
Victoria	13	-2	21	6	20.7		25.7	Sept-Îles	13	-1	21	6	20.0		*
Williams Lake	12	-1	20	2	30.6		27.6	Sherbrooke	18	1	29	9	5.2		67.1
ALBERTA								Val-d'Or	17	0	30	8	13.9		45.5
Calgary	18	4	30	9	0.0		86.3	NEW BRUNSWICK							
Cold Lake	18	3	34	8	10.4		67.0	Charlo	16	-1	28	1	39.2		44.9
Coronation	17	2	34	3	2.0		92.0	Fredericton	18	0	33	8	57.6		*
Edmonton Namao	17	2	29	8	0.5		X	Saint John	16	0	27	9	57.0		26.9
Fort McMurray	17	2	27	9	10.2		*	NOVA SCOTIA							
Jasper	12	-1	21	6	32.0		22.3	Greenwood	20	1	31	9	21.4		X
Lethbridge	19	4	33	7	0.0		*	Shearwater	17	1	31	10	31.4		55.1
Medicine Hat	19	2	38	-6	1.5		93.8	Sydney	17	2	28	5	41.1		61.9
Peace River	14	-1	22	5	55.4		X	Yarmouth	15	0	22	10	47.4		*
SASKATCHEWAN								PRINCE EDWARD ISLAND							
Oree Lake	17	X	33	9	*		57.8	Charlottetown	17	1	26	8	4.4		*
Estevan	19	2	30	9	3.1		79.1	Summerside	18	0	28	10	12.2		35.9
La Ronge	19	3	33	10	3.8		X	NEWFOUNDLAND							
Regina	19	3	33	6	1.0		80.5	Gander	13	-1	25	4	24.0		32.2
Saskatoon	20	3	36	8	1.6		*	Port aux Basques	11	0	19	7	21.8		*
Swift Current	19	3	37	8	*		*	St. John's	12	0	23	5	5.2		*
Yorkton	18	1	30	8	3.8		71.8	St. Lawrence	12	2	23	3	25.4		X
MANITOBA								Cartwright	10	0	26	1	17.3		X
Brandon	18	1	28	8	5.0		*	Goose	14	0	27	6	16.7		25.5
Churchill	16	7	32	3	2.9		72.1	Hopedale	7	-2	22	1	4.0		X
The Pas	19	3	31	10	8.4		88.7								

Av = weekly mean temperature (°C)
Mx = weekly extreme maximum temperature (°C)
Mn = weekly extreme minimum temperature (°C)
Tp = weekly total precipitation (mm)
Dp = Departure of mean temperature from normal (°C)

SOG = snow depth on ground (cm), last day of the period
H = weekly total bright sunshine (hrs)

X = not observed

P = extreme value based on less than 7 days

* = missing

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**LONGWOODS
NEAR LONDON-
ONTARIO** Air from Wisconsin and Michigan brought a large amount of strongly acidic rain with a pH reading of 4.1 to Longwoods on June 27.

**DORSET*
MUSKOKA-
ONTARIO** Dorset received strongly acidic rain with pH values of 3.8 on June 24 and 3.9 on June 26. The rain on June 24 was associated with air that came from northern Ontario, Wisconsin, Michigan and across Lake Huron, Georgian Bay. The rain on June 26 was produced in air which passed over Wisconsin, Michigan and across Lake Huron, Georgian Bay. Dorset received a large amount of strongly acidic rain with a pH reading of 4.2 on June 27. This air came from Wisconsin, Michigan and southern Ontario. Data supplied by Ontario Ministry of Environment.

**CHALK RIVER
OTTAWA
VALLEY-
ONTARIO** Air which passed over Wisconsin, Michigan and northern Ontario brought strongly acidic rain with a pH reading of 3.7 to Chalk River on June 24. Information on the rainfall for the rest of the week was not available.

**MONTMORENCY
QUEBEC CITY-
QUEBEC** Air which passed through Pennsylvania, New York and southern Quebec brought moderately acidic rain with a pH reading of 4.4 to Montmorency on June 24. On June 26 air which came from the New England States, Maine and southern Quebec brought moderately acidic rain to the area with a pH value of 4.6. The next day June 27 the region received strongly acidic rain of pH 3.9 associated with air that passed over Maine and southern Quebec.

**KEJIMKUJIK
SOUTHWESTERN
NOVA SCOTIA** Kejimkujik received normal rain on June 25 and June 26 with pH readings of 5.2 each day. The rain on June 25 was associated with air that came from New Brunswick, Nova Scotia and off of the Atlantic Ocean while on June 26 the rain came from the southeast off of the Atlantic Ocean. Kejimkujik received strongly acidic rain on June 28 with a pH reading of 4.0 and on June 29 the rain was moderately acidic with a pH of 4.3. Both of these events were produced in air which came from the south along the eastern Seaboard.

* Dorset data supplied by Ontario Ministry of Environment.

Environmental damage to lakes and streams is usually observed in sensitive areas regularly receiving precipitation with pH less than 4.7. pH readings less than 4.0 are serious.

This report was prepared by the Federal Long-Range Transport of Air Pollutants (LRTAP) Liaison Office. For further information, please contact Dr. H.C. Martin at (416) 667-4803.