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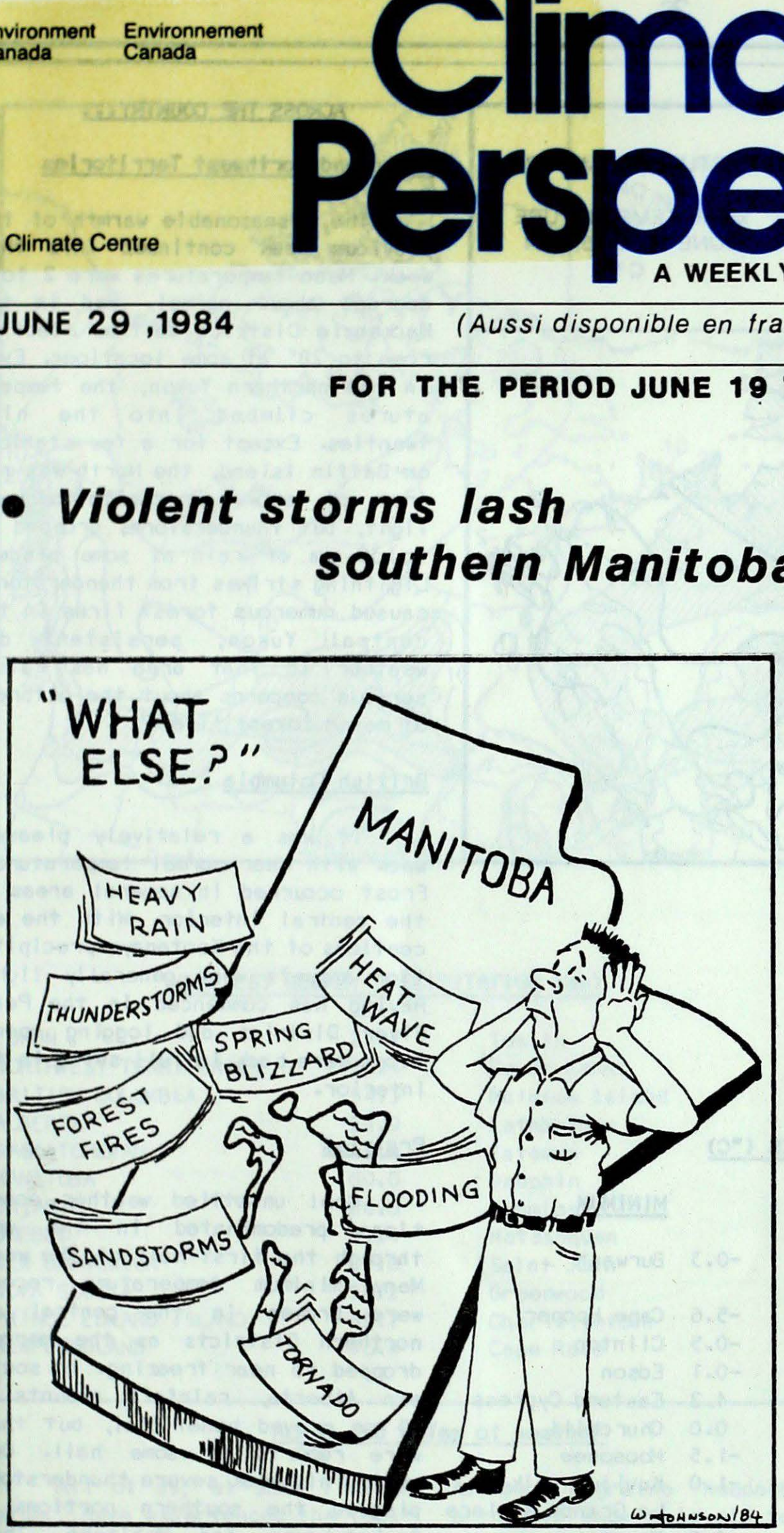
Climatic Perspectives

A WEEKLY REVIEW OF CANADIAN CLIMATE

JUNE 29 ,1984 | *(Aussi disponible en français)* | VOL.6 NO.25

FOR THE PERIOD JUNE 19 TO 25, 1984

• *Violent storms lash southern Manitoba*



Once again this week, severe weather struck southern Manitoba. Heavy rains, large size hail and tornadoes pounded many southwestern communities leaving wide paths of destruction behind. Areas between Dauphin and Swan River were the hardest hit as over 100 mm of rain in about 6 hours left farms water logged. Damage to crops was expected to be significant, nearly 10,000 hectares of fields were under water in that area. Mike Shumski of Statistics Canada said: "Although all crops were damaged, a return to the warmer and drier weather would promote crop growth."

Earlier in the week, tornadoes and large hail stones flattened a few granaries and flipped a few tractors and trucks on the outskirts of Winnipeg. Heavy rains flooded many basements in the City, and high winds caused power disruptions throughout most of southern Manitoba. A bolt of lightning killed a soccer player south of Winnipeg.

• *Widespread frost in the Maritimes*

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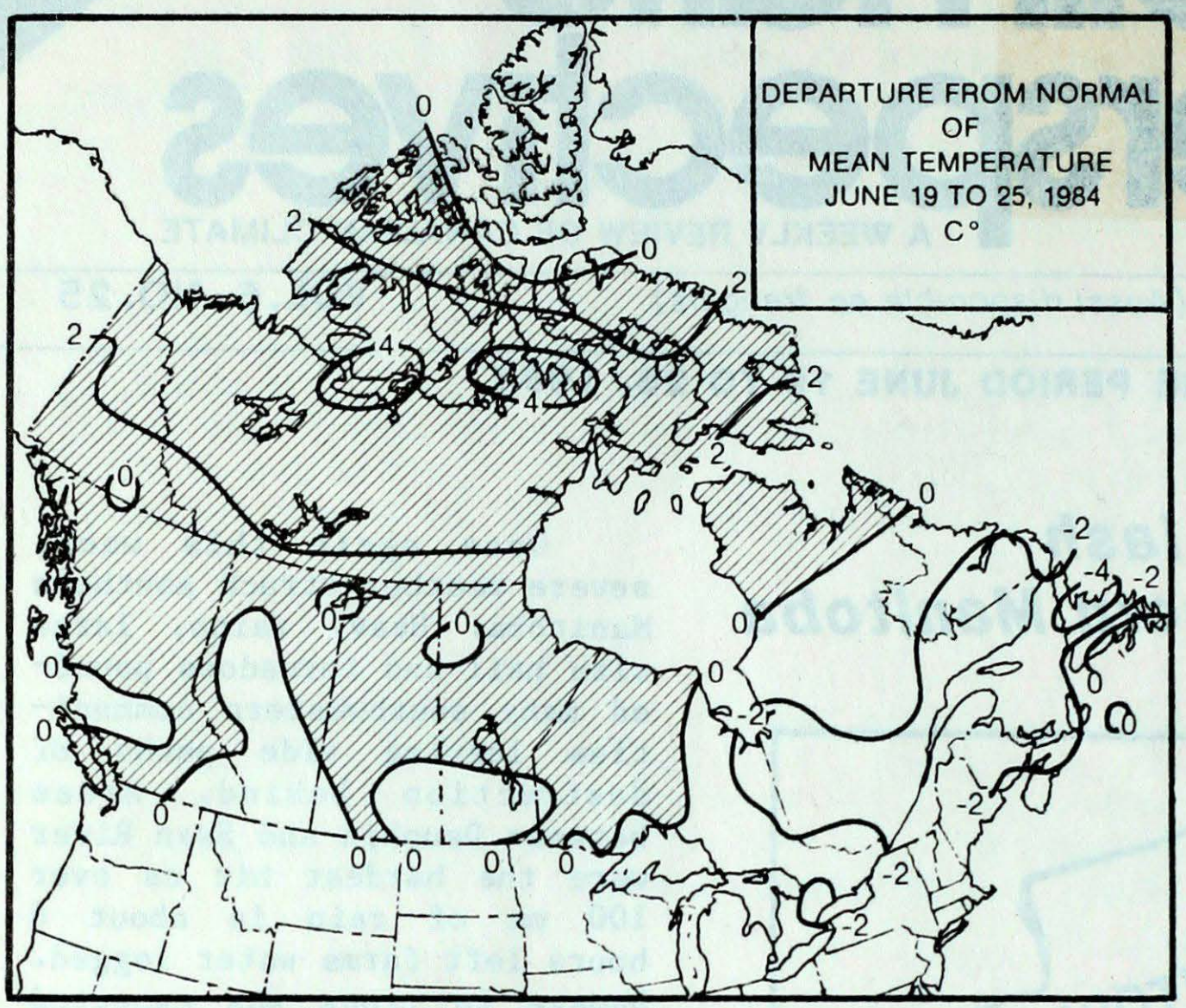
NOTE: The data shown in this publication are based on unverified reports from approximately 225 Canadian synoptic stations.

Canada



WEEKLY TEMPERATURES EXTREMES (°C)

	MAXIMUM		MINIMUM	
YUKON TERRITORY	28.3	Dawson	-0.3	Burwash
NORTHWEST TERRITORIES	28.4	Hay River	-5.6	Cape Hooper
BRITISH COLUMBIA	32.6	Lytton	-0.5	Clinton
ALBERTA	29.2	Medicine Hat	-0.1	Edson
SASKATCHEWAN	30.7	Estevan	4.2	Eastend Cypress
MANITOBA	30.8	Brandon	0.0	Churchill
ONTARIO	28.9	Kingston	-1.5	Moosonee
QUEBEC	28.5	Kuujjuaq	-1.0	Kuujjuarapik
				La Grande Riviere
NEW BRUNSWICK	26.3	Charlo	0.9	Moncton
				St. Stephen
NOVA SCOTIA	25.3	Shelburne	1.0	Eddy Point
PRINCE EDWARD ISLAND	22.3	Summerside	5.6	Summerside
NEWFOUNDLAND	25.8	Goose	-2.2	Battle Harbour

ACROSS THE NATION

Warmest mean temperature	20.7	Windsor, ONT
Coolest mean temperature	0.3	Alert , NWT

ACROSS THE COUNTRY...

Yukon and Northwest Territories

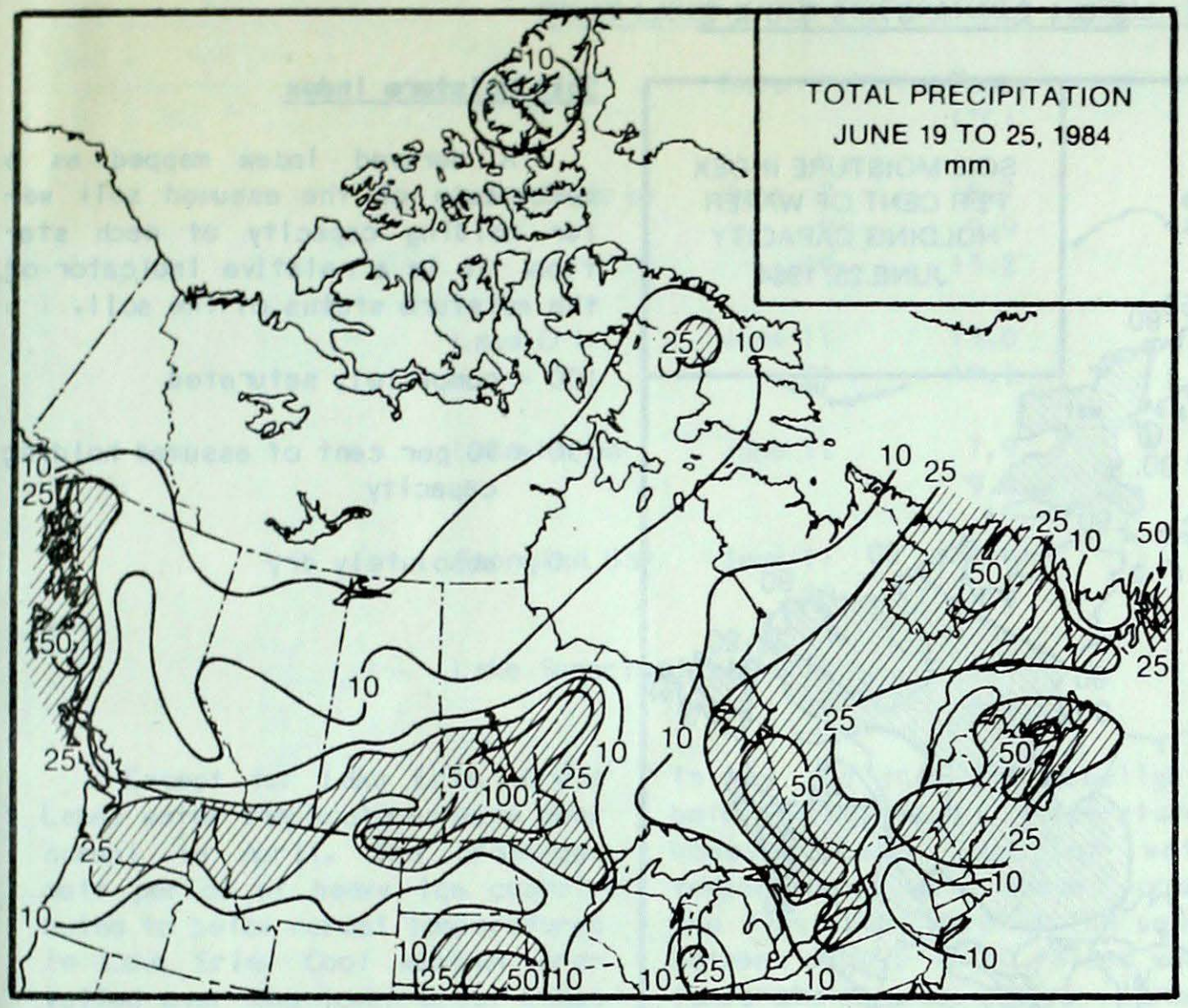
The unseasonable warmth of the previous week continued into this week. Mean temperatures were 2 to 6 degrees above normal, and in the Mackenzie District daytime readings rose to 28° at some locations. Even in the northern Yukon, the temperatures climbed into the high twenties. Except for a few stations on Baffin Island, the North was now free of snow. Precipitation was light, but thunderstorms dropped 10 to 30 mm of rain at some places. Lightning strikes from thunderstorms caused numerous forest fires in the central Yukon, persistent dry weather in that area has raised serious concerns about the outbreak of major forest fires.

British Columbia

It was a relatively pleasant week with near normal temperatures. Frost occurred in several areas of the central interior. With the exceptions of the Kootenays precipitation amounts were generally light. Haying has commenced in the Peace River District and logging operations were back in full swing in the interior.

Prairies

Cool unsettled weather conditions predominated in the west through the first half of the week. Many minimum temperature records were broken in the central and northern Districts as the mercury dropped to near freezing. In southern Alberta, rainfall amounts of 25 mm proved beneficial, but there were reports of some hail. Once again this week severe thunderstorms plagued the southern portions of Saskatchewan and Manitoba. These storms produced strong winds, torrential downpours and large hail stones; in addition, numerous tornadoes and funnel clouds were sighted. Many districts of southern Manitoba received between 50 and 100 millimetres of rain, causing considerable flooding. One June 21, Winnipeg received 69 mm of rain, of which, 56.6 mm fell in one hour. This is the most ever recorded in a one-hour period at Winnipeg. Downpours of



HEAVIEST WEEKLY PRECIPITATION (mm)

YUKON	25.4	Teslin
NORTHWEST TERRITORIES	26.4	Dewer Lakes
BRITISH COLUMBIA	54.3	McInnes Island
ALBERTA	24.9	Lethbridge
SASKATCHEWAN	49.5	Estevan
MANITOBA	60.0	Dauphin
ONTARIO	88.6	Timmins
QUEBEC	49.4	Natashquan
NEW BRUNSWICK	85.0	Saint John
NOVA SCOTIA	50.2	Greenwood
PRINCE EDWARD ISLAND	69.2	Charlottetown
NEWFOUNDLAND	96.4	Cape Race

Aches and pains of weather

All of us, at some time or other, have experienced the feeling of being 'under the weather'. We are not ill but we know that the weather affects our mood. For some people, however, the changing weather brings great discomfort. People suffering from Asthma, migraine headaches and arthritis know this all too well. In the up coming June supplement of Climatic Perspectives, one of the articles will examine the relationships between weather and asthma.

this magnitude can be expected to occur only once every hundred years.

Ontario

The weather was cool but dry throughout most of the week. Over the weekend, however, heavy rain fell in the central and eastern areas. Timmins received the most - 85 mm. The temperatures were about 2° below normal in the South and averaged near normal in Northwestern Ontario. The dry weather favoured hay crop growth that was described as excellent this year.

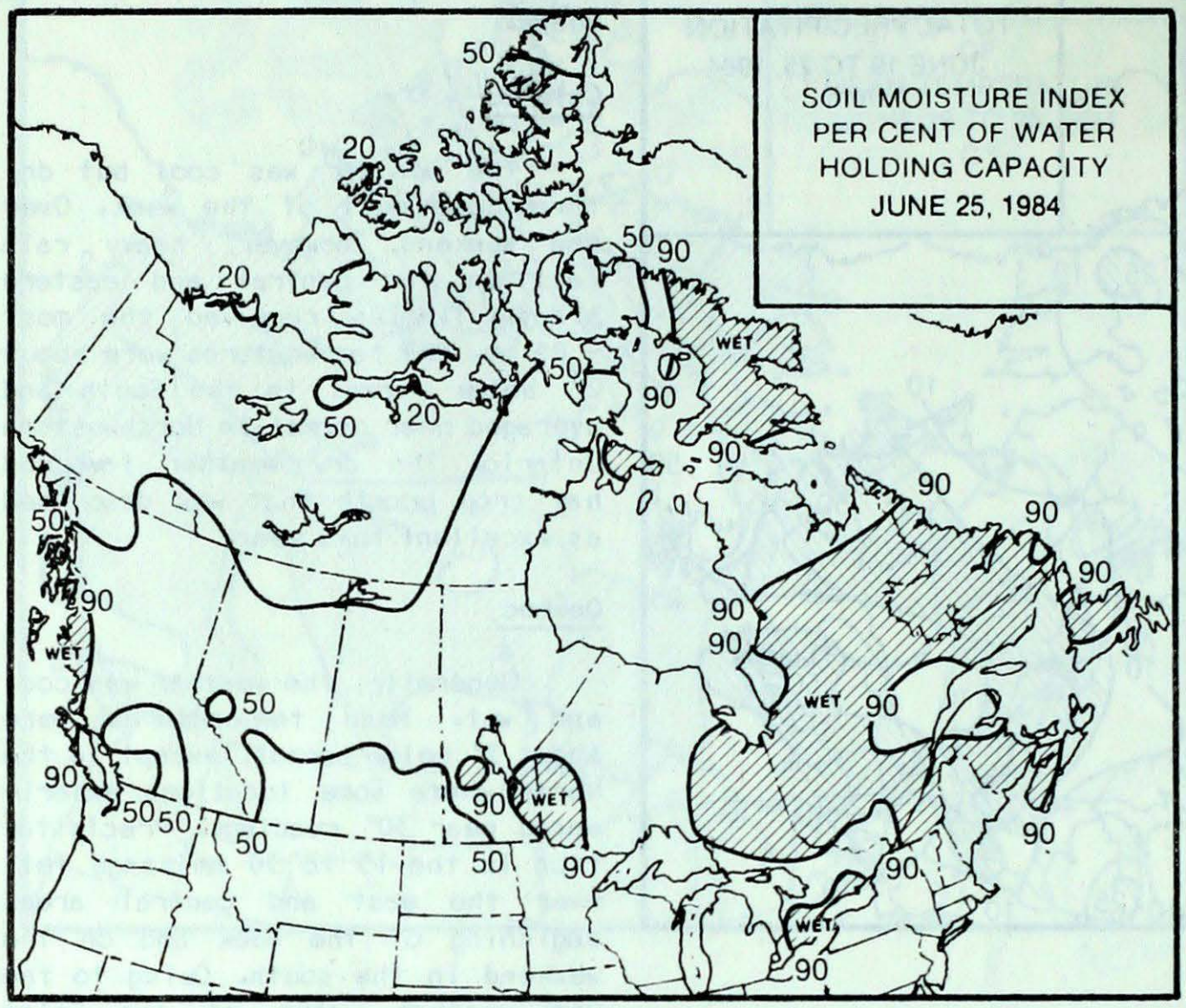
Québec

Generally, the weather was cool and wet. Mean temperatures were about 3° below normal, except in the North where some locations experienced near 30° readings. Precipitation in the 15 to 30 mm range fell over the east and central areas beginning of the week and on the weekend in the south. Owing to the wet weather, some of the Saint Jean Baptiste Celebrations were postponed.

Atlantic Provinces

Northwesterly flow of cooler air mass produced record-low temperatures throughout most of Atlantic Canada. Overnight readings fell below freezing in New Brunswick and in parts of Nova Scotia, and widespread frost occurred in the agricultural areas. Frost damage to tender crops was expected, especially tobacco and corn. In Newfoundland, the weather was cool and damp. Although spring planting was completed, crop growth was slow because of the cool weather. The first cut of the hay crop was nearly completed in the East. Heavy rains inundated the Maritimes; in New Brunswick 50 to 80 mm of rain contributed to minor flooding. The Saint John River rose 4 metres near Saint John. Owing the wet weather, potatoes were suffering from 'seed piece rot' in northwestern New Brunswick.

SOIL MOISTURE



Soil Moisture Index

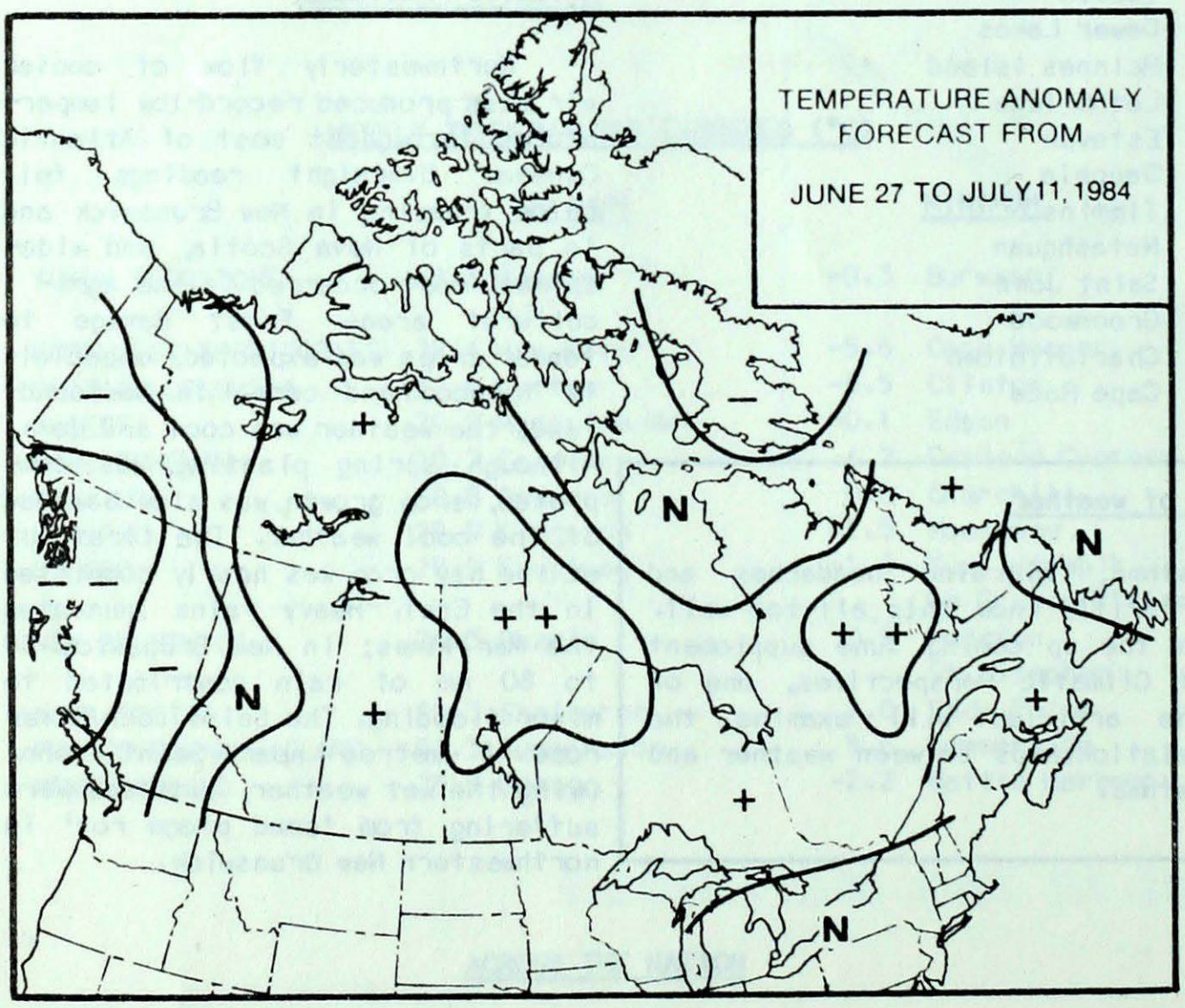
A derived index mapped as a percentage of the assumed soil water holding capacity at each station. It is a relative indicator of the moisture status of the soil.

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**

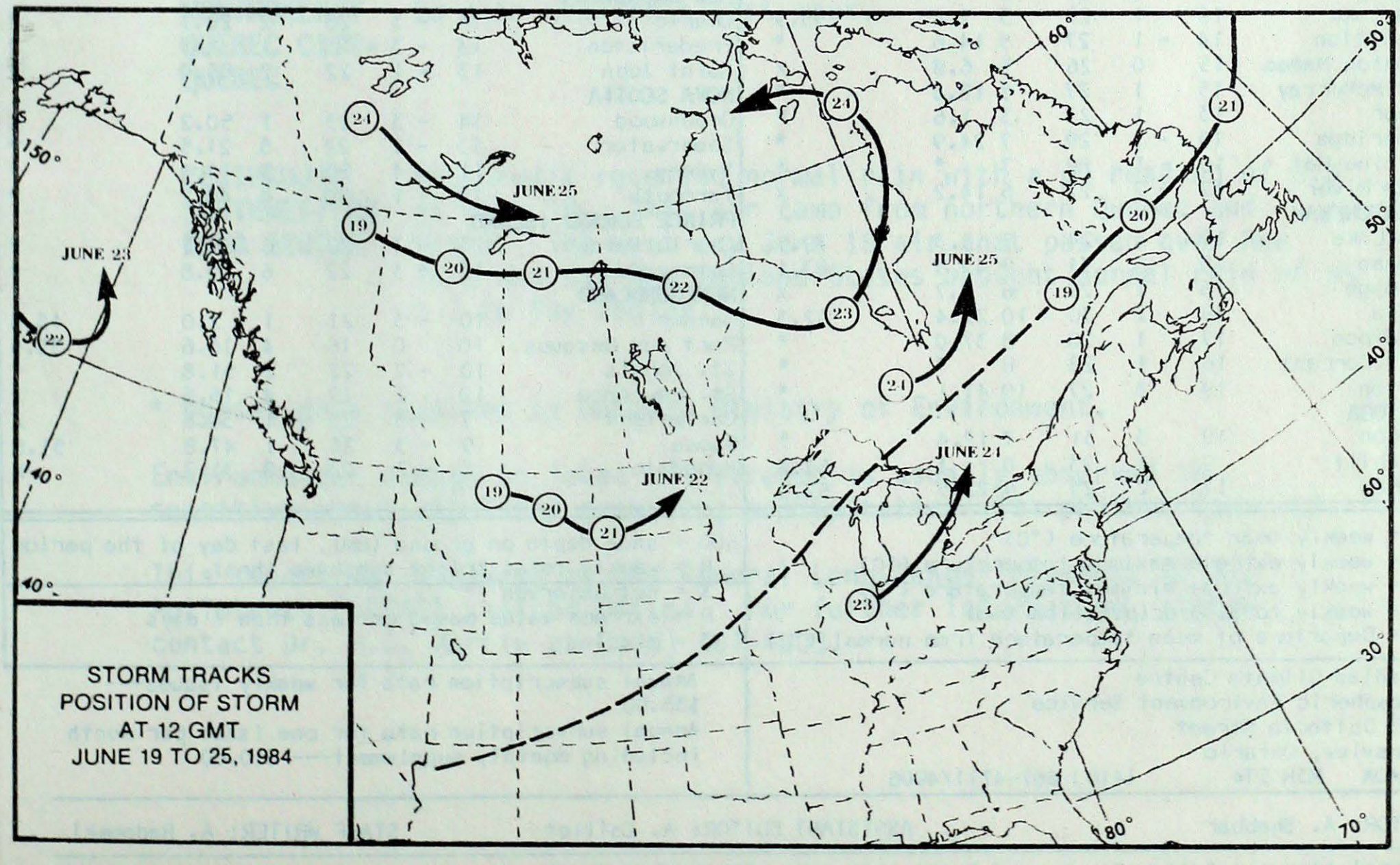
GREAT LAKES WATER TEMPERATURES (SATELLITE DERIVED)

	Date	Temp. (°C)	Departure from Normal (°C)
Lake Ontario	June 2	6.7	-1.3
	9	9.9	0.2
	19	13.2	0.6
Lake Erie	June 11	17.0	1.4
	21	19.7	1.9
Lake Huron	June 11	7.9	-0.1
		9.9	0.0
Georgian Bay	June 11	8.0	0.0
	20	12.3	2.2
Lake Superior	June 11	5.6	2.8
	20	4.8	0.0

Except for Lake Erie, Great Lakes water temperatures were near normal in April. The prolonged melt period of heavy ice contributed to below normal temperatures in Lake Erie. Cool weather prevailed over the lower Great Lakes in May and that led to slightly below normal winter temperatures; however Lake Superior water temperatures were above normal. The first heat wave of the season between June 5 to 10 raised water temperatures to above normal. Surface water readings during the latter half of June exhibited a large diurnal range, caused by strong solar heating of the surface during the day.

- George Irbe

STORM TRACKS



TEMPERATURE, PRECIPITATION AND BRIGHT SUNSHINE DATA FOR THE WEEK ENDING 0600 GMT JUNE 26, 1984

STATION	TEMP				PRECIP		SUN
	Av	Dp	Mx	Mn	Tp	SOG	H
YUKON TERRITORY							
Dawson	16	2	28	4	0.8		X
Mayo A	17	3	26	7	0.0		X
Watson Lake	14	0	22	7	*		*
Whitehorse	13	0	22	3	2.0		*
NORTHWEST TERRITORIES							
Fort Smith	15	2	26	6	9.0		*
Inuvik	16	4	26	5	0.0		*
Norman Wells	18	4	28	11	1.2		*
Yellowknife	17	4	23	11	7.4		*
Baker Lake	9	3	18	1	*	0.0	84.4
Cape Dyer	4	3	12	- 3	0.0	18.0	X
Clyde	4	1	13	- 3	7.6	4.0	55.5
Frobisher Bay	5	0	14	- 1	*	0.0	54.1
Alert	0	- 1	4	- 4	*	12.0	*
Eureka	2	- 2	5	- 1	19.2		48.4
Hall Beach	5	3	13	1	16.9		X
Resolute	1	0	6	- 2	1.8		35.1
Cambridge Bay	8	5	19	1	2.0		*
Mould Bay	2	1	7	- 1	0.6	0.0	*
Sachs Harbour	6	3	13	- 1	0.0		141.4
BRITISH COLUMBIA							
Cape St. James	11	0	16	9	42.6		*
Cranbrook	14	- 3	27	5	22.4		56.7
Fort Nelson	16	1	25	7	13.0		*
Fort St. John	14	0	23	3	11.0		X
Kamloops	20	1	29	9	1.6		71.1
Penticton	18	1	29	10	0.2		55.5
Port Hardy	12	0	20	5	3.0		40.6
Prince George	13	0	24	1	9.9		62.9
Prince Rupert	12	1	16	6	39.9		39.5
Revelstoke	18	1	27	7	6.6		59.9
Smithers	14	1	26	4	4.6		44.5
Vancouver	17	2	25	12	2.8		*
Victoria	15	1	24	8	6.6		63.9
Williams Lake	13	- 1	25	1	0.0		47.4
ALBERTA							
Calgary	14	0	25	6	*		*
Cold Lake	16	1	29	3	2.4		55.9
Coronation	14	- 1	27	5	14.6		*
Edmonton Namao	15	0	26	5	6.8		X
Fort McMurray	15	1	27	5	18.8		*
Jasper	13	1	23	3	1.6		*
Lethbridge	15	- 1	29	7	24.9		*
Medicine Hat	16	- 1	29	7	*		*
Peace River	12	- 2	22	6	14.2		X
SASKATCHEWAN							
Cree Lake	15	X	24	7	8.3		79.5
Estevan	19	3	31	9	49.5		83.1
La Ronge	16	1	29	6	9.7		X
Regina	18	2	30	10	22.4		62.3
Saskatoon	17	1	28	8	37.0		*
Swift Current	16	1	28	8	*		*
Yorkton	19	3	27	10	41.1		*
MANITOBA							
Brandon	19	3	31	7	12.4		*
Churchill	9	1	23	0	!		57.8
The Pas	17	2	25	5	22.5		57.9
Thompson	15	2	26	3	*		*
Winnipeg	19	2	30	11	*		*
ONTARIO							
Big Trout Lake	14	1	24	6	9.6		X
Earlton	13	- 2	26	3	*		X
Kapuskasing	15	0	26	3	44.0		*
Kenora	18	2	29	11	24.5		X
London	18	0	27	10	19.6		*
Moosonee	11	3	25	- 2	49.0		*
Muskoka	16	- 1	27	7	*		X
North Bay	15	- 1	26	8	27.2		*
Ottawa	18	- 1	27	11	24.6		*
Pickle Lake	16	2	27	4	15.6		X
Red Lake	16	0	26	5	23.8		*
Sudbury	16	0	25	9	46.2		62.6
Thunder Bay	13	- 1	25	3	6.2		58.9
Timmins	13	- 1	26	2	88.6		X
Toronto	17	- 2	25	9	1.8		X
Trenton	17	- 2	27	8	46.2		X
Wiarton	15	- 1	24	7	11.2		79.1
Windsor	21	0	27	14	1.8		X
QUEBEC							
Bagotville	14	- 2	24	5	20.7		X
Blanc-Sablon	7	- 1	14	1	32.0		*
Inukjuak	6	0	13	- 1	9.4		61.3
Kuujjuaq	11	3	29	1	2.8		59.5
Kuujjuarapik	7	- 1	25	- 1	14.9		51.0
Maniwaki	14	- 2	25	2	33.4		*
Mont-Joli	13	- 3	25	3	14.2		58.8
Montréal	17	- 3	27	9	24.0		*
Natashquan	9	- 2	15	1	49.4		*
Nitchequon	10	- 1	19	1	38.6		89.5
Québec	15	- 2	26	7	32.8		68.3
Schefferville	8	- 1	21	1	27.5		51.8
Sept-Iles	11	- 2	18	3	24.4		48.0
Sherbrooke	13	- 2	25	2	30.4		63.8
Val-d'Or	12	- 3	25	2	17.7		*
NEW BRUNSWICK							
Charlo	14	- 3	26	2	28.1		*
Fredericton	14	- 3	25	1	*		*
Saint John	13	- 1	22	2	85.0		*
NOVA SCOTIA							
Greenwood	14	- 3	23	1	50.2		X
Shearwater	13	- 1	22	5	21.5		*
Sydney	11	- 4	20	3	16.8		*
Yarmouth	13	- 1	20	4	40.2		*
PRINCE EDWARD ISLAND							
Charlottetown	13	- 3	22	6	69.2		*
Summerside	13	- 3	22	6	40.8		*
NEWFOUNDLAND							
Gander	10	- 3	21	1	2.0		43.8
Port aux Basques	10	0	16	4	16.6		55.5
St. John's	10	- 2	22	2	51.8		*
St. Lawrence	10	1	19	4	15.5		X
Cartwright	7	- 3	25	- 1	38.8		X
Goose	9	- 3	26	1	47.8		51.8
Hopedale	6	- 2	23	0	31.7		X

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

Canadian Climate Centre
Atmospheric Environment Service
4905 Dufferin Street
Downsview, Ontario
CANADA M3H 5T4 (416) 667-4711/4906

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EDITOR: A. Shabbar ASSISTANT EDITOR: A. Caillet STAFF WRITER: A. Radomski

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ACID RAIN REPORT ISSUED BY ENVIRONMENT CANADA FOR JUNE 17 - 23, 1984

LONGWOODS NEAR LONDON-ONTARIO

On June 17 air that came from the U.S. midwest brought a large amount of strongly acidic rain of pH 3.8 to Longwoods. The following day June 18 the region received strongly acidic rain with a pH reading of 3.9. This air had passed over Illinois and Michigan. On June 23 strongly acidic rain with a pH value of 3.6 was associated with air that had travelled through Pennsylvania, West Virginia and Ohio.

DORSET* MUSKOKA-ONTARIO

Dorset received strongly acidic rain with a pH of 4.1 on June 17. This air originated in the U.S. midwest. On June 18 air which passed over Wisconsin, Michigan and across Lake Huron, Georgian Bay brought moderately acidic rain with a pH value of 4.4 to the region. Air from West Virginia, Pennsylvania and New York brought strongly acidic rain of pH 4.2 to Dorset on June 23.

CHALK RIVER OTTAWA VALLEY-ONTARIO

On June 17 air that came from Wisconsin, Michigan and across Lake Huron, Georgian Bay brought strongly acidic rain with a pH reading of 3.9 to Chalk River. Air which passed over northern Ontario and northern Quebec brought moderately acidic rain of pH 4.4 to the region on June 23.

MONTMORENCY QUEBEC CITY-QUEBEC

No data available last week.

KEJIMKUJIK SOUTHWESTERN NOVA SCOTIA

Kejimkujik received normal rain with a pH reading of 5.3 on June 18. This air came from northern Quebec and Maine. The next day June 19 air that passed over New York and the New England States brought normal rain of pH 5.1 to the region.

* 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.

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.