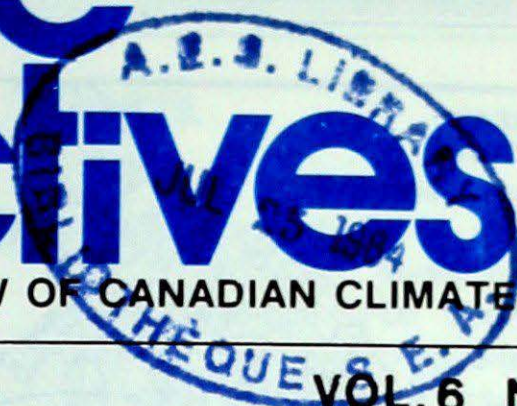


Climatic Perspectives

A WEEKLY REVIEW OF CANADIAN CLIMATE



Canadian Climate Centre

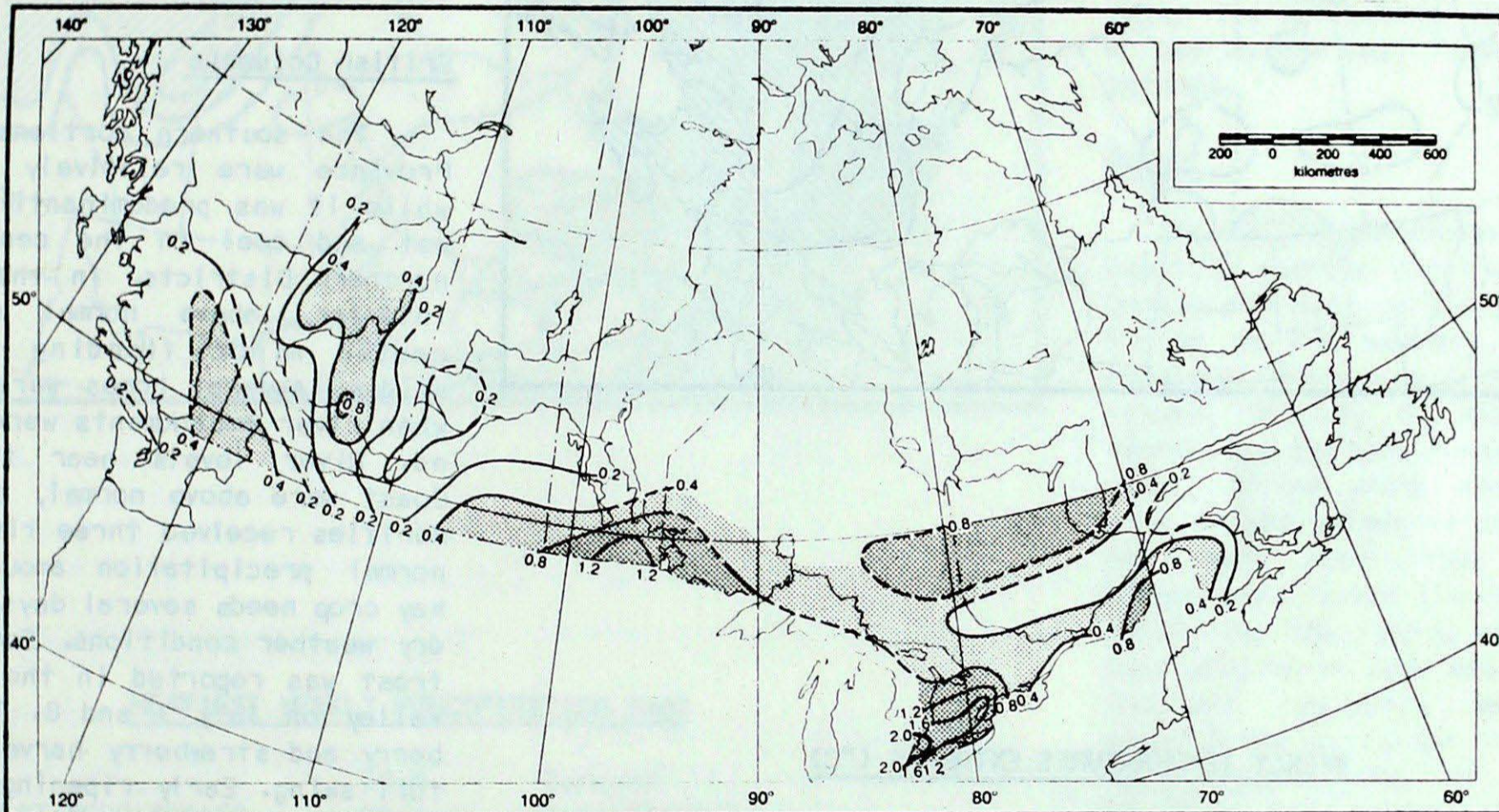
JULY 13, 1984

(Aussi disponible en français)

VOL. 6 NO. 27

FOR THE PERIOD JULY 3 TO 9, 1984

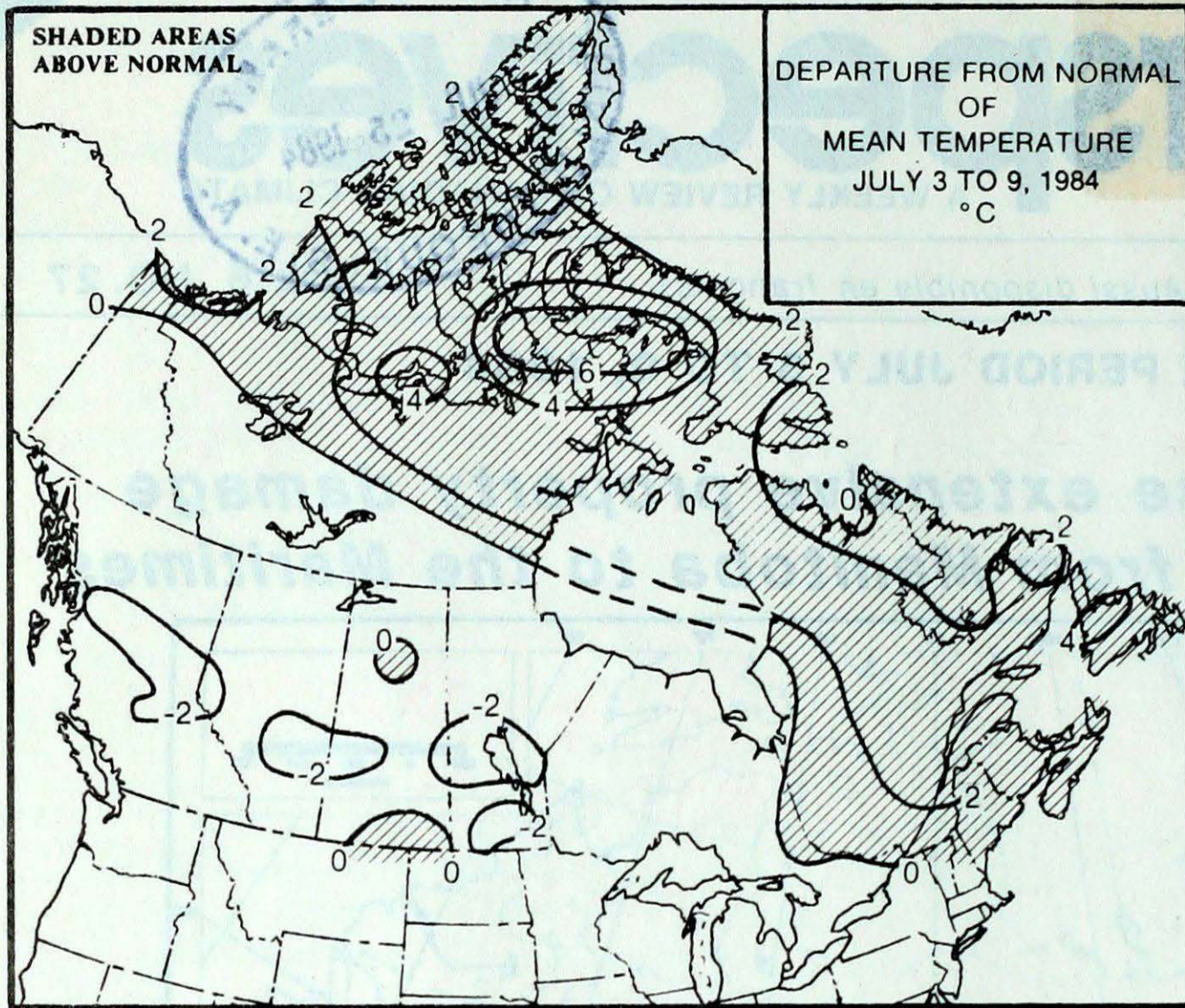
• **Tornadoes cause extensive property damage from Manitoba to the Maritimes**



Average annual frequency of tornadoes per 10,000 square kilometres for the period 1950-1979. (Dashed isopleths have been interpolated).

Outbreak of severe thunderstorms spawned numerous tornadoes from Manitoba to the Maritimes. On July 8, tornadoes ripped through several towns in southern Manitoba, destroying homes and automobiles. At St. Claude, a twister toppled a ferris wheel injuring about 20 people. Near Carman, Man., a number of farm homes were destroyed. In southern Ontario, at least 5 tornadoes were sighted, roofs and sidings were torn off some buildings and 3 aircraft were damaged. In the Eastern Townships, flash floods and strong winds contributed to widespread flooding, some houses were moved off their foundations. In Nova Scotia, a small twister touched down at Tatamagouche, a few cottages were destroyed and a water spout tossed around some lobster traps in the Northumberland Strait.

• **Heavy rains in British Columbia - minor flooding and mud slides**



ACROSS THE COUNTRY...

Yukon and Northwest Territories

Warm weather continued over the eastern half of the Arctic and the temperatures rose into the mid-twenties at a few stations in the Keewatin District. The Yukon and the Mackenzie District experienced cool weather once again this week. Except for the northern Yukon, damp weather prevailed. The wet weather favoured forestry in the southern Yukon; only 9 forest fires were burning, the largest fire in the Carmack area covered about 5,000 hectares.

British Columbia

The southern portions of the Province were relatively pleasant while it was predominantly cloudy, wet and cool in the central and northern Districts. In the central interior, above normal rainfalls caused minor flooding and mud slides; several homes were damaged when river embankments were weakened. River levels near the North Coast were above normal, some communities received three times their normal precipitation amounts. The hay crop needs several days of sunny dry weather conditions. Some ground frost was reported in the Okanagan Valley on July 7 and 8. The Raspberry and strawberry harvest was in full swing. Early ripening cherries are ready to be picked in the South.

Prairies

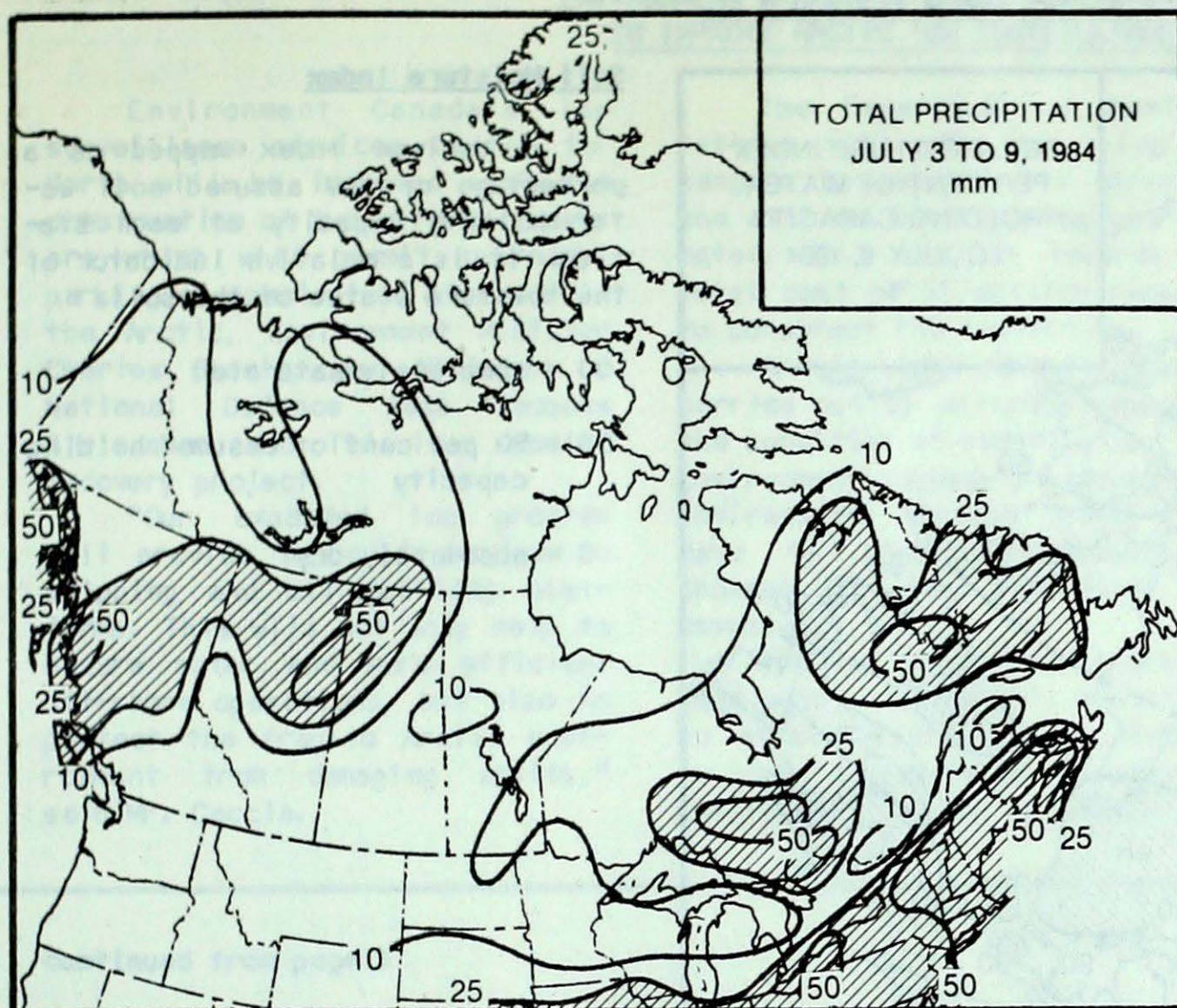
Overall, it was a relatively pleasant but cool week with only scattered afternoon shower and thunderstorm activities. Several minimum temperature records were set in central and southern Alberta as night-time temperatures dropped to near freezing. On July 8, violent thunderstorms developed over southern Manitoba. Hail and three tornadoes cut a swath of destruction from west of Brandon to the southeast corner of the Province. The town of St. Claude and adjacent communities were hardest hit. Houses were damaged and several buildings were lifted off their foundations. There was extensive property damage but luckily there were no serious injuries.

WEEKLY TEMPERATURES EXTREMES (°C)

	<u>MAXIMUM</u>	<u>MINIMUM</u>
YUKON TERRITORY	24.4 Teslin	0.3 Dawson
NORTHWEST TERRITORIES	25.7 Fort Simpson	-4.0 Cape Hooper
BRITISH COLUMBIA	29.7 Penticton	2.2 Burns Lake
ALBERTA	32.0 Medicine Hat	0.2 Rocky Mountain House
SASKATCHEWAN	31.9 Swift Current	3.9 Hudson Bay
MANITOBA	29.7 Portage La Prairie	1.4 Bissett
ONTARIO	31.7 Windsor	2.3 Armstrong
QUEBEC	31.3 Bagotville	-0.5 Kuujuaq
NEW BRUNSWICK	32.0 Chatham	11.0 Miscou Island
NOVA SCOTIA	30.9 Greenwood	6.5 Western Head
PRINCE EDWARD ISLAND	27.4 Summerside	11.8 East Point
NEWFOUNDLAND	31.2 Deer Lake	2.0 Hopedale

ACROSS THE NATION

Warmest mean temperature	20.7	Quebec City, QUE
Coollest mean temperature	5.0	Broughton Island, NWT



Ontario

Heavy rains and severe thunderstorms dominated the weather across the Province. Numerous tornadoes were reported from Georgian Bay to the southwestern regions on July 6. The twisters caused extensive damage to buildings and other properties, including airplane hangers and 3 aircraft at Lucan near London. Heavy rains in the 30 to 45 mm range fell in many communities between July 5th-7th, London received the most - 80 mm. Owing to the favourable combination of rain and sunshine during June, the strawberry crop was described as the best in many years in Ontario.

Quebec

Warm temperatures dominated Québec's weather until the weekend. Cooler air covered the St. Lawrence Valley on the weekend and daytime readings dropped to near seasonable values. On July 6, severe weather lashed the Eastern Townships. Heavy rains, strong winds and large size hail caused extensive property damage. Many communities near Sherbrooke experienced flooded roads and basements. The raging waters caused soil erosion in some areas. Several thousand residents were without electricity as fallen trees knocked down power lines. At Sherbrooke, 80 mm of rain fell in less than 12 hours - a once in over 10 years occurrence. At Bury, 30 km northeast of Sherbrooke, strong winds moved a house off its foundation and a barn was demolished at the same location.

Atlantic Provinces

Pleasant summery weather covered Atlantic Canada throughout most of the week. Mean temperatures were 3 to 6 degrees above normal and several stations in Newfoundland established record-warm overnight readings. On July 8, however, heavy rains in the 30 to 55 mm range inundated parts of New Brunswick and Prince Edward Island. During the first week of July, Fredericton, received about 71 mm of rain, whereas the normal for the month is 89 mm. Owing to the heavy rains, fields were waterlogged and farmers could

...continued on page 5

HEAVIEST WEEKLY PRECIPITATION (mm)

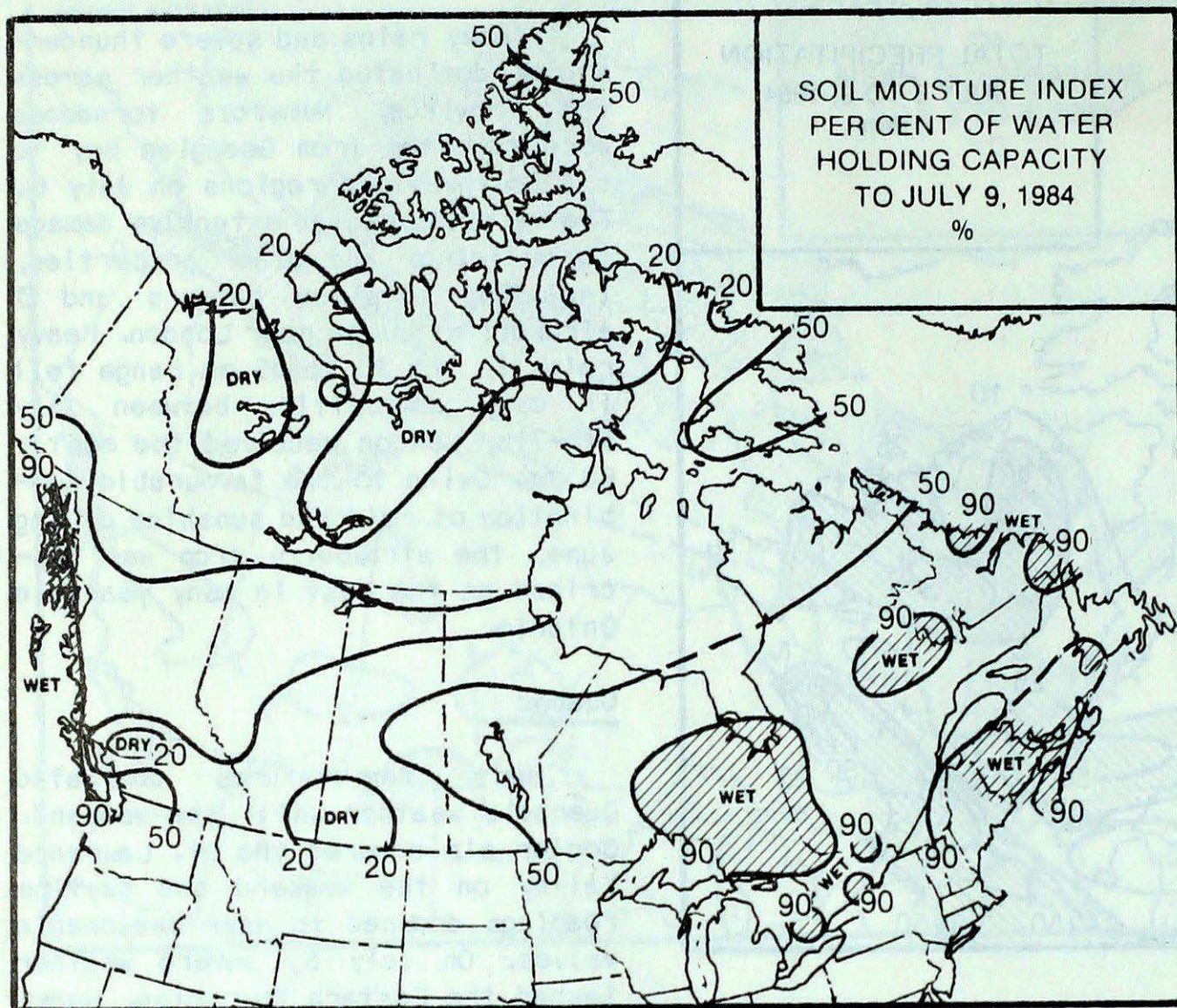
YUKON	20.6	Burwash
NORTHWEST TERRITORIES	25.4	Fort Smith
BRITISH COLUMBIA	72.2	Prince Rupert
ALBERTA	74.5	Fort McMurray
SASKATCHEWAN	33.7	Uranium City
MANITOBA	19.9	The Pas
ONTARIO	79.6	London
QUEBEC	99.6	Sherbrooke
NEW BRUNSWICK	86.6	Saint John
NOVA SCOTIA	59.8	Greenwood
PRINCE EDWARD ISLAND	53.2	Summerside
NEWFOUNDLAND	66.9	Wabush Lake

Cool weather promotes mosquito breeding

Sera from 327 English sparrows, 105 sentinel chickens and 42 rabbits have been tested with no evidence of arboviral activity in southwestern Ontario. Mosquito numbers remain high in the Windsor area particularly since

evenings have been relatively cool. Culex, Piplens-restuans numbers appear lower than previous years which may reflect heavy rains "flushing out" the breeding sites.

- University of Guelph

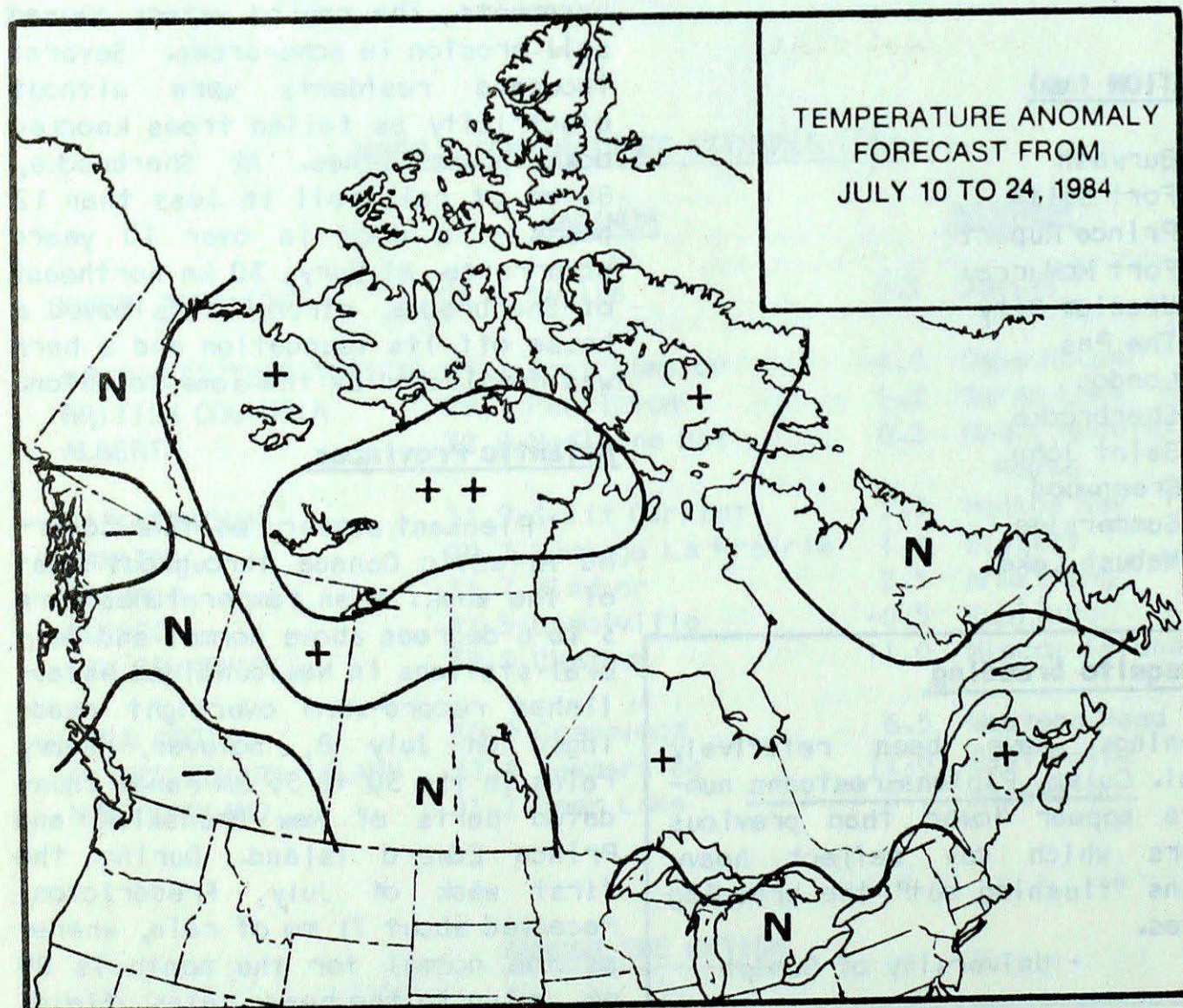
SOIL MOISTURESoil Moisture Index

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 FORECASTTemperature 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

**ENVIRONMENT CANADA TO BUILD NEW AIRCRAFT HANGARS
TO IMPROVE ARCTIC ICE SURVEILLANCE SERVICE**

Environment Canada's ice surveillance services in the far North will be improved with the construction of two aircraft hangars which will permit overnight parking of specialized aircraft in the Arctic, Environment Minister Charles Caccia, and Minister of National Defence Jean Jacques Blais announced. This is a special recovery project.

"Our expanded ice program will provide improved service to shipping and oil drilling platforms. This will not only help to ensure safer and more efficient off-shore operations, but also to protect the fragile Arctic environment from damaging spills," said Mr. Caccia.

The Department of National Defence will also be using the hangars to service its aircraft, and will be contributing approximately \$1.5 million towards the total cost of \$5 million required to construct the facilities.

Arctic ice surveillance is carried out by aircraft report on the condition of floating sea ice. Environment Canada's Atmospheric Environment Service uses these data to produce forecasts of changes in ice conditions and movement.

The new hangars will provide sufficient Canadian facilities to enable ice-surveying aircraft to operate year-round. At present, Environment Canada is barely able

to offer full ice forecasting services from mid-June to November.

This program is part of a major expansion of ice service to the far North.

The hangars will be built in the Northwest Territories, at Resolute Bay and Inuvik. At present, Frobisher Bay has the only hangar in the Canadian Arctic capable of servicing the ice reconnaissance aircraft. The new hangars will provide facilities for Environment Canada's two Lockheed Electra aircraft and the new de Havilland Dash-7.

- Information Directorate

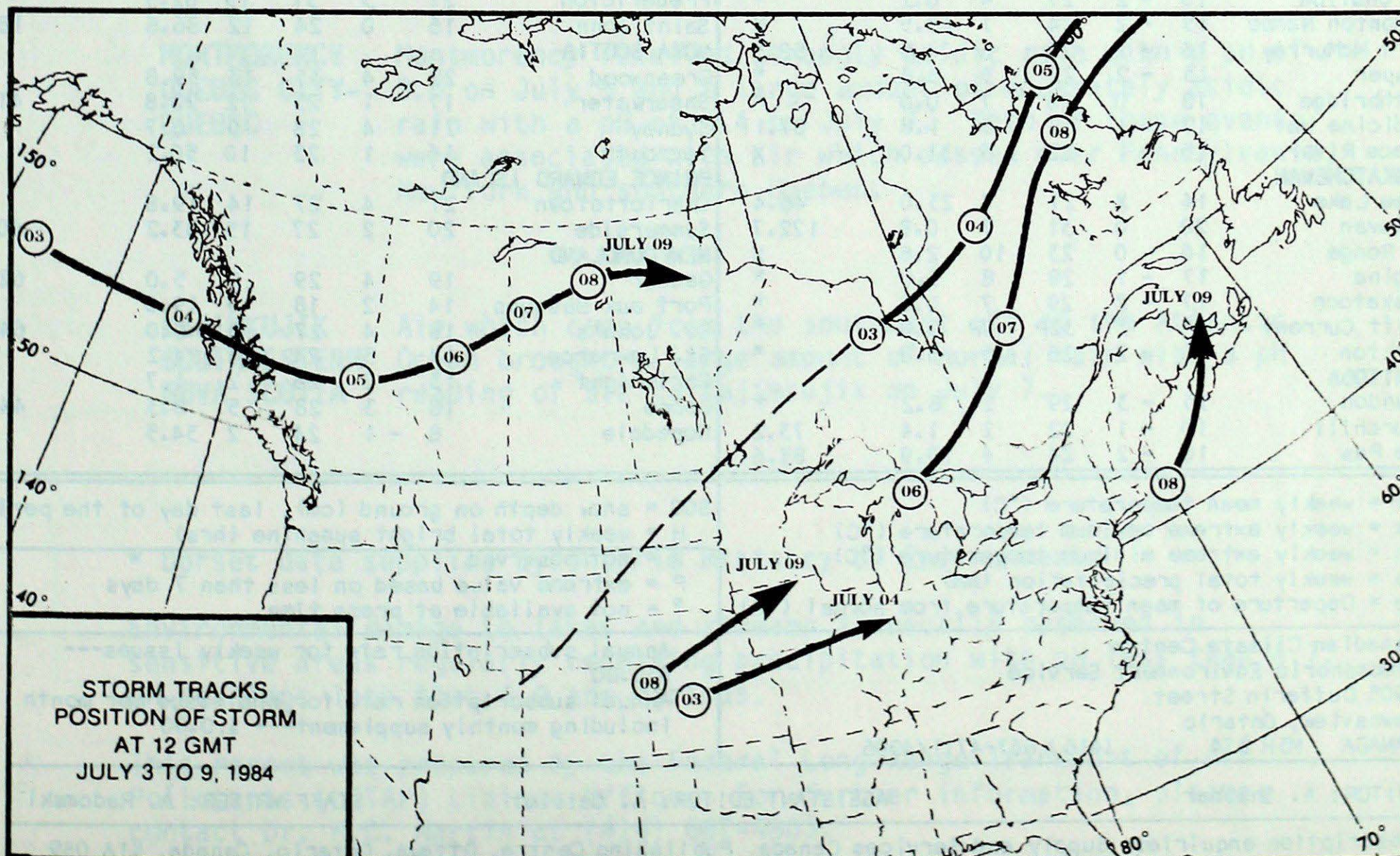
continued from page 3

not cultivate or spray their potato crop. Because of the saturated fields, hay harvest was delayed in Prince Edward Island. Extensive fog blanketed the coastal areas

and hampered transportations. On July 5, a small tornado touched down near Tatamagouche on the north shores of Nova Scotia. A cottage was lifted off its founda-

tion and windows were blown out in others. In Northumberland Strait, a water spout lifted a few lobster traps.

STORM TRACKS



TEMPERATURE, PRECIPITATION AND BRIGHT SUNSHINE DATA FOR THE WEEK ENDING 0600 GMT JULY 10, 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	15	0	24	4	6.0		*
Dawson	14	-2	24	0	9.8		X	Winnipeg	17	-3	28	5	*	86.7	
Mayo A	13	-2	22	2	15.7		X	ONTARIO							
Watson Lake	14	-1	22	5	20.1		45.8	Big Trout Lake	15	0	25	5	21.7		X
Whitehorse	13	0	24	5	12.3		*	Earlton	17	1	26	8	*		X
NORTHWEST TERRITORIES								Kapuskasing	15	-1	25	6	58.4		*
Fort Smith	14	-2	24	7	25.4		*	Kenora	17	-1	30	7	3.5		X
Inuvik	14	0	23	4	11.0		*	London	18	-2	28	8	79.6		46.0
Norman Wells	16	-1	25	6	1.6		*	Moosonee	14	0	26	6	16.4		42.4
Yellowknife	15	-2	24	9	13.2		60.0	Muskoka	16	-1	27	6	*		X
Baker Lake	12	3	24	3	0.0		*	North Bay	17	-1	26	8	58.8		50.8
Cape Dyer	8	4	16	3	0.8	0.0	X	Ottawa	21	1	29	9	2.6		67.0
Clyde	6	2	17	-3	0.0	0.0	141.0	Pickle Lake	16	0	27	7	13.4		X
Frobisher Bay	8	0	15	2	7.8		35.0	Red Lake	16	-2	28	4	19.8		*
Alert	*	*	11P	1	*		*	Sudbury	17	0	27	8	16.5		*
Eureka	7	1	15	2	1.6		*	Thunder Bay	16	0	27	7	11.2		*
Hall Beach	8	3	18	2	0.0		X	Timmins	15	0	25	6	28.4		X
Resolute	8	4	14	2	1.2		*	Toronto	18	-2	28	7	34.6		X
Cambridge Bay	13	5	21	7	1.5		*	Trenton	19	-1	26	7	13.8		X
Mould Bay	7	3	15	2	1.6		36.2	Warton	17	0	27	7	6.8		64.5
Sachs Harbour	7	2	17	1	7.8		42.0	Windsor	20	-1	32	10	23.0		X
BRITISH COLUMBIA								QUEBEC							
Cape St. James	12	-1	15	9	16.5		27.6	Bagotville	20	3	31	8	13.8		X
Cranbrook	16	-2	26	3	4.6		*	Blanc-Sablon	12	2	18	6	54.8		*
Fort Nelson	15	-2	25	6	47.9		38.7	Inukjuak	10	3	22	-2	2.4		*
Fort St. John	14	-2	21	8	24.2		X	Kuujuuaq	10	-1	22	-1	47.1		*
Kamloops	19	-1	29	8	0.4		*	Kuujuuarapik	8	-1	24	3	12.2		22.5
Penticton	18	-1	30	6	0.0		*	Maniwaki	18	2	28	7	15.6		57.9
Port Hardy	13	0	18	8	34.3		8.8	Mont-Joli	19	3	27	10	28.6		56.5
Prince George	13	-2	22	4	26.6		*	Montréal	21	1	29	10	2.4		*
Prince Rupert	11	-1	15	9	72.2		*	Natashquan	16	3	25	11	25.8		*
Revelstoke	16	-1	27	6	9.6		47.1	Nitchequan	16	3	23	8	38.0		39.0
Smithers	11	-3	18	3	24.3		15.8	Québec	21	2	30	11	18.0		45.9
Vancouver	15	-1	23	11	0.0		*	Schefferville	14	2	22	8	10.2		41.7
Victoria	15	-1	23	9	0.0		81.6	Sept-Iles	16	1	23	11	29.4		48.2
Williams Lake	13	-3	26	4	15.7		*	Sherbrooke	18	2	28	5	99.6		*
ALBERTA								Val-d'Or	17	1	26	8	30.5		56.0
Calgary	15	-1	26	3	1.7		*	NEW BRUNSWICK							
Cold Lake	16	-1	25	6	20.6		71.9	Charlo	20	2	30	13	7.5		32.0
Coronation	15	-2	27	4	0.2		*	Fredericton	21	3	31	15	82.5		*
Edmonton Namao	15	-2	24	7	48.5		X	Saint John	16	0	24	12	86.6		18.5
Fort McMurray	16	-1	25	6	74.5		58.5	NOVA SCOTIA							
Jasper	13	-2	22	3	6.6		*	Greenwood	22	4	31	13	59.8		X
Lethbridge	18	0	28	7	0.0		*	Shearwater	17	1	23	12	22.8		41.3
Medicine Hat	19	-1	32	6	1.8		87.1	Sydney	21	4	28	9	0.7		*
Peace River	15	-1	22	6	31.0		X	Yarmouth	16	1	23	10	50.2		*
SASKATCHEWAN								PRINCE EDWARD ISLAND							
Cree Lake	14	X	21	7	23.0		46.4	Charlottetown	21	4	27	14	19.8		*
Estevan	20	0	31	7	0.8		122.7	Summerside	20	2	27	15	53.2		40.7
La Ronge	16	0	23	10	2.6		X	NEWFOUNDLAND							
Regina	17	-1	28	8	5.0		*	Gander	19	4	29	5	5.0		62.8
Saskatoon	17	-2	29	7	0.8		*	Port aux Basques	14	2	18	9	19.0		*
Swift Current	*	*	32P	7P	0.0		*	St. John's	18	4	27	5	0.0		64.4
Yorkton	16	-2	26	5	5.8		*	St. Lawrence	14	3	24	5	4.2		X
MANITOBA								Cartwright	13	2	26	2	1.7		X
Brandon	15	-3	29	2	6.2		*	Goose	18	3	28	5	8.3		44.9
Churchill	10	-1	22	2	1.4		73.2	Hopedale	8	-1	24	2	34.5		X
The Pas	16	-2	24	4	19.9		83.6								

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
* = not available at press time

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. Cailliet

STAFF WRITER: A. Radomski

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ACID RAIN REPORT ISSUED BY ENVIRONMENT CANADA FOR JULY 1 - 7, 1984

**LONGWOODS
NEAR LONDON-
ONTARIO** On July 4 and 5 Longwoods received strongly acidic rain with pH readings of 3.8 each day. The rain on July 4 was produced in air which came from the U.S. Midwest and the rain on July 5 was associated with air which passed through Indiana and Michigan. Air from Wisconsin and Michigan brought a large amount of moderately acidic rain with a pH value of 4.4 to the region on July 6.

**DORSET*
MUSKOKA-
ONTARIO** Dorset received a small amount of strongly acidic rain of pH 3.4 on July 3. The air associated with this event passed through northern Ontario, Michigan and south central Ontario. Information on the rainfall for the rest of the week was not available.

**CHALK RIVER
OTTAWA
VALLEY-
ONTARIO** Air which came from northern Ontario, Michigan and across Lake Huron and Georgian Bay brought strongly acidic rain with a pH value of 4.0 to Chalk River on July 3. The following events on July 4 and July 6 were both strongly acidic with pH readings of 4.1 and 4.0 respectively. The rain on July 4 was associated with air from Wisconsin, Michigan and the Sudbury Basin while on July 6 heavy rain was produced in air which came from West Virginia, Pennsylvania, New York and central Ontario. On July 7 the region received slightly acidic rain with a pH of 4.8 which originated in air from northern Ontario.

**MONTMORENCY
QUEBEC CITY-
QUEBEC** Montmorency received strongly acidic rain with a pH of 3.6 on July 5 and a large amount of moderately acidic rain with a pH of 4.4 on July 7. Both of these events were associated with air which passed over Pennsylvania, New York and southern Quebec.

**KEJIMKUJIK
SOUTHWESTERN
NOVA SCOTIA** Air which came from the southeast off of the Atlantic Ocean brought a large amount of normal rain with a pH reading of 5.2 to Kejimkujik on July 7.

* 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.