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# Climatic Perspectives

A WEEKLY REVIEW OF CANADIAN CLIMATE

AUGUST 24 ,1984 | (Aussi disponible en français) | VOL. 6 NO. 33

## FOR THE PERIOD AUGUST 14 TO 20, 1984

**HIGH PRAIRIE**
Torrential rains and large hail damage cars and destroy crops

**TORONTO**
Tornado leaves a swath of destruction in the Northwest suburbs

**PRINCE ALBERT**
High winds damage buildings, small aircraft and down power lines

**LONDON**
Golf ball size hail damage cars and accumulates to a depth of 5 to 10 centimetres

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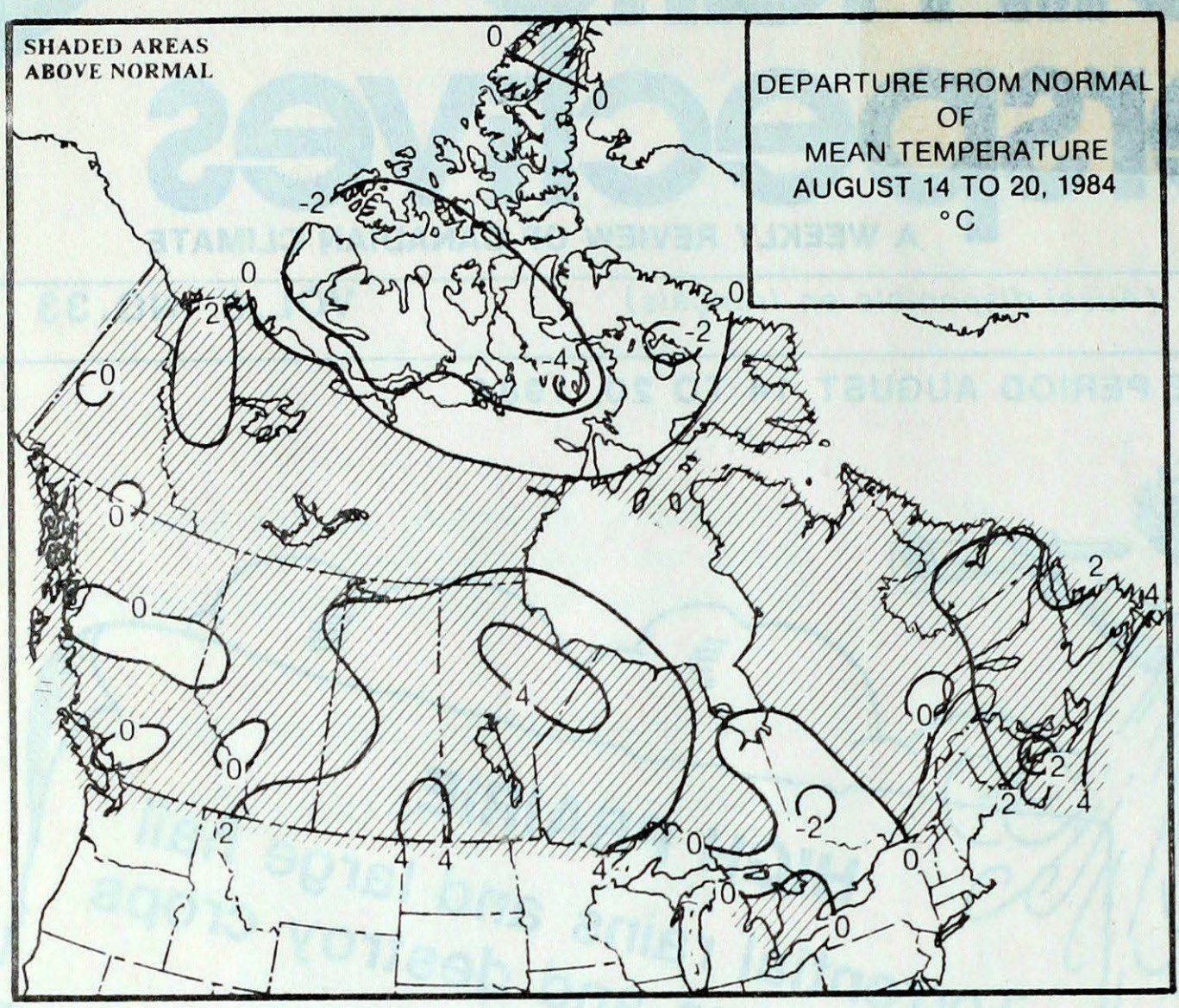
**NOTE:** The data shown in this publication are based on unverified reports from approximately 225 Canadian synoptic stations.

Canada




## WEEKLY TEMPERATURES EXTREMES (°C)

| | MAXIMUM | | MINIMUM | |
|---|---|---|---|---|
| YUKON TERRITORY | 26.6 | Mayo | -3.8 | Burwash |
| NORTHWEST TERRITORIES | 28.6 | Norman Wells | -3.6 | Resolute |
| BRITISH COLUMBIA | 33.4 | Lytton | -1.0 | Puntzi Mountain |
| ALBERTA | 33.9 | Coronation | 1.7 | Banff |
| SASKATCHEWAN | 36.4 | Yorkton | 2.7 | Collins Bay |
| MANITOBA | 33.4 | Brandon | 4.5 | Lynn Lake |
| ONTARIO | 33.6 | Pickle Lake | 0.0 | Moosonee |
| QUÉBEC | 30.4 | Kuujjuaraplk | 0.7 | Matagami |
| NEW BRUNSWICK | 30.3 | Chatham | 4.9 | St. Stephen |
| NOVA SCOTIA | 29.9 | Greenwood | 8.4 | Greenwood |
| PRINCE EDWARD ISLAND | 28.7 | Summerside | 14.0 | Charlottetown |
| NEWFOUNDLAND | 33.1 | Goose | 1.7 | Wabush Lake |

## ACROSS THE NATION

| | | |
|---|---|---|
| Warmest mean temperature | 22.2 | Windsor, Ont |
| Coolest mean temperature | -0.5 | Mould Bay, NWT |

## ACROSS THE COUNTRY...

### Yukon and Northwest Territories

The Yukon and the Northwest Territories experienced near to above normal temperatures under mostly sunny skies. Temperatures in the Arctic ranged between 2 to 3 degrees below normal. Precipitation was generally light, with the exception of eastern portions of the Keewatin District where precipitation totals for the week were more the 40 mm.

### British Columbia

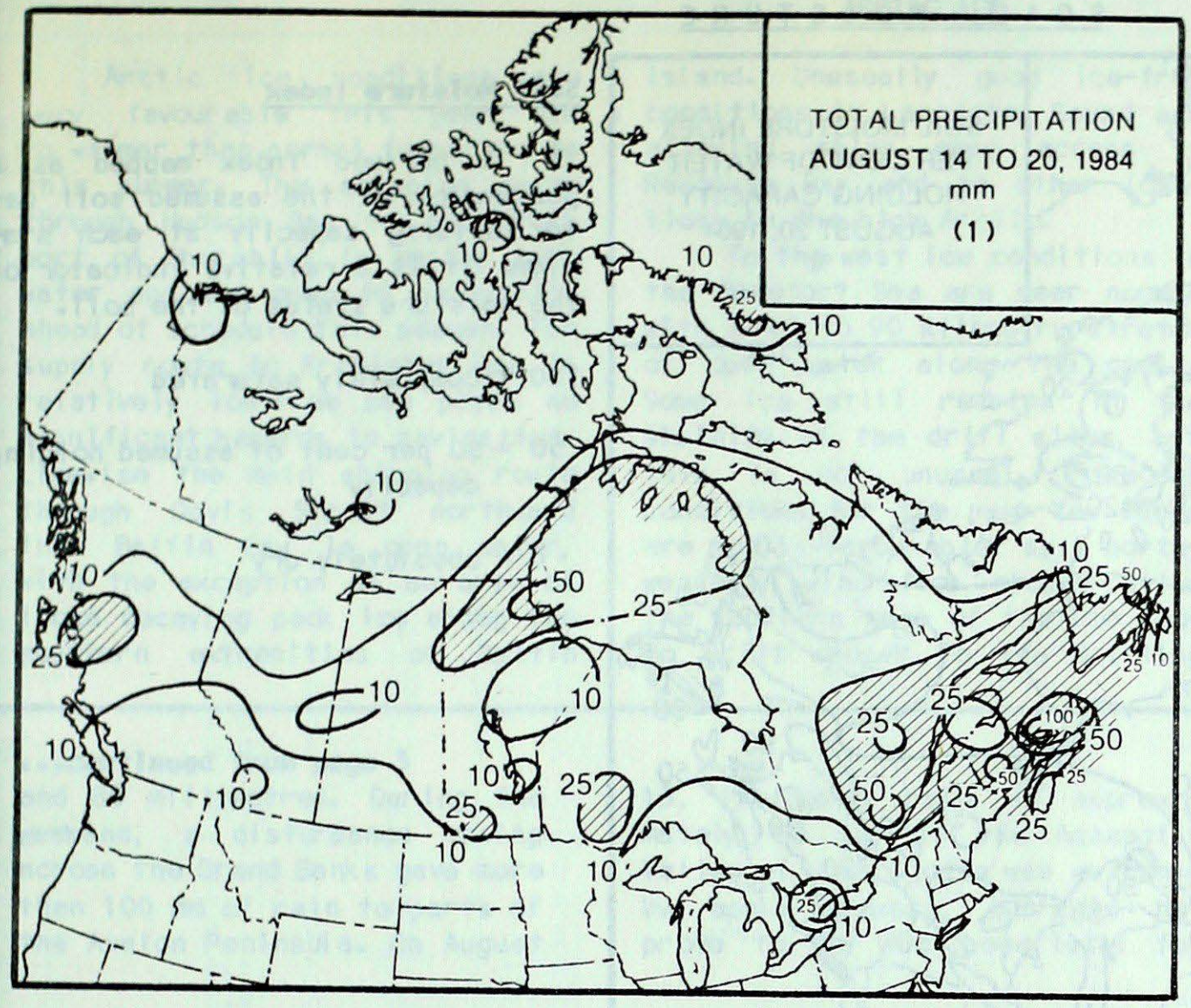
Once again the south enjoyed a pleasant week with slightly above normal temperatures. Sunshine was plentiful, even though scattered afternoon showers and thundershowers produced locally heavy downpours. On the other hand, conditions through the central portion of the province and north Vancouver Island were unsettled and cool. Lightning started several new fires, but the forest fire situation was considered under control.

### Prairies

Warm sunny weather predominated but with increased shower activity towards the weekend. Heavy amounts of precipitation fell across the central and northern districts, helping the forest fire situation. In the south, widely scattered showers did little to improve the drought. On August 17, a severe thunderstorm hit the community of High Prairie in the Peace River District. in a 30-minute period 100 mm of rain fell, accompanied by walnut-sized hail and strong winds; cars were damaged and many crops were totally destroyed. Prince Albert experienced a heavy thunderstorm on the evening of August 19. Wind gusts reached 164 km/h, causing structural damage to many buildings and power-outages caused by downed hydro wires. Many small planes were overturned and damaged at the airport. Harvesting operations have commenced.

### Ontario

The warm and humid weather that prevailed since the beginning of




August continued until the weekend when a cooler and drier airmass finally pushed southward. Scattered showers and thundershowers deposited generally 15 to 25 millimetres of rain. On August 14, severe thunderstorms developed in the late afternoon and lashed Toronto and the Niagara Peninsula fruit belt with locally high winds and torrential downpours. Hail and strong winds damaged many fruit trees near Beamsville. A tornado touched down in the northwest portion of the Toronto suburbs, causing widespread damage. The roofs of several homes were literally lifted off. The walls and more than half the roof of a 27,000 square metre factory caved in, and the roofs and contents of two large department store warehouses were heavily damaged. Total damage was estimated at approximatly $20 million. A violent thunderstorm in London in the late afternoon of August 18, damaged cars with golf ball size hail which accumulated to a depth of 5 to 10 centimetres on the ground.

**HEAVIEST WEEKLY PRECIPITATION (mm) (1)**

| | | |
|---|---|---|
| YUKON | 12.7 | Shingle Point |
| NORTHWEST TERRITORIES | 47.1 | Rankin Inlet |
| BRITISH COLUMBIA | 38.8 | Mcinnes Island |
| ALBERTA | 18.4 | Peace River |
| SASKATCHEWAN | 48.8 | North Battleford |
| MANITOBA | 55.7 | Churchill |
| ONTARIO | 36.8 | Atikokan |
| QUEBEC | 70.7 | Ste. Agathe des Monts |
| NEW BRUNSWICK | 61.8 | Fredericton |
| NOVA SCOTIA | 90.0 | Eddy Point |
| PRINCE EDWARD ISLAND | 112.4 | Summerside |
| NEWFOUNDLAND | 114.5 | St. Johns |

**Statistics on the Toronto Tornado**

**Date:** Aug. 14, 1984
**Time:** 19:35 - 1950 EDT
**Path-length:** 3.0 km
**Path Orientation:** NE to SW (unusual)
**Path width*:** 150±50 metres
**Associated precipitaion:**
- 100 - 200 mm in a 2 hours period
- hail stones reported up to 2 cm in diameter

***Associated winds:** winds were estimated between 65 and 115 km/h in the vicinity of the path. Maximum speeds up to 180 km/h.

**Quebec**

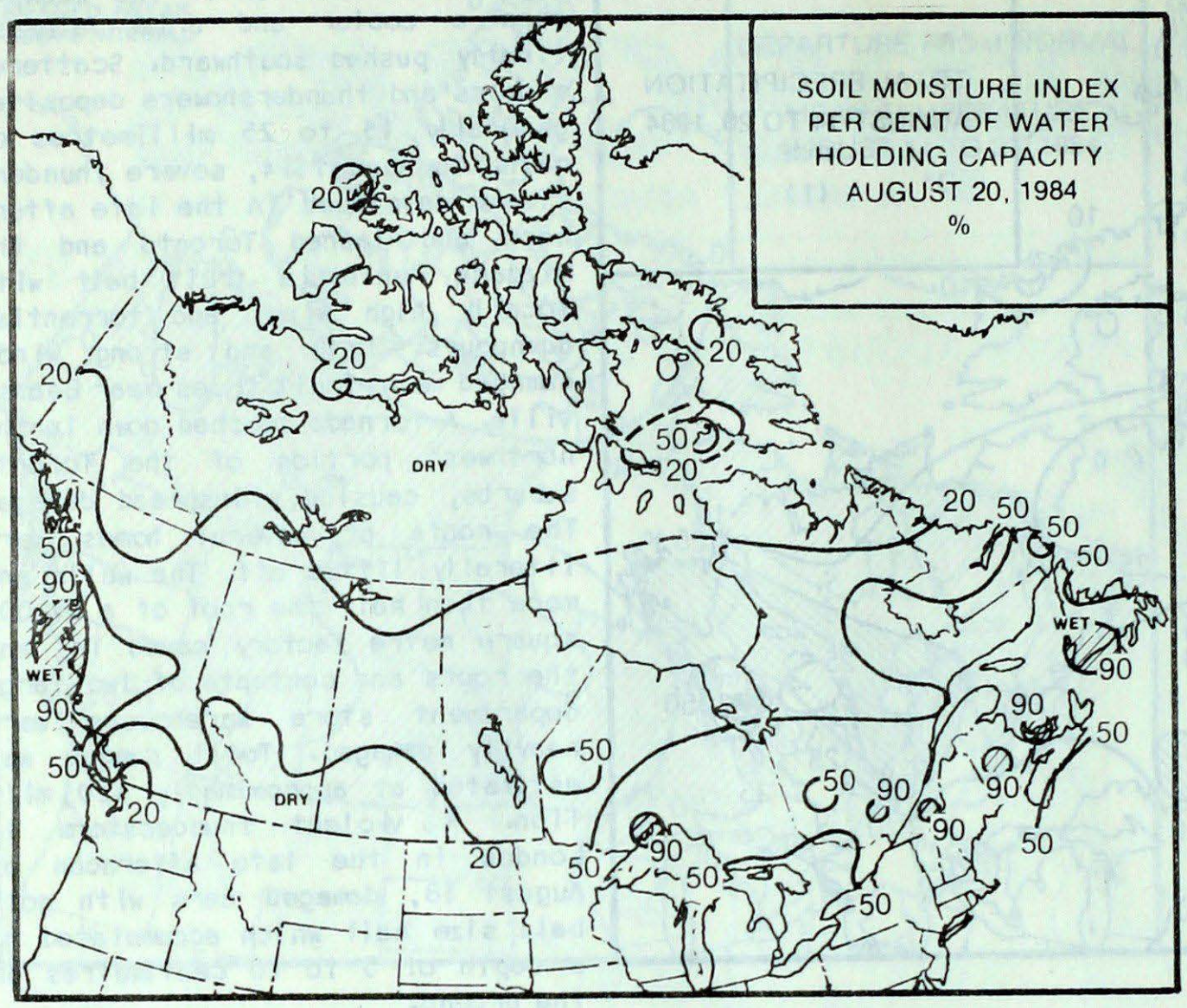
The week began sunny and very warm, but it turned sharply cooler around mid-week, especially in the north. Many northern communities established new daily maximum temperature records. The mercury at Kuujjuaq on August 15 climbed to 30°, exceeding the previous monthly record high of 28.3° set in 1959; the very next day the temperature was 2° below the previous low maximum temperature record for the date of 8° set in 1976. Precipitation amounts were variable, ranging between 15 and 35 millimetres, mainly in the form of showers. Heavier amounts fell on the Laurentides region, Ste. Agathe recorded a weekly rainfall of almost 71 mm. The "Transat-Tag" sail boat race got off to a sunny start from Québec City with a favourable southwesterly breeze.

**Atlantic Provinces**

It was very warm and humid until the weekend. Daytime temperatures hovered in the mid to high twenties. The temperature at Goose Bay reached 33° on August 15. Precipitation amounts ranged between 20

**...continued on page 5**

## SOIL MOISTURE




### Soil Moisture Index

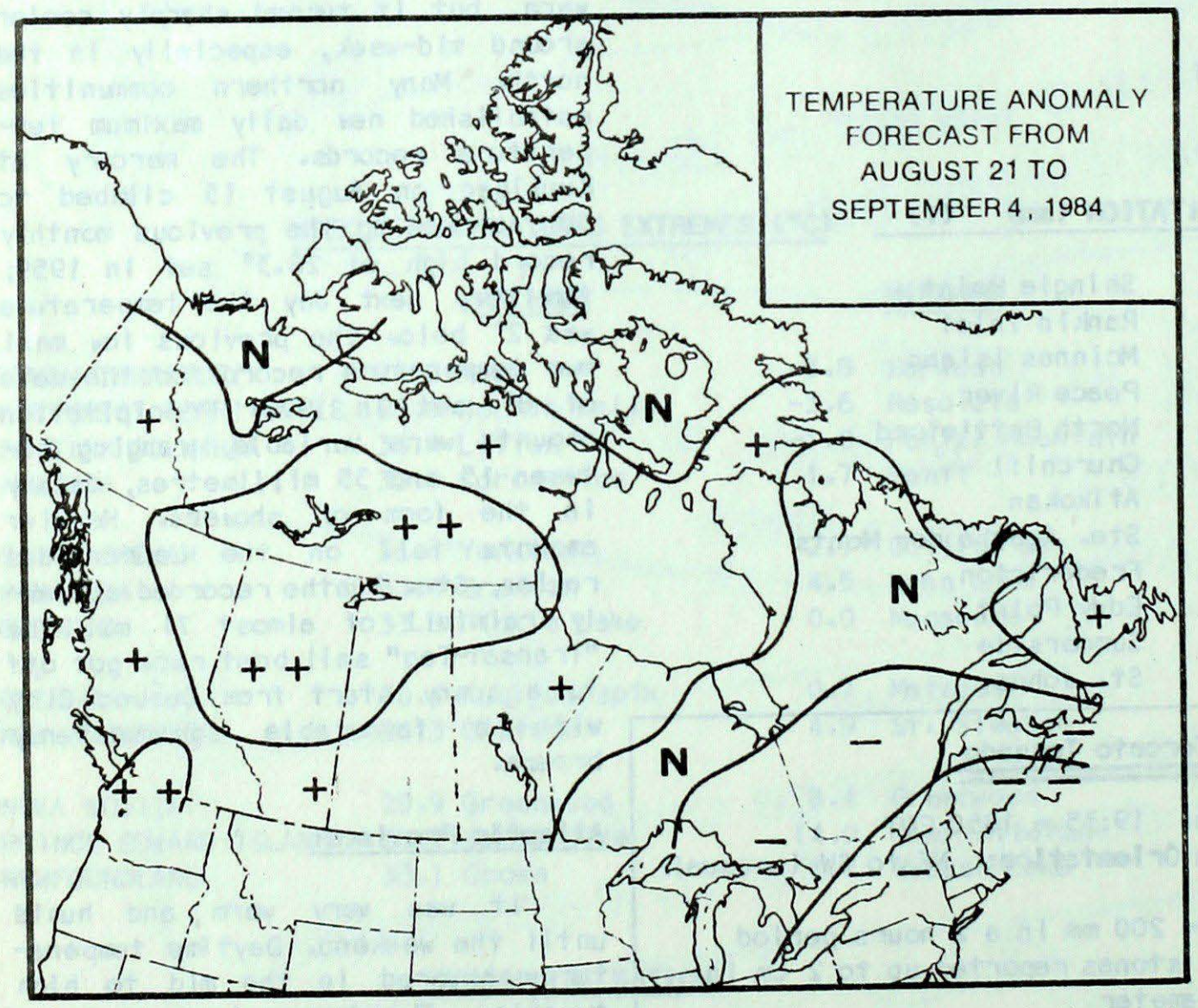
A derived index mapped as a percentage of the assumed soil water holding capacity at each station. It is a relative indicator of the moisture status of the soil.

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

## ARCTIC ICE

Arctic ice conditions are very favourable this year due to warmer than normal temperatures this summer. The shipping route through Hudson Bay to the grain port of Churchill is mostly open water and was open to navigation ahead of schedule this season. The supply route to Frobisher Bay is relatively ice-free and poses no significant hazards to navigation. Likewise the main shipping route through Davis Strait northward into Baffin Bay is open water, with the exception of an area of loose decaying pack ice along the southern extremities of Baffin Island. Unusually good ice-free conditions in Lancaster Sound are allowing ships easy access to Resolute Bay and to other locations in the high Arctic.

To the west ice conditions in the Beaufort Sea are near normal with a 40 to 90 kilometre stretch of open water along the coast. Some ice still remains in the vicinity of the drill sites, but this is not unusual. Forecast conditions for the next few weeks are not as favourable, as a northwesterly wind flow should allow the southern edge of the ice pack to drift closer to the drilling areas.

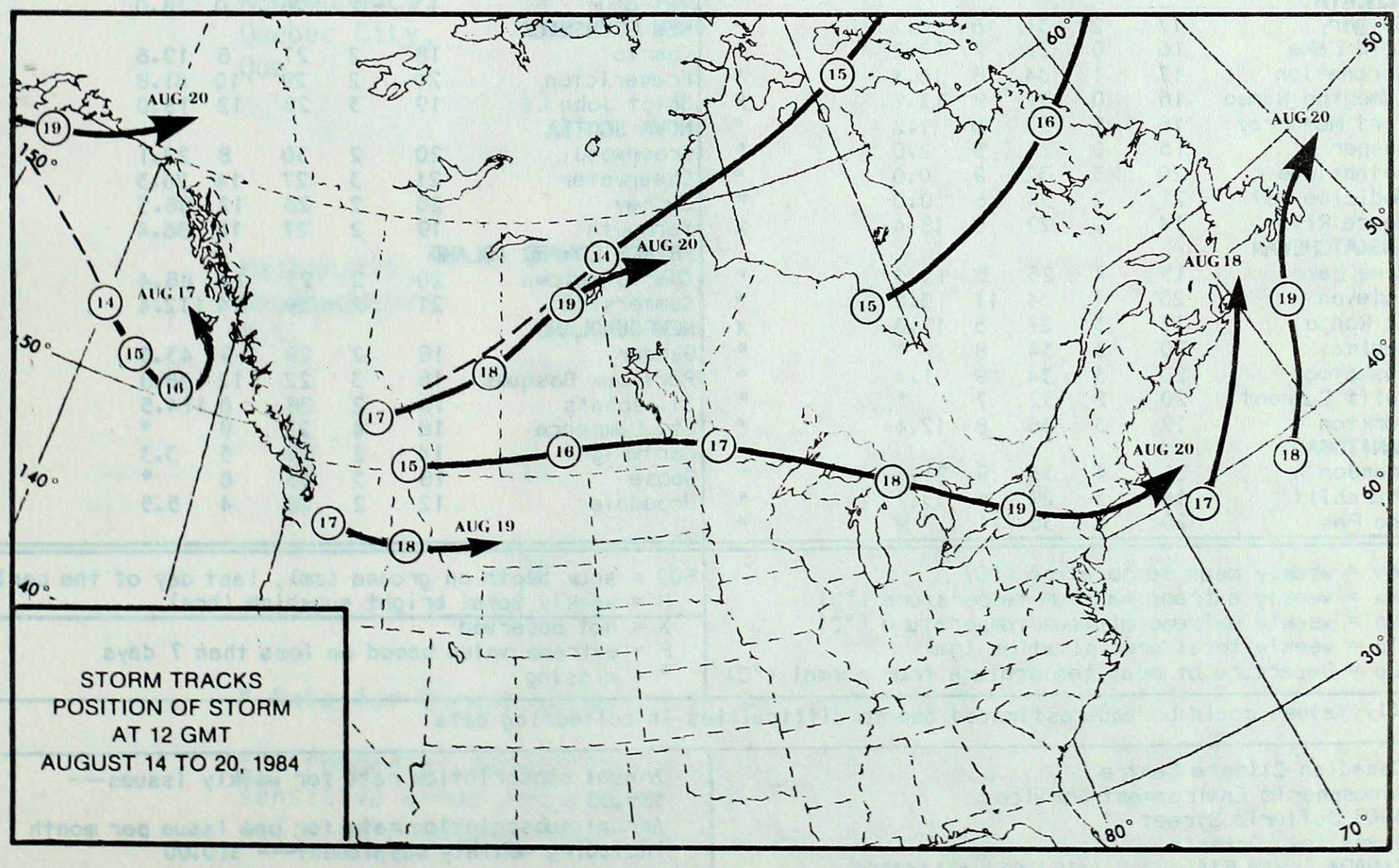
In the central Arctic, fortunately ice conditions have been very favourable this year and are not expected to hamper or detain the first passenger ship to sail through the Northwest Passage this September. The Lindblad Explorer is already on-route and is expected to arrive in Resolute Bay on August 30. Five Canadian icebreakers are currently stationed in the Arctic and will assist and escort the ship if any problems arise.

Andy Radomski

**...continued from page 3**

and 80 millimetres. During the weekend, a disturbance moving across the Grand Banks gave more than 100 mm of rain to parts of the Avalon Peninsula. On August 13, the heavy rain, of approximately 60 mm, in the Annapolis Valley of Nova Scotia was welcomed by apple growers, but did not prove to be very beneficial for grain and vegetable crops due to the close proximity of harvest time and the possible damage the excess moisture may cause this late in the season.

## STORM TRACKS



## TEMPERATURE, PRECIPITATION AND BRIGHT SUNSHINE DATA FOR THE WEEK ENDING 0600 GMT AUGUST 21, 1984

| STATION | TEMP | | | | PRECIP(1) | | SUN |
|---|---|---|---|---|---|---|---|
| | Av | Dp | Mx | Mn | Tp | SOG | H |
| **YUKON TERRITORY** | | | | | | | |
| Dawson | 11 | - 2 | 26 | - 3 | 0.5 | | X |
| Mayo A | 13 | 1 | 27 | - 1 | 0.0 | | X |
| Watson Lake | 13 | 0 | 26 | 1 | 2.2 | | * |
| Whitehorse | 13 | 1 | 25 | 0 | 4.6 | | * |
| **NORTHWEST TERRITORIES** | | | | | | | |
| Fort Smith | 14 | 0 | 27 | 2 | 0.0 | | 73.4 |
| Inuvik | 14 | 2 | 28 | 6 | 17.1 | | * |
| Norman Wells | 15 | 2 | 29 | 4 | 2.4 | | * |
| Yellowknife | 14 | 0 | 23 | 4 | 3.2 | | * |
| Baker Lake | 10 | 0 | 22 | 0 | 1.3 | | * |
| Cape Dyer | 5 | 0 | 10 | 0 | 5.4 | | X |
| Clyde | 4 | 0 | 12 | 0 | 19.0 | | * |
| Frobisher Bay | 7 | 0 | 14 | 2 | * | | * |
| Alert | 1 | 0 | 8 | - 3 | 8.6 | 0.0 | * |
| Eureka | 3 | 0 | 7 | - 2 | 0.2 | | * |
| Hall Beach | 4 | 0 | 10 | 1 | * | | X |
| Resolute | 0 | - 3 | 8 | - 4 | 15.8 | | * |
| Cambridge Bay | 4 | - 3 | 12 | - 1 | 5.2 | | * |
| Mould Bay | -1 | - 3 | 5 | - 3 | * | 0.0 | * |
| Sachs Harbour | 2 | - 2 | 11 | - 3 | 9.8 | | * |
| **BRITISH COLUMBIA** | | | | | | | |
| Cape St. James | 14 | 0 | 18 | 12 | 18.4 | | * |
| Cranbrook | 18 | 2 | 32 | 6 | * | | * |
| Fort Nelson | 15 | 0 | 27 | 1 | 6.6 | | * |
| Fort St. John | 14 | 0 | 24 | 4 | 19.5 | | X |
| Kamloops | 21 | 1 | 32 | 10 | 0.6 | | * |
| Penticton | 20 | 1 | 32 | 9 | 0.0 | | * |
| Port Hardy | 14 | 1 | 20 | 7 | 22.4 | | * |
| Prince George | 14 | 1 | 26 | 5 | 10.1 | | * |
| Prince Rupert | 14 | 2 | 20 | 9 | 15.5 | | * |
| Revelstoke | 18 | 1 | 27 | 9 | 6.0 | | * |
| Smithers | 13 | 0 | 25 | 5 | 27.9 | | * |
| Vancouver | 19 | 2 | 27 | 12 | 2.0 | | * |
| Victoria | 17 | 1 | 24 | 9 | * | | * |
| Williams Lake | 15 | 0 | 26 | 4 | 3.0 | | * |
| **ALBERTA** | | | | | | | |
| Calgary | 17 | 2 | 31 | 6 | 0.2 | | * |
| Cold Lake | 16 | 0 | 29 | 7 | 12.2 | | * |
| Coronation | 17 | 1 | 34 | 8 | 16.4 | | * |
| Edmonton Namao | 16 | 0 | 31 | 9 | 13.1 | | X |
| Fort McMurray | 16 | 1 | 27 | 5 | 1.2 | | * |
| Jasper | 15 | 0 | 27 | 5 | 2.0 | | * |
| Lethbridge | 20 | 3 | 32 | 9 | 0.0 | | * |
| Medicine Hat | 21 | 2 | 34 | 6 | 0.0 | | * |
| Peace River | 14 | 0 | 29 | 6 | 18.4 | | X |
| **SASKATCHEWAN** | | | | | | | |
| Cree Lake | 15 | X | 25 | 5 | 13.0 | | * |
| Estevan | 23 | 4 | 34 | 11 | 3.0 | | * |
| La Ronge | 17 | 3 | 27 | 5 | 19.0 | | X |
| Regina | 20 | 3 | 34 | 8 | * | | * |
| Saskatoon | 20 | 3 | 34 | 9 | 1.4 | | * |
| Swift Current | 20 | 2 | 32 | 7 | * | | * |
| Yorkton | 19 | 3 | 36 | 8 | 12.4 | | * |
| **MANITOBA** | | | | | | | |
| Brandon | 21 | 4 | 33 | 9 | 21.4 | | * |
| Churchill | 14 | 3 | 29 | 6 | 55.7 | | * |
| The Pas | 20 | 4 | 30 | 11 | M | | * |

| STATION | TEMP | | | | PRECIP(1) | | SUN |
|---|---|---|---|---|---|---|---|
| | Av | Dp | Mx | Mn | Tp | SOG | H |
| Thompson | 17 | 4 | 27 | 7 | 4.6 | | * |
| Winnipeg | 21 | 3 | 32 | 10 | 13.6 | | * |
| **ONTARIO** | | | | | | | |
| Big Trout Lake | 18 | 4 | 30 | 8 | 13.2 | | X |
| Earlton | 16 | 0 | 27 | 4 | * | | X |
| Kapuskasing | 16 | 1 | 30 | 4 | 3.6 | | * |
| Kenora | 21 | 4 | 30 | 12 | 18.2 | | X |
| London | 20 | 0 | 29 | 7 | 0.0 | | * |
| Moosonee | 13 | - 1 | 30 | 0 | 16.6 | | * |
| Muskoka | 18 | 1 | 27 | 3 | * | | X |
| North Bay | 16 | - 1 | 26 | 6 | 0.0 | | * |
| Ottawa | 18 | - 1 | 29 | 8 | 14.4 | | * |
| Pickle Lake | 18 | 3 | 34 | 5 | 11.2 | | X |
| Red Lake | 19 | 2 | 30 | 8 | 21.4 | | * |
| Sudbury | 17 | 0 | 28 | 9 | 16.4 | | * |
| Thunder Bay | 18 | 1 | 29 | 8 | 7.9 | | * |
| Timmins | 16 | 0 | 28 | 5 | 7.2 | | X |
| Toronto | 20 | 0 | 31 | 7 | 30.1 | | X |
| Trenton | 18 | - 2 | 28 | 8 | * | | X |
| Wiarton | 17 | - 1 | 27 | 8 | 0.0 | | * |
| Windsor | 22 | 1 | 30 | 13 | 0.0 | | X |
| **QUEBEC** | | | | | | | |
| Bagotville | 16 | - 1 | 28 | 3 | 37.8 | | X |
| Blanc-Sablon | 13 | 2 | 23 | 8 | * | | * |
| Inukjuak | 9 | 0 | 15 | 5 | 34.8 | | * |
| Kuujjuaq | 11 | 1 | 30 | 1 | * | | * |
| Kuujjuarapik | 11 | 1 | 30 | 4 | * | | * |
| Maniwaki | 16 | - 1 | 27 | 3 | 22.6 | | * |
| Mont-Joli | 16 | 0 | 26 | 8 | 19.2 | | * |
| Montréal | 19 | - 1 | 30 | 7 | * | | * |
| Natashquan | 16 | 2 | 24 | 10 | 31.4 | | * |
| Nitchequon | 13 | 1 | 27 | 5 | 15.7 | | * |
| Québec | 18 | 1 | 28 | 9 | 25.8 | | * |
| Schefferville | 13 | 2 | 28 | 3 | 16.2 | | * |
| Sept-Iles | 15 | 1 | 23 | 5 | 29.4 | | * |
| Sherbrooke | 17 | 0 | 28 | 4 | 11.0 | | * |
| Val-d'Or | 13 | - 2 | 26 | 0 | 18.0 | | * |
| **NEW BRUNSWICK** | | | | | | | |
| Charlo | 18 | 2 | 27 | 8 | 19.6 | | * |
| Fredericton | 20 | 2 | 29 | 10 | 61.8 | | * |
| Saint John | 19 | 3 | 28 | 12 | 18.0 | | * |
| **NOVA SCOTIA** | | | | | | | |
| Greenwood | 20 | 2 | 30 | 8 | 22.1 | | X |
| Shearwater | 21 | 3 | 27 | 14 | 26.3 | | * |
| Sydney | 20 | 2 | 28 | 12 | 88.5 | | * |
| Yarmouth | 19 | 2 | 27 | 10 | 36.4 | | * |
| **PRINCE EDWARD ISLAND** | | | | | | | |
| Charlottetown | 20 | 2 | 27 | 14 | 88.4 | | * |
| Summerside | 21 | 2 | 29 | 14 | 112.4 | | * |
| **NEWFOUNDLAND** | | | | | | | |
| Gander | 18 | 2 | 29 | 9 | 43.0 | | * |
| Port aux Basques | 18 | 3 | 22 | 12 | 38.8 | | * |
| St. John's | 18 | 2 | 28 | 8 | 114.5 | | * |
| St. Lawrence | 18 | 4 | 23 | 9 | * | | X |
| Cartwright | 14 | 2 | 29 | 5 | 3.3 | | X |
| Goose | 18 | 3 | 33 | 8 | * | | * |
| Hopedale | 12 | 2 | 28 | 4 | 5.5 | | 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

(1) Values could be underestimated due to difficulties in collecting data

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# ACID RAIN REPORT ISSUED BY ENVIRONMENT CANADA
## FOR AUG. 12 - AUG. 18, 1984

| SITE | DAY | pH | AIR PATH TO SITE |
|---|---|---|---|
| Longwoods, near London, Ont. | 18 | - | Northwestern Ontario, Michigan. |
| Dorset,* Muskoka, Ont. | 12 | 3.7 | Wisconsin, Michigan, south-central Ontario. |
| | 13 | 4.1 | Wisconsin, Michigan, south-central Ontario. |
| | 14 | 4.3 | Wisconsin, Michigan, south-central Ontario. |
| | 15 | 4.4 | Wisconsin, Michigan, across Lake Huron and Georgian Bay. |
| | 18 | 4.3 | Northern Ontario, Sudbury basin. |
| Chalk River Ottawa Valley, Ont. | 13 | 4.3 | Michigan, across Lake Erie, New York northeastern Ontario. |
| | 14 | 5.0 | Vermont, New York, northeastern Ontario. |
| Montmorency, Quebec City, Que. | 14 | 5.5 | Nova Scotia, New Brunswick, Maine, Southern Quebec. |
| | 15 | 5.1 | New Brunswick, New England States, southern Quebec. |
| Kejimkujik, Southwestern N.S. | 12 | 4.6 | From the south off of the Atlantic Ocean. |
| | 13 | 4.9 | From the south off of the Atlantic Ocean. |
| | 14 | 4.4 | From the south off of the Atlantic Ocean. |
| | 15 | 4.2 | From the south off of the Atlantic Ocean. |

* Data for Dorset supplied by the 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.