Climatic Perspectives

MONTHLY SUPPLEMENT INCLUDED

August 13 to 19, 1990 — A weekly review of Canadian climate and water — Vol.12 No.33



# Critically dry areas remain in western Canada despite locally heavy rains

Significant amounts of rain, occasionally accompanied by severe storms, drenched parts of Alberta and southern Saskatchewan and Manitoba. The rain, because of the patchy nature, failed to dampen the tinder dry, fire-prone areas near Lac la Biche, Alta, northern British Columbia and the northern portions of Saskatchewan and Manitoba. Also, little if any precipitation fell in the Palliser's Triangle of southern Alberta and Saskatchewan. In northern B.C., the dry weather has caused water levels to drop and some wells to run dry.

## Calgary gets deluged

Damaging thunderstorms dumped more than 100 mm of rain on parts of Calgary August 16 and 17, causing severe flooding and damage in the millions. On August 16, a lightning bolt tore a hole in the roof of a shopping mall. During the night of the 17th, the roof of another shopping centre collapsed, while in the northwest part of the city hundreds of cars and houses were flooded, when storm sewers were unable to handle the deluge caused by more than 60 mm of rain that the storm produced.

## Waterspout in central B.C.

On the evening on the 13th, a tornadic waterspout touched down on Stuart Lake, northwest of Prince George, and travelled towards the Indian village of Tachie. As the swirling column of water approached the community, blowing water and golf-ball sized hail enveloped the village. Tornadic winds blew down trees, lifted roofs and damaged several buildings, causing thousands of dollars in damage.

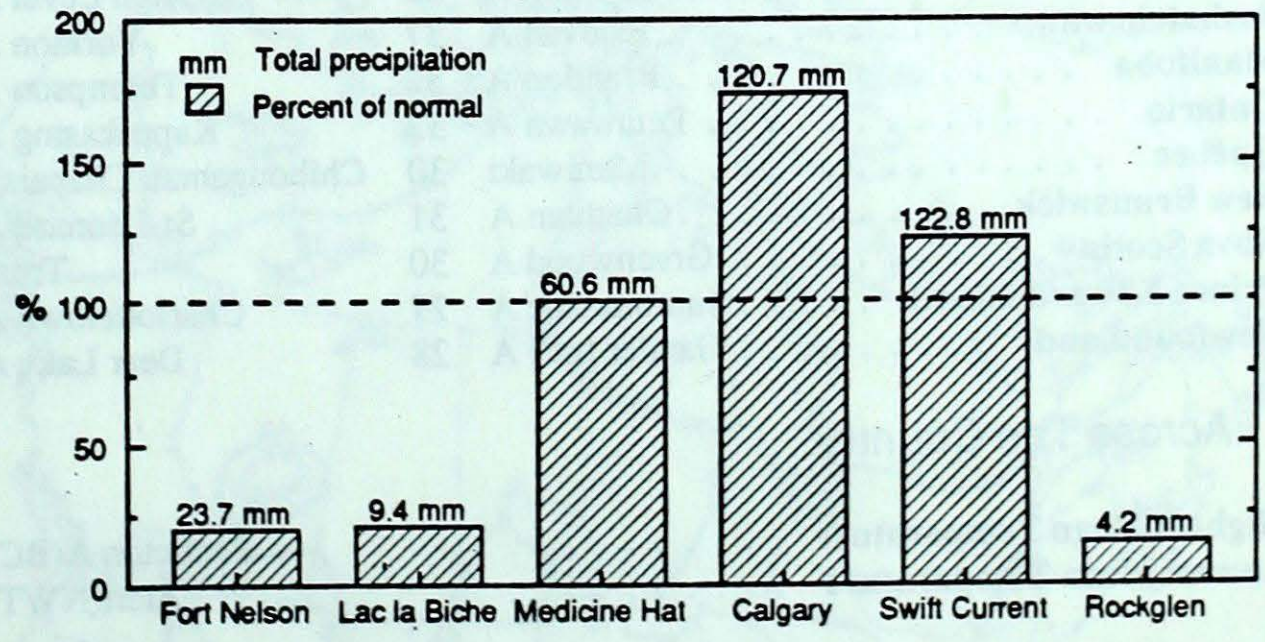
## Victoria's prolonged dry spell

Victoria did not receive any measurable precipitation between July 6 and August 16. This 40 consecutive day dry spell ended when a brief shower deposited 0.2 mm of rain, ranking this stretch of dry weather as the 3rd longest on record. Since records began in 1940, Victoria has registered 18 years with dry spells of at least 30 days duration, the two longest, 53 and 42 days, occurred in 1986 and 1987, respectively.

## *Warm weather across most of the country*

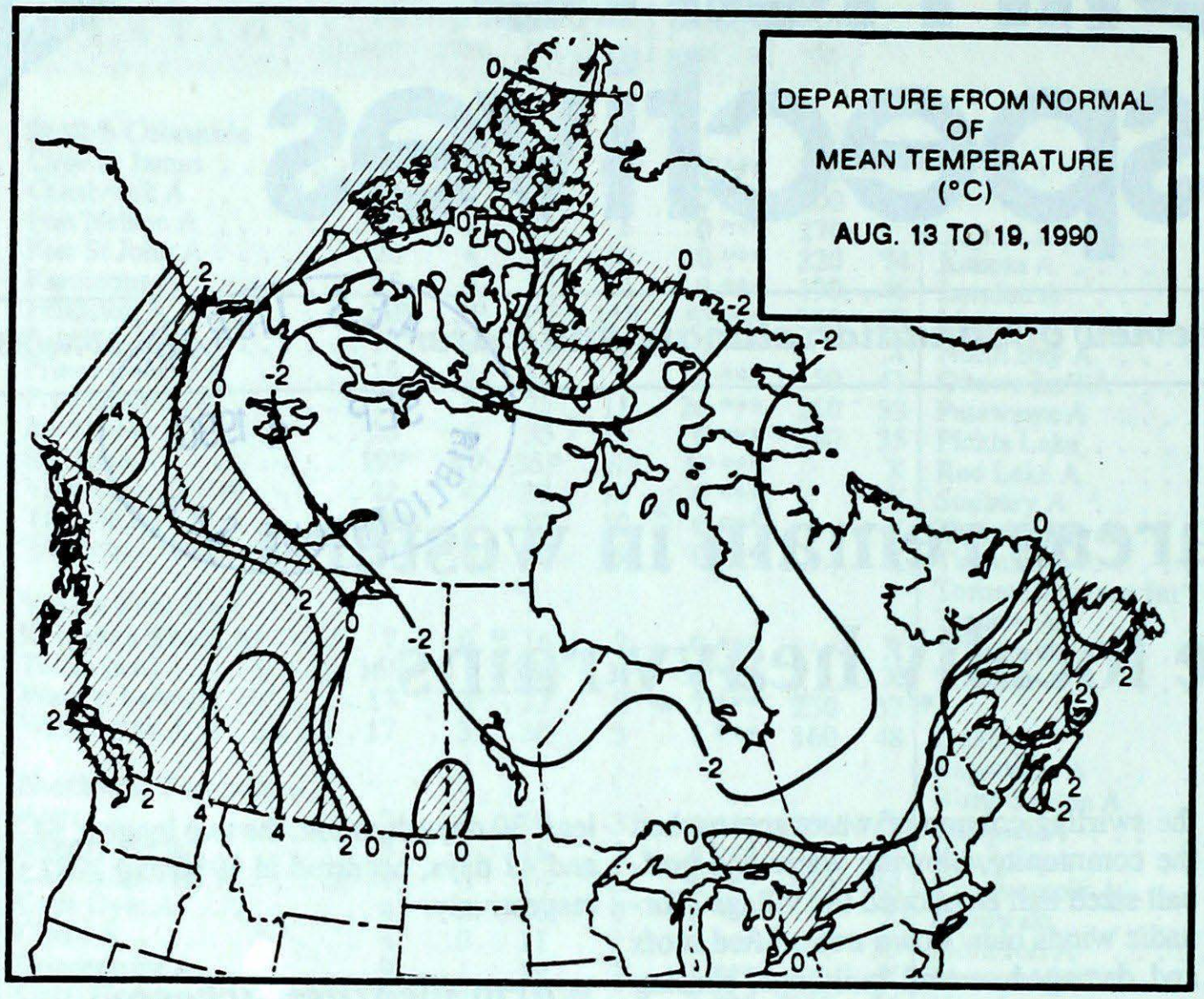
For the week of August 27, above-normal temperatures are forecast across most of the country, with temperatures about 2 degrees above normal. Extreme southern Manitoba may experience temperatures 4 degrees above normal, as an upper atmospheric ridge of high pressure dominates. Only the Atlantic provinces and the eastern half of Quebec can anticipate near to below-normal temperatures.

**Percent of normal precipitation - July to August 19, 1990**




As can be seen in the above table, summer precipitation totals compared to the long term normals vary greatly in western Canada.

Canada




## Weekly normal temperatures (°C)

| | max. | min. |
|---|---|---|
| **Whitehorse A** | 18.6 | 6.7 |
| **Iqaluit A** | 10.3 | 3.4 |
| **Yellowknife A** | 18.2 | 9.8 |
| **Vancouver Int'l A** | 21.5 | 12.7 |
| **Victoria Int'l A** | 21.2 | 10.9 |
| **Calgary Int'l A** | 22.3 | 8.3 |
| **Edmonton Int'l A** | 21.4 | 7.7 |
| **Regina A** | 25.2 | 10.3 |
| **Saskatoon A** | 24.3 | 10.1 |
| **Winnipeg Int'l A** | 24.7 | 11.5 |
| **Ottawa Int'l A** | 24.4 | 13.5 |
| **Toronto (Pearson Int'l A)** | 25.7 | 13.1 |
| **Montréal Int'l A** | 24.7 | 14.2 |
| **Québec A** | 23.2 | 11.9 |
| **Fredericton A** | 24.8 | 11.9 |
| **Saint John A** | 21.8 | 11.5 |
| **Halifax (Shearwater)** | 22.3 | 13.7 |
| **Charlottetown A** | 22.3 | 13.4 |
| **Goose A** | 19.3 | 9.2 |
| **St John's A** | 19.5 | 11.6 |

## Weekly temperature and precipitation extremes

| | Maximum temperature (°C) | | Minimum temperature (°C) | | Heaviest precipitation (mm) | |
|---|---|---|---|---|---|---|
| **British Columbia** | Penticton A | 37 | Dease Lake | 5 | Estevan Point (aut) | 57 |
| **Yukon Territory** | Whitehorse A | 29 | Komakuk Beach A | 2 | Faro (aut) | 6 |
| | | | | | Watson Lake A | 6 |
| **Northwest Territories** | Fort Simpson A | 27 | Alert | -8 | MacKar Inlet | 25 |
| **Alberta** | Medicine Hat A | 36 | High Level A | 4 | Calgary Int'l A | 37 |
| **Saskatchewan** | Estevan A | 37 | Yorkton A | 1 | Estevan A | 38 |
| **Manitoba** | Brandon A | 32 | Thompson A | -2 | Brandon A | 77 |
| **Ontario** | Petawawa A | 32 | Kapuskasing A | 1 | Simcoe | 68 |
| **Québec** | Maniwaki | 30 | Chibougamau Chapais a | 1 | Parent (aut) | 94 |
| **New Brunswick** | Chatham A | 31 | St-Léonard A | 4 | Charlo A | 58 |
| **Nova Scotia** | Greenwood A | 30 | Truro | 6 | Amherst (aut) | 21 |
| **Prince Edward Island** | Summerside A | 27 | Charlottetown A | 9 | Summerside A | 24 |
| **Newfoundland** | Gander Int'l A | 28 | Deer Lake A | 1 | Daniels Harbour | 64 |

### Across The Country...

| | | |
|---|---|---|
| **Highest Mean Temperature** | Penticton A(BC) | 26 |
| **Lowest Mean Temperature** | Alert(NWT) | -1 |

90/08/13-90/08/19

CLIMATIC PERSPECTIVES
VOLUME 12

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ISBN 0225-5707 UDC 551.506.1(71)

**Climatic Perspectives** is a weekly publication (disponible aussi en français) of the Canadian Climate Centre, Atmospheric Environment Service, 4905 Dufferin St., Downsview, Ontario, Canada M3H 5T4

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

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monthly issue: . . . . . $10.00
foreign: . . . . . $12.00

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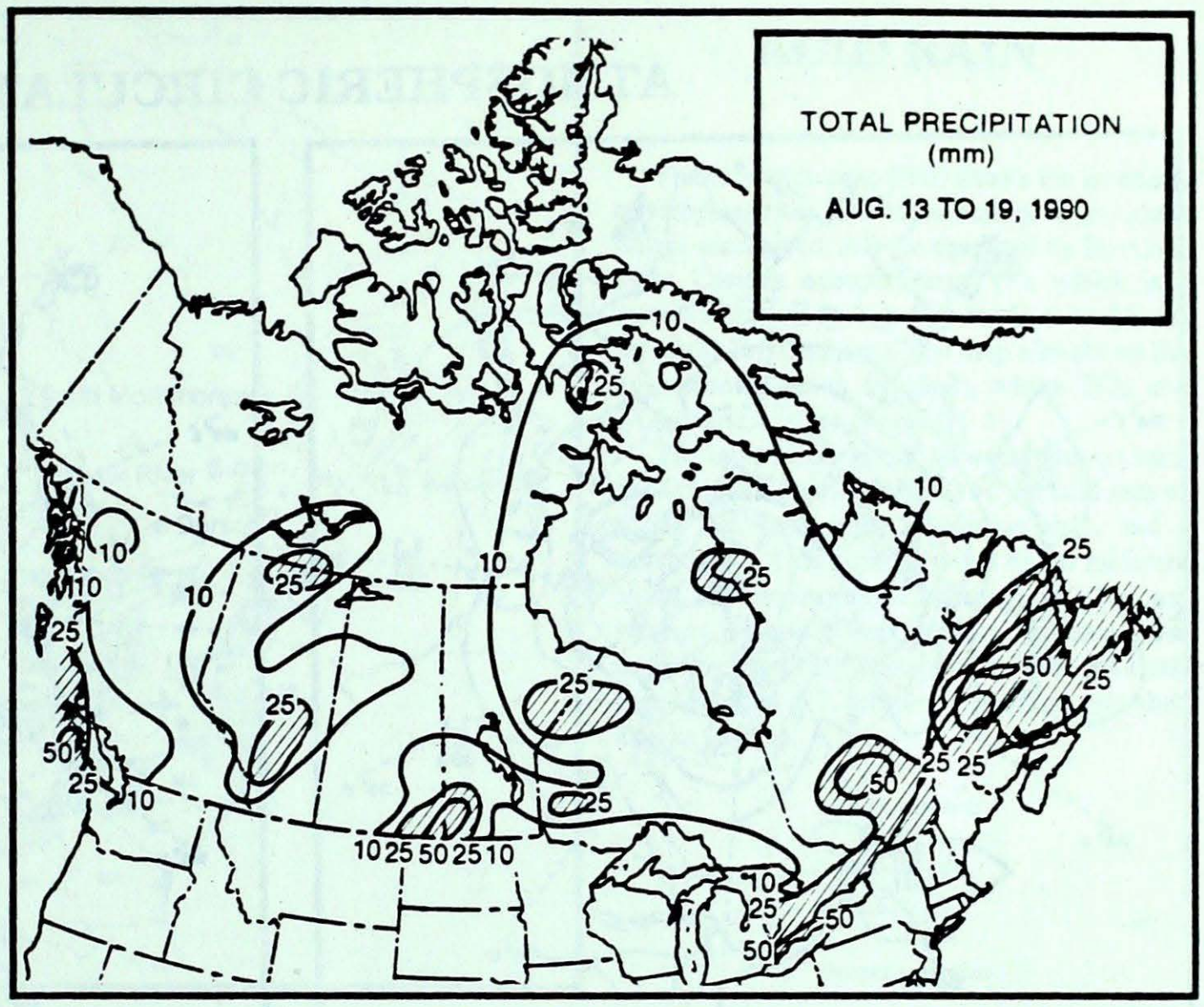
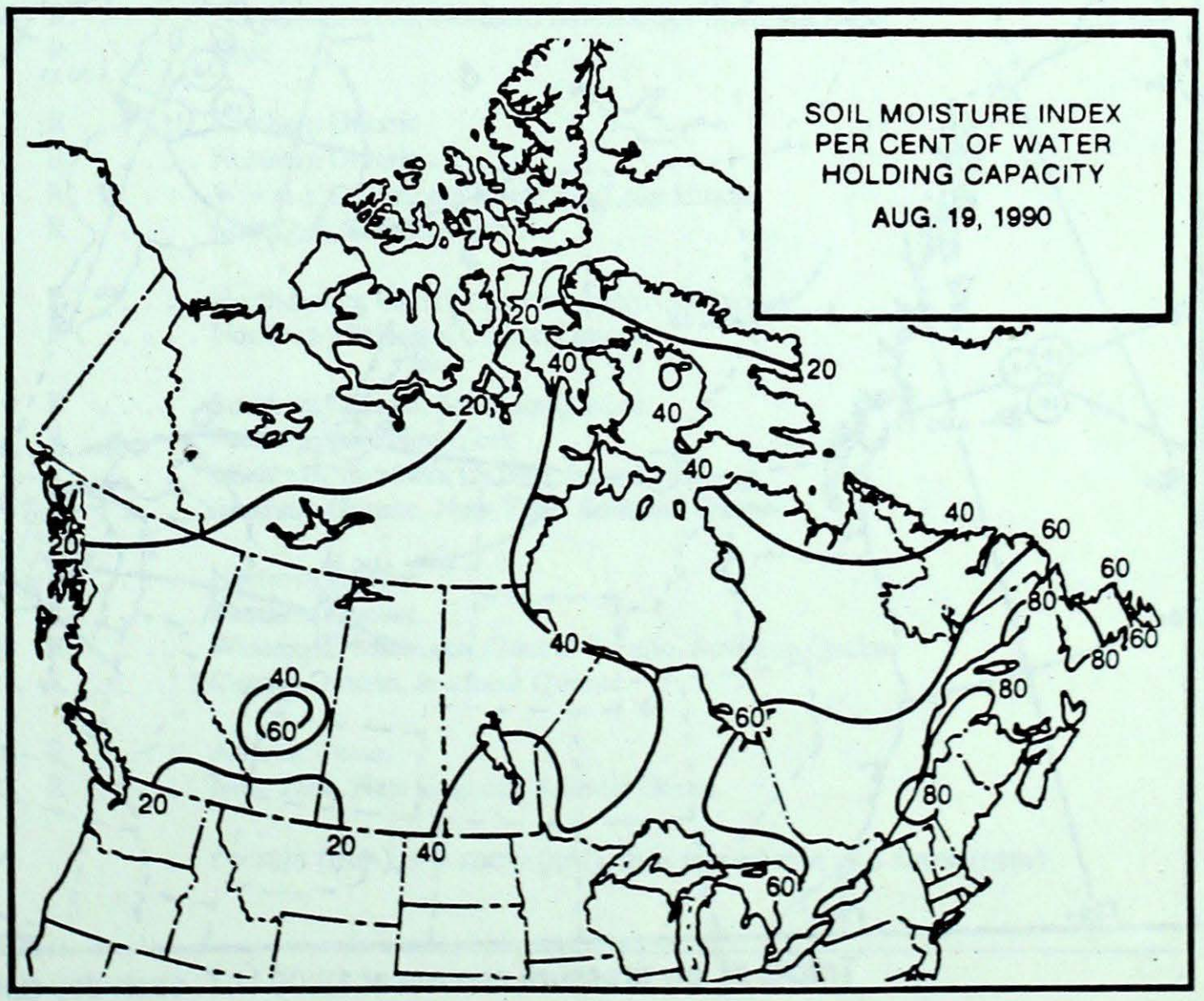
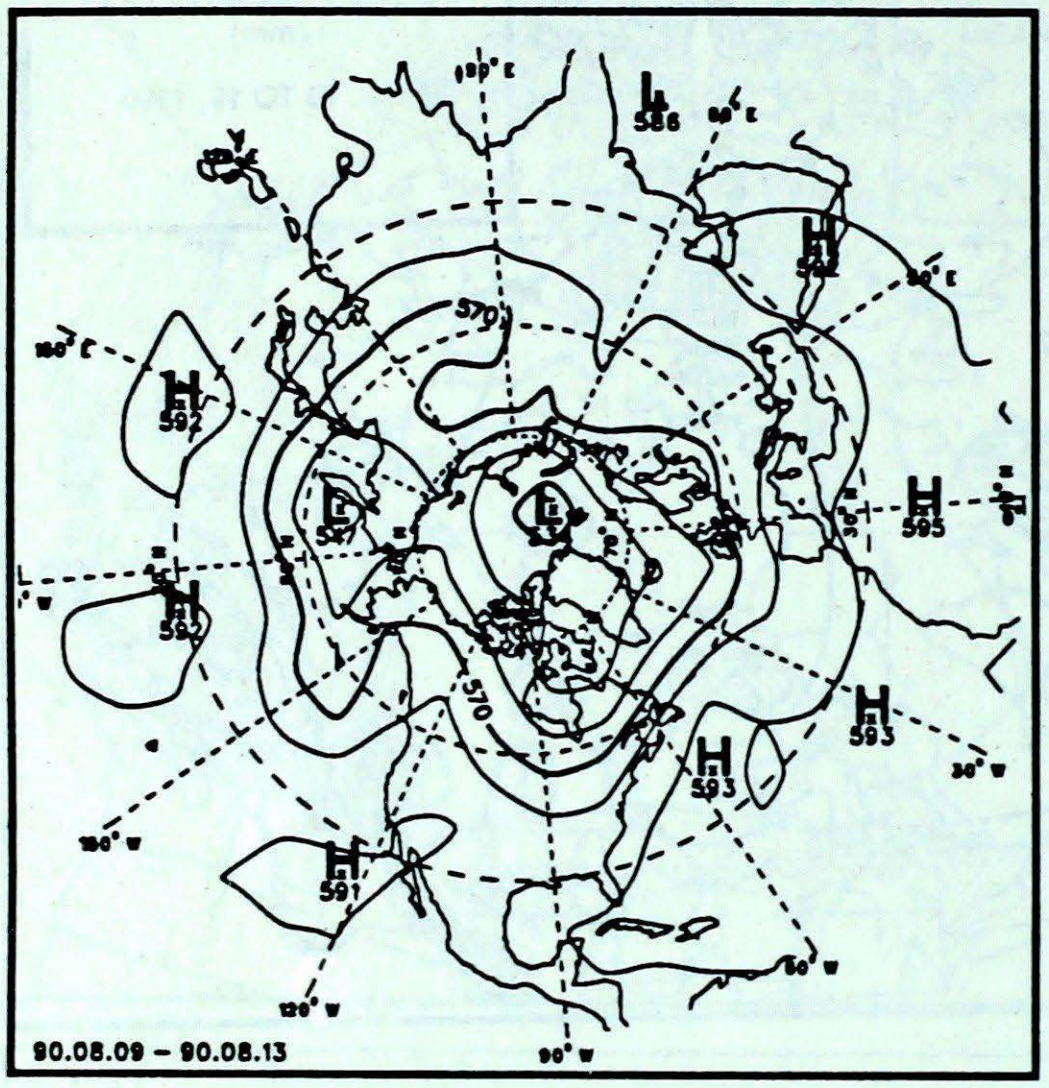
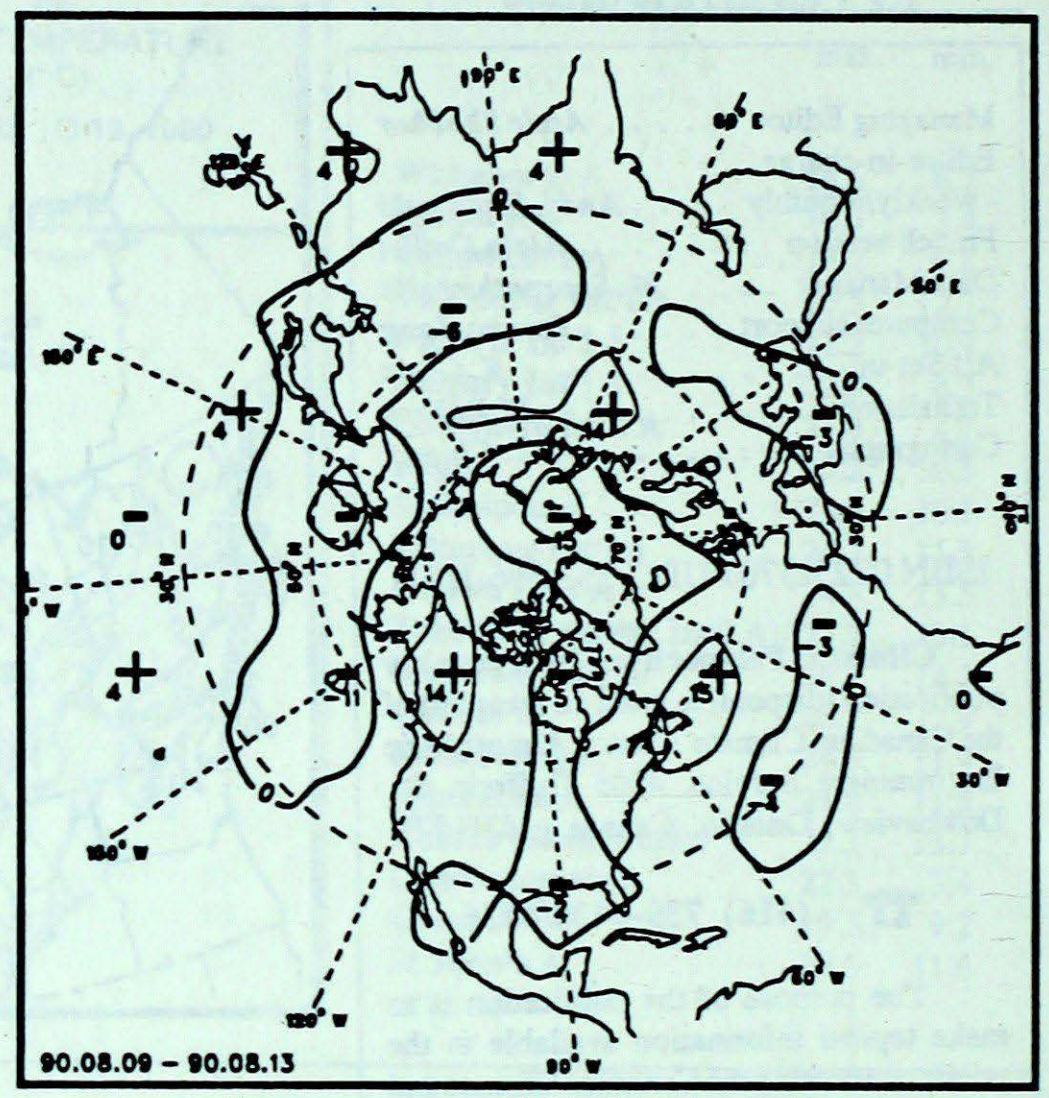


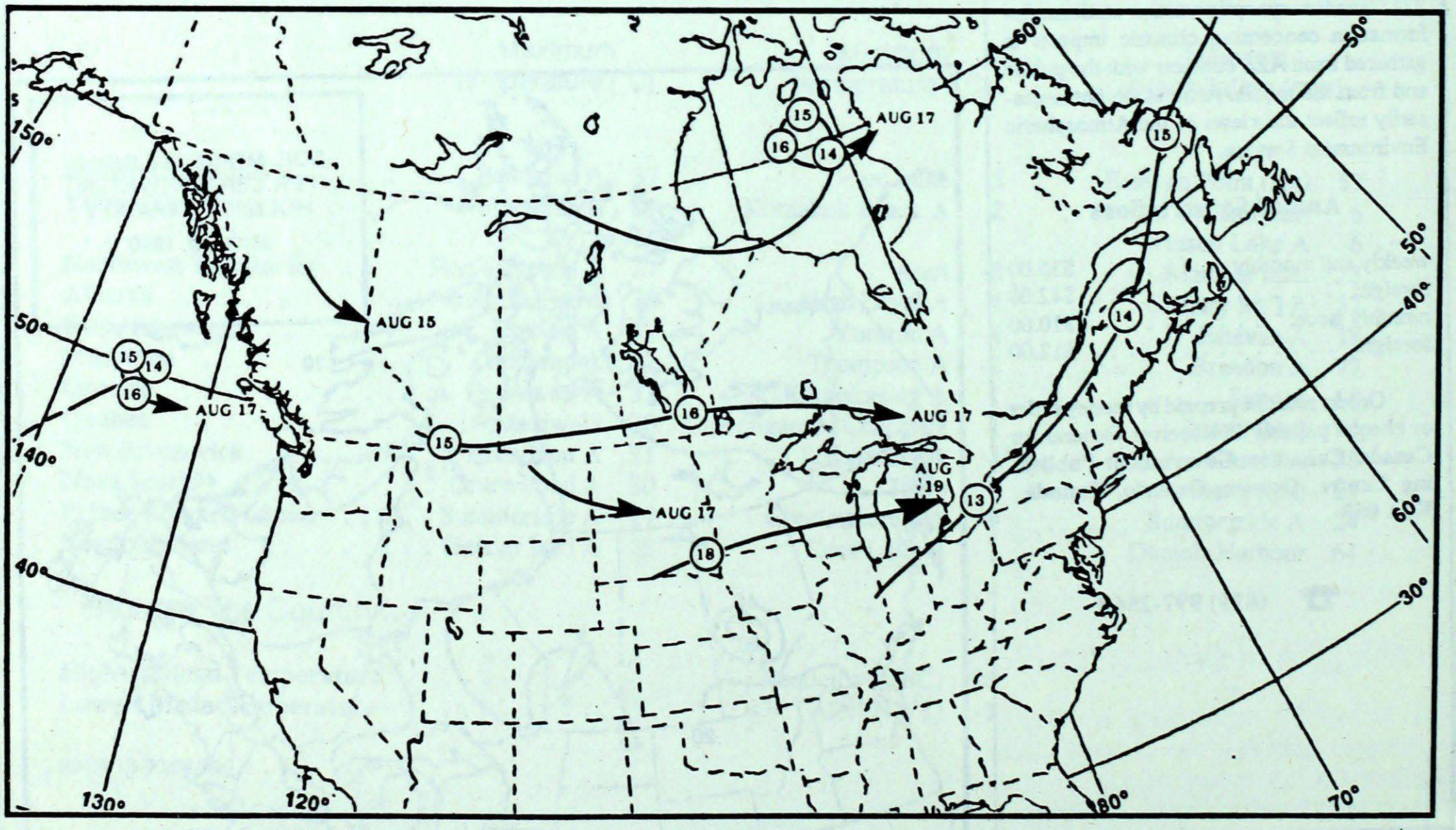
# ATMOSPHERIC CIRCULATION




Mean geopotential height
50-kPa level (10-decametre intervals)

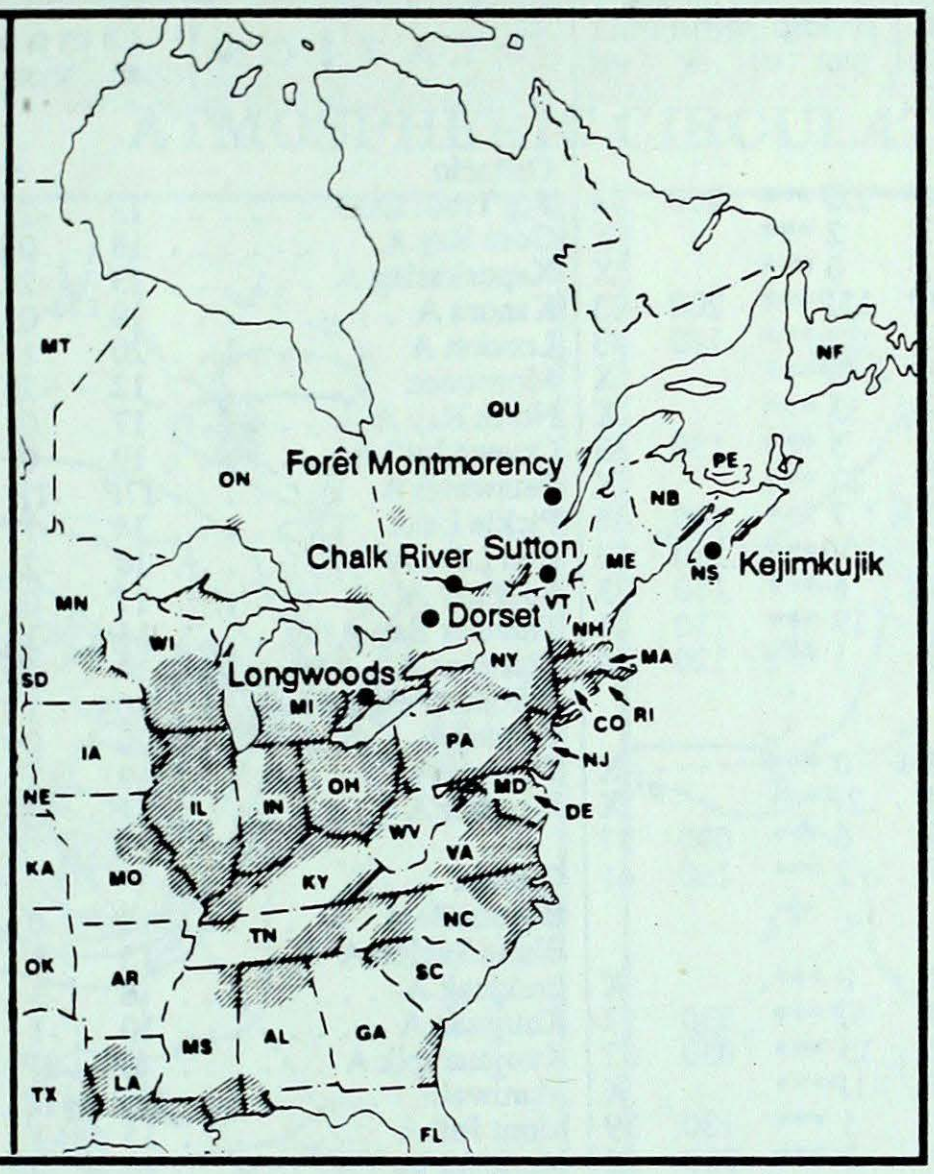



Mean geopotential height anomaly
50-kPa level (10-decametre intervals)




Tracks of low pressure centres at 12:00 U.T. each day during the period.

| | | |
|---|---|---|
| ALABAMA | — | AL |
| ARKANSAS | — | AR |
| CONNECTICUT | — | CO |
| DELAWARE | — | DE |
| FLORIDA | — | FL |
| GEORGIA | — | GA |
| ILLINOIS | — | IL |
| INDIANA | — | IN |
| IOWA | — | IA |
| KANSAS | — | KA |
| KENTUCKY | — | KY |
| LOUISIANA | — | LA |
| MAINE | — | ME |
| MANITOBA | — | MT |
| MARYLAND | — | MD |
| MASSACHUSETTS | — | MA |
| MICHIGAN | — | MI |
| MINNESOTA | — | MN |
| MISSISSIPPI | — | MS |
| MISSOURI | — | MO |
| NEBRASKA | — | NE |
| NEW BRUNSWICK | — | NB |
| NEWFOUNDLAND | — | NF |
| NEW HAMPSHIRE | — | NH |
| NEW JERSEY | — | NJ |
| NEW YORK | — | NY |
| NORTH CAROLINA | — | NC |
| NORTH DAKOTA | — | ND |
| NOVA SCOTIA | — | NS |
| OHIO | — | OH |
| OKLAHOMA | — | OK |
| ONTARIO | — | ON |
| PENNSYLVANIA | — | PA |
| PRINCE EDWARD ISLAND | — | PE |
| QUÉBEC | — | QU |
| RHODE ISLAND | — | RI |
| SOUTH CAROLINA | — | SC |
| SOUTH DAKOTA | — | SD |
| TENNESSEE | — | TN |
| TEXAS | — | TX |
| VERMONT | — | VT |
| VIRGINIA | — | VA |
| WEST VIRGINIA | — | WV |
| WISCONSIN | — | WI |




# ACID RAIN

The reference map (left) shows the locations of sampling sites, where the acidity of precipitation is monitored. All are operated by Environment Canada except Dorset (*), which is a research station operated by the Ontario Ministry of the Environment. The map also shows the approximate areas (shaded), where $SO_2$ and $NO_x$ emissions are greatest.

The table below gives the weekly report summarizing the acidity (or pH) of the acid rain or snow that fell at the collection sites, and a description of the path travelled by the moisture laden air. Environmental damage to lakes and streams is usually observed in sensitive areas regularly receiving precipitation with pH readings less than 4.7, while pH readings less than 4.0 are serious.

Think recycling

Pensez à recycler

August 12 to 18, 1990

| Site | day | pH | amount | | air path to site |
|---|---|---|---|---|---|
| **Longwoods** | 12 | 3.6 | 35 | R | . . . . . Ohio, Southern Ontario |
| | 15 | 3.9 | 8 | R | . . . . . Northern Illinois, Northern Indiana, Southern Michigan |
| | 18 | 3.5 | 6 | R | . . . . . Ohio |
| **Dorset *** | 12 | 4.2 | 2 | R | . . . . . Southern Ontario |
| | 13 | 4.3 | 1 | R | . . . . . Northern Ontario |
| | 14 | 4.7 | 1 | R | . . . . . Wisconsin, Northern Michigan, Lake Huron |
| | 15 | 3.6 | 1 | R | . . . . . Michigan, Southern Ontario |
| **Chalk River** | 13 | 4.0 | 10 | R | . . . . . Northeastern Ontario, Northwestern Quebec |
| | 14 | 4.3 | 3 | R | . . . . . Northern Michigan, Central Ontario |
| **Sutton** | 12 | 3.8 | 10 | R | . . . . . Southern Ontario, Southern Quebec |
| | 13 | 3.6 | 34 | R | . . . . . Pennsylvania, New York |
| | 15 | 4.1 | 4 | R | . . . . . Michigan, Southern Ontario, New York |
| | 18 | 3.3 | 4 | R | . . . . . Southern Ontario, New York, Southern Quebec |
| **Montmorency** | 13 | 4.9 | 20 | R | . . . . . Northern Quebec |
| | 15 | 4.1 | 1 | R | . . . . . Southern Quebec |
| | 17 | 5.1 | 20 | R | . . . . . Wisconsin, Michigan, Central Ontario, Southern Quebec |
| | 18 | 4.6 | 2 | R | . . . . . Central Ontario, Southern Quebec |
| **Kejimkujik** | 12 | 5.0 | 6 | R | . . . . . Atlantic Ocean |
| | 18 | 3.7 | 2 | R | . . . . . New York, New England, Atlantic Ocean |

r = rain (mm), s = snow (cm), m = mixed rain and snow (mm)

| STATION | temperature mean | anom | max | min | precip. ptot | st | wind max dir | vel |
|---|---|---|---|---|---|---|---|---|
| **British Columbia** | | | | | | | | |
| Cape St James | 16P | 2P | 21P | 13P | 12P*** | | 130 | 74 |
| Cranbrook A | 21 | 5 | 33 | 13 | 2 *** | | | X |
| Fort Nelson A | 18 | 3 | 30 | 7 | 0 *** | | | X |
| Fort St John A | 16P | 1P | 27P | 9P | 15P*** | | 200 | 33 |
| Kamloops A | 22 | 2 | 34 | 13 | 22 *** | | 180 | 93 |
| Penticton A | 26P | 7P | 37P | 15P | 0P*** | | | X |
| Port Hardy A | 16 | 2 | 23 | 10 | 33 *** | | | X |
| Prince George A | 18 | 4 | 32 | 7 | 3 *** | | 130 | 63 |
| Prince Rupert A | 16 | 3 | 22 | 10 | 22 *** | | | X |
| Revelstoke A | 20 | 3 | 33 | 11 | 7 *** | | 190 | 46 |
| Smithers A | 18P | 4P | 30P | 7P | 10P*** | | 240 | 52 |
| Vancouver Int'l A | 19 | 2 | 25 | 14 | 6 *** | | 110 | 43 |
| Victoria Int'l A | 17 | 1 | 26 | 10 | 19 *** | | 130 | 41 |
| Williams Lake A | 18 | 3 | 32 | 7 | 1 *** | | 120 | 44 |
| **Yukon Territory** | | | | | | | | |
| Komakuk Beach A | 9 | 3 | 16 | 2 | 0 *** | | | X |
| Teslin (aut) | 16P | * | 27P | 5P | 2P*** | | | X |
| Watson Lake A | 15 | 2 | 25 | 6 | 6 *** | | 090 | 37 |
| Whitehorse A | 17 | 5 | 29 | 7 | 2 *** | | 160 | 61 |
| **Northwest Territories** | | | | | | | | |
| Alert | -1 | -2 | 7 | -8 | 0 *** | | | X |
| Baker Lake A | 8P | -2P | 17P | 3P | 6P*** | | 330 | 57 |
| Cambridge Bay A | 5 | -1 | 9 | 2 | 15 *** | | 030 | 57 |
| Cape Dyer A | 3P | -2P | 8P | 0P | 1P*** | | | X |
| Clyde A | 4 | -1 | 13 | -1 | 1 *** | | 130 | 39 |
| Coppermine A | 6 | -3 | 15 | 0 | 3 *** | | 330 | 52 |
| Coral Harbour A | 6 | -2 | 15 | 1 | 15 *** | | 050 | 85 |
| Eureka | 4 | 0 | 9 | -1 | 1 *** | | 310 | 37 |
| Fort Smith A | 15P | 1P | 23P | 0P | 24P*** | | | X |
| Hall Beach A | 5 | 0 | 10 | 0 | 13 *** | | 080 | 52 |
| Inuvik A | 12 | 1 | 20 | 4 | 0 *** | | | X |
| Iqaluit A | 6 | -1 | 14 | 0 | 10 *** | | 140 | 50 |
| Mould Bay A | 2 | 1 | 8 | -3 | 1 | 1 | 010 | 41 |
| Norman Wells A | 13P | 0P | 22P | 5P | 5P*** | | 140 | 41 |
| Resolute A | 2P | -1P | 7P | -2P | 5P*** | | 090 | 69 |
| Yellowknife A | 12 | -2 | 17 | 6 | 11 *** | | 120 | 44 |
| **Alberta** | | | | | | | | |
| Calgary Int'l A | 18 | 2 | 29 | 10 | 37 *** | | 290 | 63 |
| Cold Lake A | 15 | 0 | 24 | 6 | 10 *** | | 350 | 35 |
| Edmonton Namao A | 16 | 1 | 24 | 9 | 23 *** | | 170 | 37 |
| Fort McMurray A | 15 | 1 | 27 | 5 | 9 *** | | | X |
| High Level A | 16 | 2 | 27 | 4 | 25 *** | | 240 | 46 |
| Jasper | 18 | 3 | 29 | 7 | 20 *** | | | X |
| Lethbridge A | 21 | 3 | 35 | 11 | 3 *** | | 200 | 52 |
| Medicine Hat A | 22 | 3 | 36 | 12 | 6 *** | | 020 | 37 |
| Peace River A | 16 | 2 | 28 | 8 | 1 *** | | 050 | 37 |
| **Saskatchewan** | | | | | | | | |
| Cree Lake | 13 | -1 | 21 | 4 | 9 *** | | 200 | 46 |
| Estevan A | 19 | 0 | 37 | 9 | 38 *** | | 270 | 82 |
| La Ronge A | 15 | 0 | 23 | 6 | 18 *** | | 340 | 37 |
| Regina A | 18 | 0 | 34 | 7 | 4 *** | | 280 | 59 |
| Saskatoon A | 16 | -1 | 27 | 7 | 5 *** | | 360 | 46 |
| Swift Current A | 17 | 0 | 33 | 8 | 6 *** | | 320 | 46 |
| Yorkton A | 15 | -2 | 31 | 1 | 13 *** | | 330 | 63 |
| **Manitoba** | | | | | | | | |
| Brandon A | 17 | 0 | 32 | 8 | 77 *** | | 320 | 89 |
| Churchill A | 10 | -2 | 21 | 4 | 13 *** | | 290 | 70 |
| Lynn Lake A | 11 | -3 | 23 | 1 | 3 *** | | 340 | 54 |
| The Pas A | 15 | -1 | 23 | 8 | 7 *** | | 330 | 78 |
| Thompson A | 11 | -2 | 24 | -2 | 2 *** | | 310 | 56 |
| Winnipeg Int'l A | 19 | 1 | 30 | 9 | 7 *** | | 320 | 72 |

| STATION | temperature mean | anom | max | min | precip. ptot | st | wind max dir | vel |
|---|---|---|---|---|---|---|---|---|
| **Ontario** | | | | | | | | |
| Big Trout Lake | 13 | -2 | 21 | 2 | 43 *** | | 210 | 59 |
| Gore Bay A | 18 | 0 | 26 | 10 | 5 *** | | 060 | 37 |
| Kapuskasing A | 13 | -2 | 23 | 1 | 19 *** | | 180 | 43 |
| Kenora A | 18 | 0 | 26 | 11 | 12 *** | | 080 | 41 |
| London A | 20 | 1 | 28 | 11 | 27 *** | | 080 | 54 |
| Moosonee | 12 | -2 | 24 | 1 | 7 *** | | 220 | 32 |
| North Bay A | 17 | 0 | 27 | 6 | 16 *** | | 240 | 44 |
| Ottawa Int'l A | 19 | 0 | 30 | 11 | 45 *** | | 340 | 50 |
| Petawawa A | 17P | -1P | 32P | 4P | 5P*** | | 020 | 33 |
| Pickle Lake | 14 | -1 | 23 | 4 | 6 *** | | 210 | 44 |
| Red Lake A | 15 | -2 | 24 | 7 | 6 *** | | 220 | 63 |
| Sudbury A | 17 | 0 | 28 | 6 | 0 *** | | 220 | 46 |
| Thunder Bay A | 16 | -1 | 31 | 4 | 7 *** | | 070 | 35 |
| Timmins A | 14 | -2 | 22 | 1 | 11 *** | | 360 | 37 |
| Toronto(Pearson Int'l A) | 20 | 1 | 29 | 13 | 35 *** | | 040 | 37 |
| Trenton A | 20 | 0 | 30 | 11 | 51 *** | | 020 | 46 |
| Wiarton A | 19 | 1 | 27 | 9 | 6 *** | | 050 | 46 |
| Windsor A | 21 | 0 | 28 | 13 | 48 *** | | 010 | 65 |
| **Québec** | | | | | | | | |
| Bagotville A | 16 | 0 | 25 | 5 | 21 *** | | 300 | 39 |
| Blanc Sablon A | 13 | * | 19 | 5 | 77 *** | | 080 | 56 |
| Inukjuak A | 6 | -3 | 13 | 1 | 29 *** | | 200 | 83 |
| Kuujjuaq A | 10 | -1 | 22 | 2 | 9 *** | | 270 | 56 |
| Kuujjuarapik A | 8P | -3P | 21P | 2P | 16P*** | | 170 | 59 |
| Maniwaki | 17P | 1P | 30P | 7P | 21P*** | | 040 | 35 |
| Mont Joli A | 15 | -1 | 23 | 6 | 38 *** | | 240 | 54 |
| Montréal Int'l A | 19 | 0 | 29 | 11 | 50 *** | | 030 | 50 |
| Natashquan A | 14 | 1 | 20 | 6 | 51 *** | | 100 | 44 |
| Québec A | 18 | 0 | 27 | 9 | 34 *** | | 230 | 39 |
| Schefferville A | 9 | -2 | 20 | 3 | 10 *** | | 330 | 52 |
| Sept-Îles A | 15 | 1 | 21 | 6 | 3 *** | | 340 | 44 |
| Sherbrooke A | 17 | 1 | 27 | 6 | 36 *** | | 080 | 33 |
| Val-d'Or A | 14 | -2 | 24 | 3 | 40 *** | | 220 | 39 |
| **New Brunswick** | | | | | | | | |
| Charlo A | 18 | 1 | 28 | 7 | 58 *** | | 130 | 46 |
| Chatham A | * | * | * | 10 | 42 *** | | 230 | 54 |
| Fredericton A | 20 | 1 | 30 | 10 | 22 *** | | 310 | 39 |
| Moncton A | 19 | 1 | 29 | 6 | 13 *** | | 230 | 67 |
| Saint John A | 17P | 0P | 26P | 7P | 7P*** | | 210 | 50 |
| **Nova Scotia** | | | | | | | | |
| Greenwood A | 20 | 2 | 30 | 7 | 10 *** | | 290 | 56 |
| Shearwater A | 20 | 2 | 25 | 10 | 8 *** | | 360 | 52 |
| Sydney A | 20 | 2 | 30 | 11 | 14 *** | | | X |
| Yarmouth A | 18 | 2 | 25 | 10 | 2 *** | | 210 | 48 |
| **Prince Edward Island** | | | | | | | | |
| Charlottetown A | 20 | 2 | 27 | 9 | 22 *** | | 170 | 48 |
| Summerside A | 20 | 1 | 27 | 10 | 24 *** | | 210 | 56 |
| **Newfoundland** | | | | | | | | |
| Cartwright | 12 | 0 | 20 | 5 | 12 *** | | | X |
| Churchill Falls A | 11 | -1 | 21 | 5 | 6 *** | | 280 | 54 |
| Gander Int'l A | 19 | 3 | 28 | 6 | 22 *** | | 230 | 56 |
| Goose A | 13 | -1 | 21 | 6 | 9 *** | | 250 | 43 |
| Port Aux Basques | 16 | 1 | 24 | 9 | 20 *** | | 310 | 54 |
| St John's A | 19 | 4 | 26 | 9 | 41 *** | | 240 | 52 |
| St Lawrence | 16 | 2 | 22 | 8 | 28 *** | | | X |
| Wabush Lake A | 10 | -2 | 21 | 4 | 10 *** | | 310 | 46 |

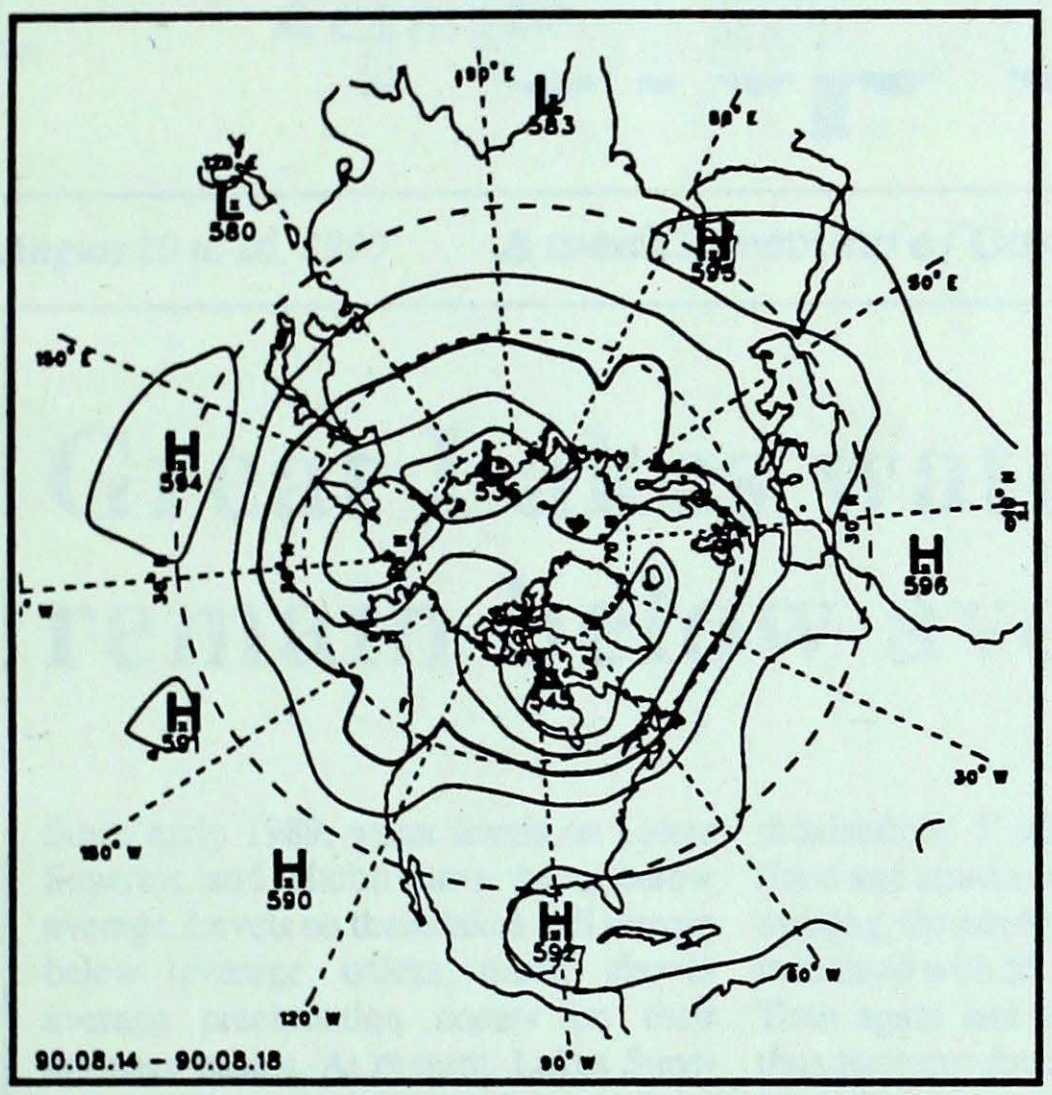
90/08/13-90/08/19

**mean** = mean weekly temperature, °C
**max** = maximum weekly temperature, °C
**min** = minimum weekly temperature, °C
**anom** = mean temperature anomaly, °C

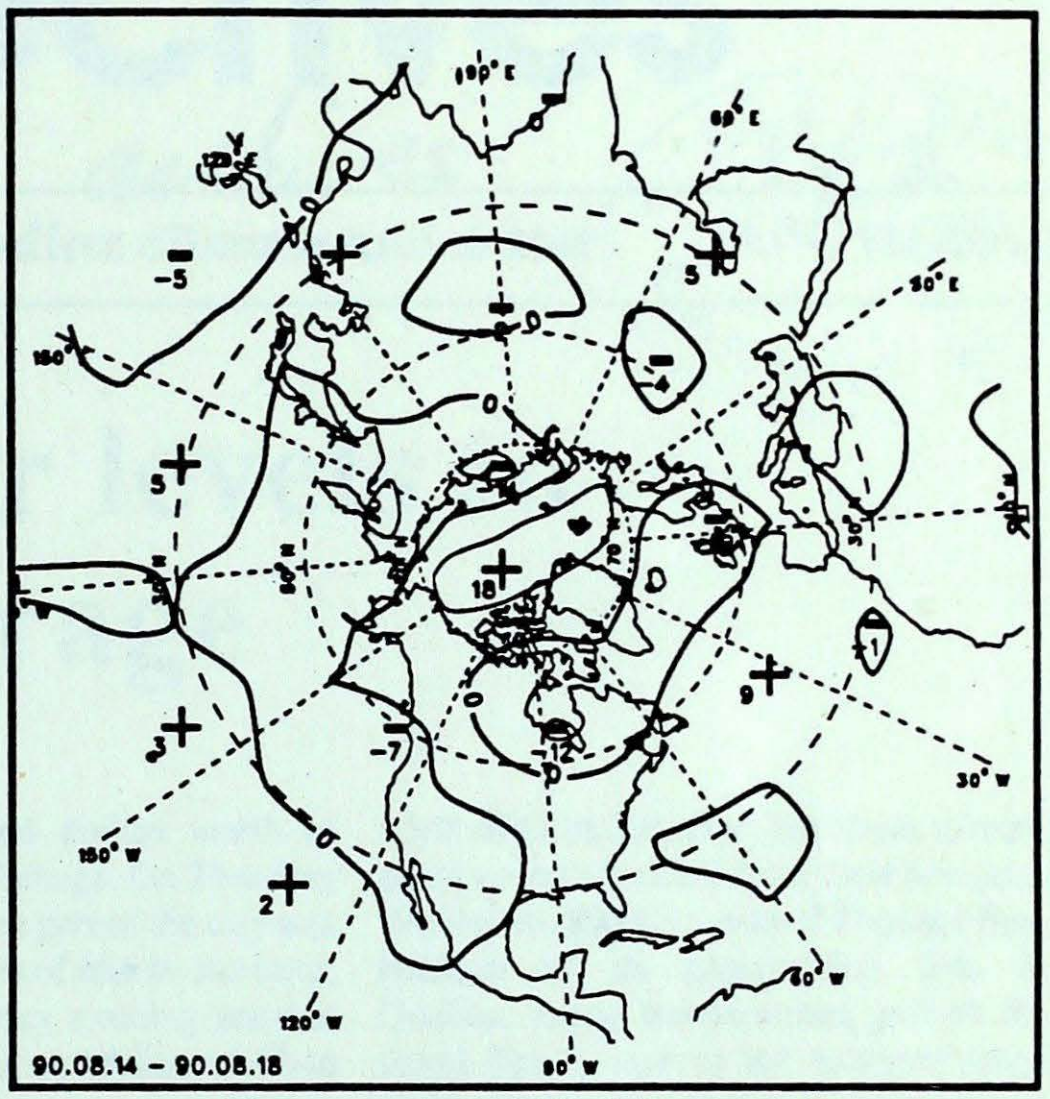
**ptot** = weekly precipitation total in mm
**st** = snow thickness on the ground in cm
**dir** = direction of max wind, deg. from north.
**vel** = wind speed in km/h

**— Annotations —**
**X** = no observation
**P** = less than 7 days of data
***** = missing data when going to printing.

# ATMOSPHERIC CIRCULATION




Mean geopotential height
50-kPa level (10-decametre intervals)




Mean geopotential height anomaly
50-kPa level (10-decametre intervals)

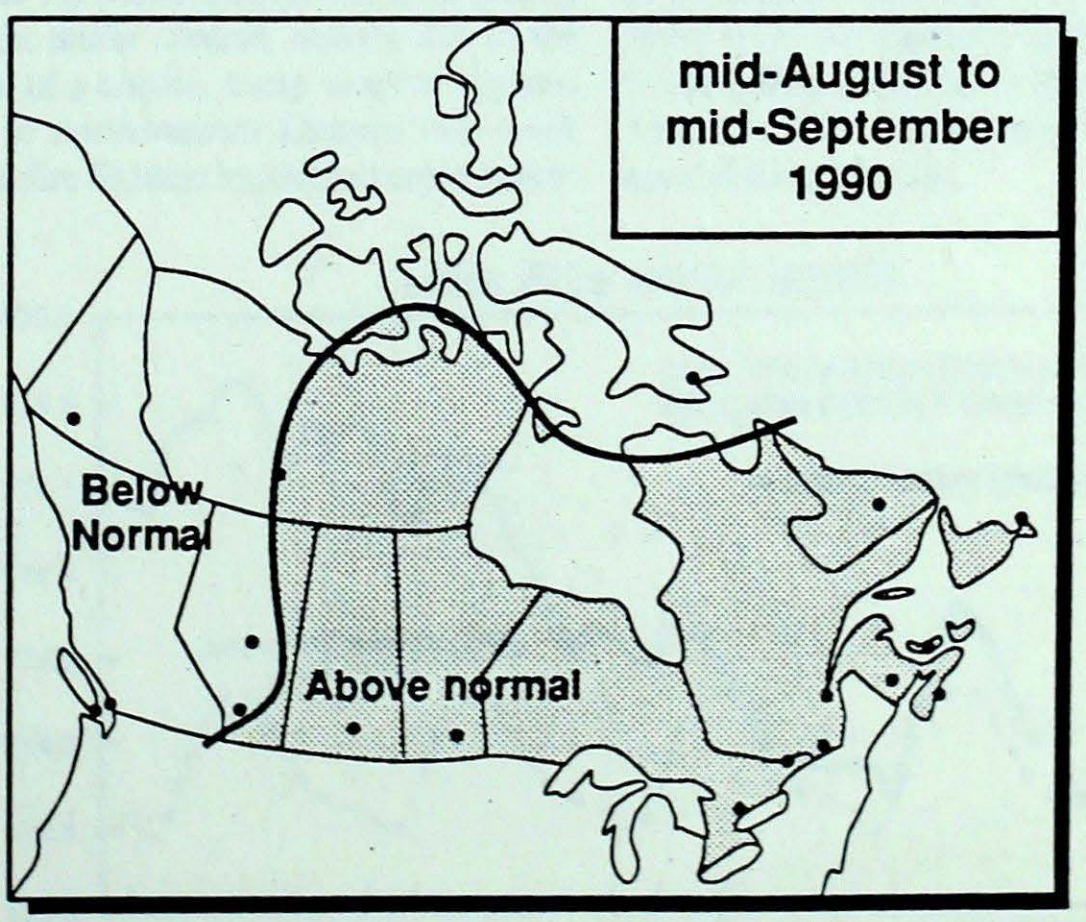
Environment Canada / Environnement Canada

Atmospheric Environment Service / Service de l'environnement atmosphérique

# MONTHLY TEMPERATURE FORECAST

*Normal temperatures for mid-August to mid-September, °C*

| | | | |
|---|---|---|---|
| Whitehorse | 10 | Toronto | 18 |
| Yellowknife | 10 | Ottawa | 17 |
| Iqaluit | 5 | Montréal | 17 |
| Vancouver | 16 | Québec | 15 |
| Victoria | 15 | Fredericton | 16 |
| Calgary | 13 | Halifax | 16 |
| Edmonton | 13 | Charlottetown | 16 |
| Regina | 15 | Goose Bay | 12 |
| Winnipeg | 15 | St. John's | 13 |




Canada