

A.E.S. LIBRARY
OCT 18 1991
BIBLIOTHEQUE S.E.H.

Sep 23 to 29, 1991

A weekly review of Canadian climate and water

Vol. 13 No 39

Ref 1

Autumn begins

There has been some interruption in the publication of Climatic Perspectives because of the strike in the Canadian public service. While numbers 36, 37, and 38 (for the period 2-22 September) and the supplement for August have been printed, they will be delayed in reaching all readers because of disruptions to delivery systems. We continue to routinely collect data flowing through the meteorological communications system, and will make available the normal complement of tables and maps once normal operations resume.

Autumn, in the calendar sense, has now arrived, and many characteristics of this transitional season's climate occurred over the past week. A strong ridge over British Columbia, the Yukon and Alberta continued to produce some fine days for outdoor work - completing the harvest, catching up with construction and woods operations, which were held back (in B.C.) by unsettled periods earlier in summer. A legacy of this soggy period has been a high moisture content of slash piles, which have vented poorly when ignited, and some operations have had to be

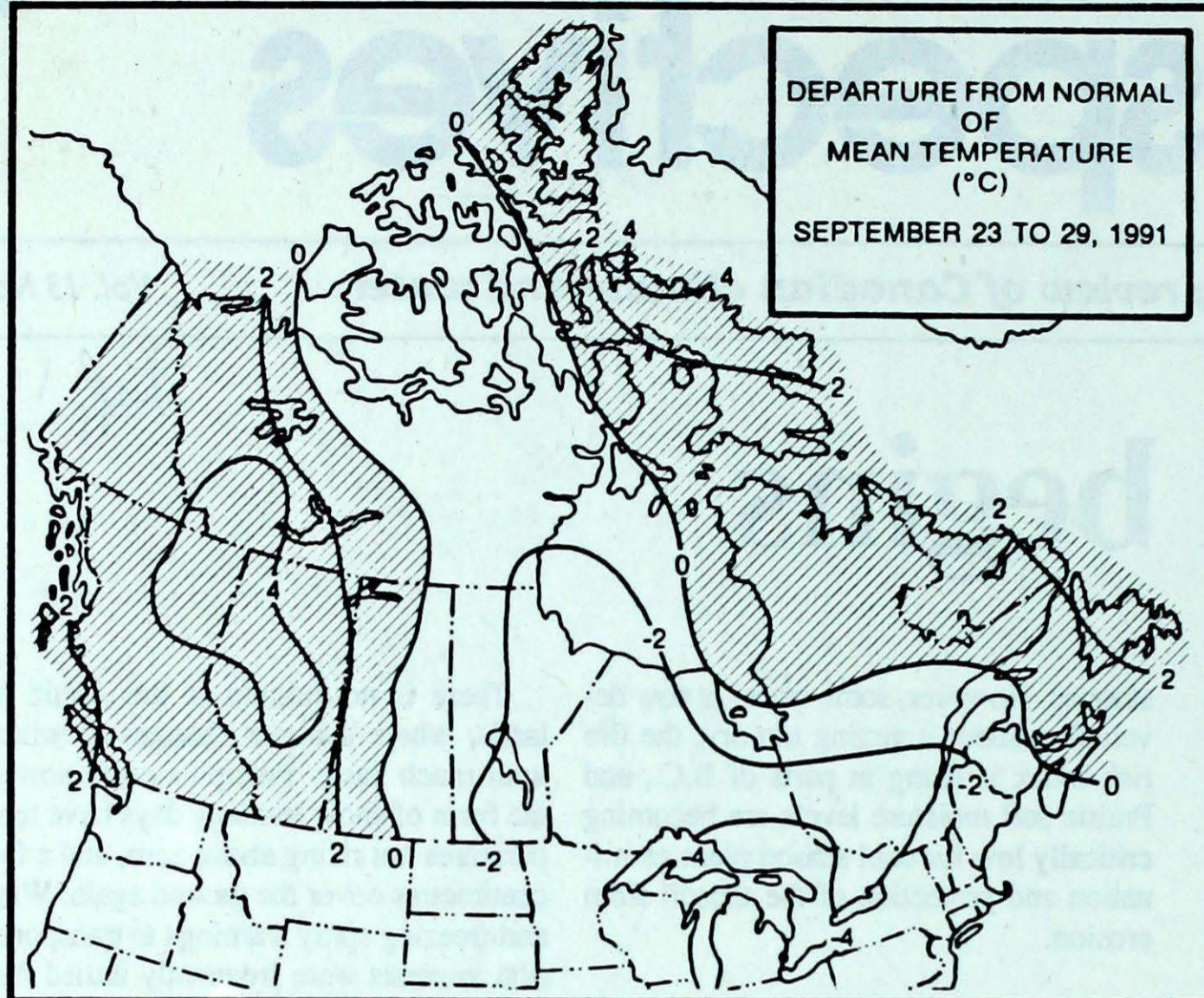
stopped. However, some worry is now developing about it getting too dry; the fire risk index is rising in parts of B.C., and Prairie soil moisture levels are becoming critically low for cool season plant germination and protection of the topsoil from erosion.

The ridge in the West is being typically balanced by a deep trough in eastern Canada, extending from the pole south through Hudson Bay and the Great Lakes Basin, giving lower than normal temperatures eastward from Manitoba. Snowfalls have occurred throughout northern Ontario and Quebec, but mainly in showers producing small water equivalent values. It was no light shower that deluged a narrow region of New Brunswick, far eastern Quebec, and the west shore of the Island of Newfoundland on the 25th 26th and 27th during the passage of intense waves along a cold front. The front extended southwest-northeast and soaked Saint John with 58.1mm of rain in 24 hours and 135mm over the week. Only slightly lesser amounts were reported at Fredericton, Blanc Sablon, Quebec, and Daniel's Harbour, Newfoundland. Strong southwesterly winds accompanied this disturbance, the highest measurements for the week, reaching 95km/h at Saint John. The winds caused some power outages, but surprisingly, reports of flooding were for small areas.

There is no autumn in the Arctic Islands, where summer changes to winter with much haste. Precipitation is now in the form of snow as many days have temperatures not rising above zero, and a few centimetres cover the ground again. Wind and freezing spray warnings to transportation interests were frequently issued during the week. Further south in Keewatin District snow accumulations are just beginning. The southern part of Mackenzie District is still in late fall. The Yellowknife Weather Office reports that residents are wearing heavier clothing; frost forms on cars most nights and puddles freeze, and people don't go out in boats for pleasure any longer - only to fish! Gale and small craft warnings on the lakes and major rivers abound. The rich have gone on holiday to the sunny Yukon.

A look ahead

Canada will return, for the week of October 7, to a more uniform temperature regime. Most of the country, from B. C. to Quebec will be under a westerly circulation with a mild northerly component, and will now experience slightly below normal temperatures. Meanwhile, the provinces further east will see very little change from either the persisting south-westerly circulation or the enduring below normal temperatures.



Weekly normal temperatures (°C)

| | max. | min. |
|---------------------------|------|------|
| Whitehorse A | 9.9 | 0.9 |
| Iqaluit A | 2.0 | -2.4 |
| Yellowknife A | 6.5 | 0.7 |
| Vancouver Int'l A | 16.9 | 9.1 |
| Victoria Int'l A | 17.5 | 7.8 |
| Calgary Int'l A | 15.8 | 2.5 |
| Edmonton Int'l A | 15.2 | 1.8 |
| Regina A | 16.1 | 2.3 |
| Saskatoon A | 15.3 | 2.5 |
| Winnipeg Int'l A | 15.6 | 3.6 |
| Ottawa Int'l A | 17.0 | 6.5 |
| Toronto (Pearson Int'l A) | 18.4 | 7.1 |
| Montréal Int'l A | 17.4 | 7.4 |
| Québec A | 15.3 | 5.1 |
| Fredericton A | 17.3 | 5.2 |
| Saint John A | 15.8 | 6.3 |
| Halifax (Shearwater) | 17.2 | 8.8 |
| Charlottetown A | 16.1 | 7.7 |
| Goose A | 11.2 | 2.8 |
| St John's A | 14.6 | 6.6 |

Weekly temperature and precipitation extremes

| | Maximum temperature (°C) | Minimum temperature (°C) | Heaviest precipitation (mm) |
|-----------------------|--------------------------|--------------------------|-----------------------------|
| British Columbia | Hope A 30 | Puntzi Mountain (aut) -5 | Prince Rupert A 16 |
| Yukon Territory | Watson Lake A 17 | Watson Lake A -4 | Watson Lake A 9 |
| Northwest Territories | Fort Simpson A 19 | Eureka -22 | Cape Dyer A 47 |
| Alberta | Medicine Hat A 27 | High Level A -3 | High Level A 6 |
| Saskatchewan | Elbow (aut) 25 | Meadow Lake A -6 | La Ronge A 13 |
| Manitoba | Brandon A 19 | Grand Rapids (aut) -9 | Thompson A 36 |
| | Winnipeg Int'l A 19 | | |
| Ontario | Port Weller (aut) 21 | Armstrong (aut) -8 | Britt (aut) 44 |
| Québec | Gaspé A 19 | Val-d'Or -5 | Blanc Sablon A 99 |
| New Brunswick | Moncton A 20 | St-Léonard A 0 | Saint John A 135 |
| Nova Scotia | Greenwood A 24 | Greenwood A 1 | Yarmouth A 74 |
| Prince Edward Island | Charlottetown A 21 | Charlottetown A 5 | East Point (aut) 36 |
| Newfoundland | Comfort Cove 23 | Wabush Lake A -3 | Daniel's Harbour 73 |

Across The Country...

| | |
|--------------------------|-----------------|
| Highest Mean Temperature | Hope A (BC) 19 |
| Lowest Mean Temperature | Alert (NWT) -14 |

CLIMATIC PERSPECTIVES
VOLUME 13

Managing Editor *Bruce Findlay*
Editor-in-charge
- weekly/monthly *Andy Radomski*
French version *Alain Caillet*
Data Manager *M. Skarpathiotakis*
Computer support *Robert Eals*
Art Set-up *K. Czaja*
Translation *D. Pokorn*
Cartography *T. Chivers*

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

☎ (416) 739-4438/4330

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

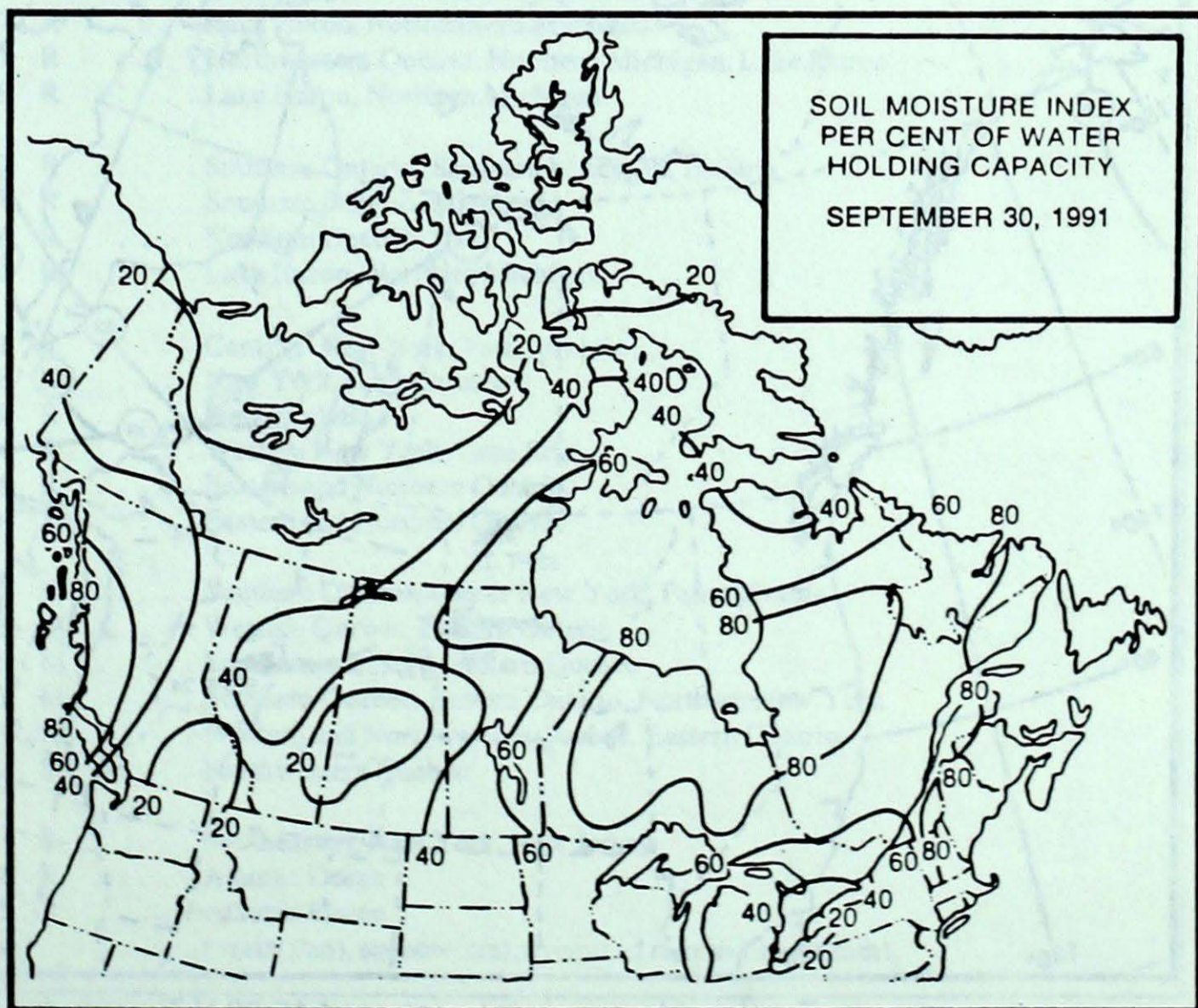
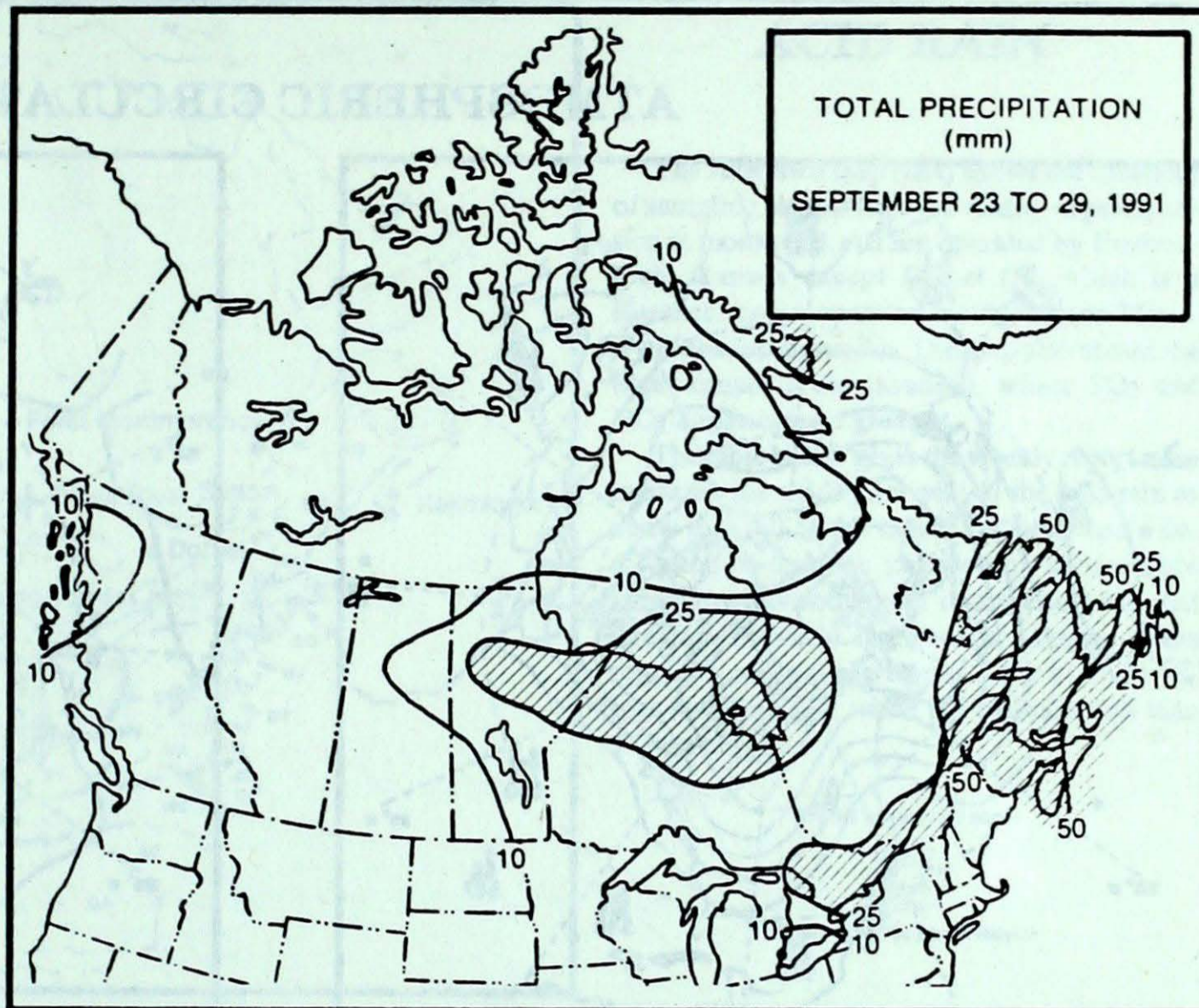
The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of the Atmospheric Environment Service.

Annual Subscriptions

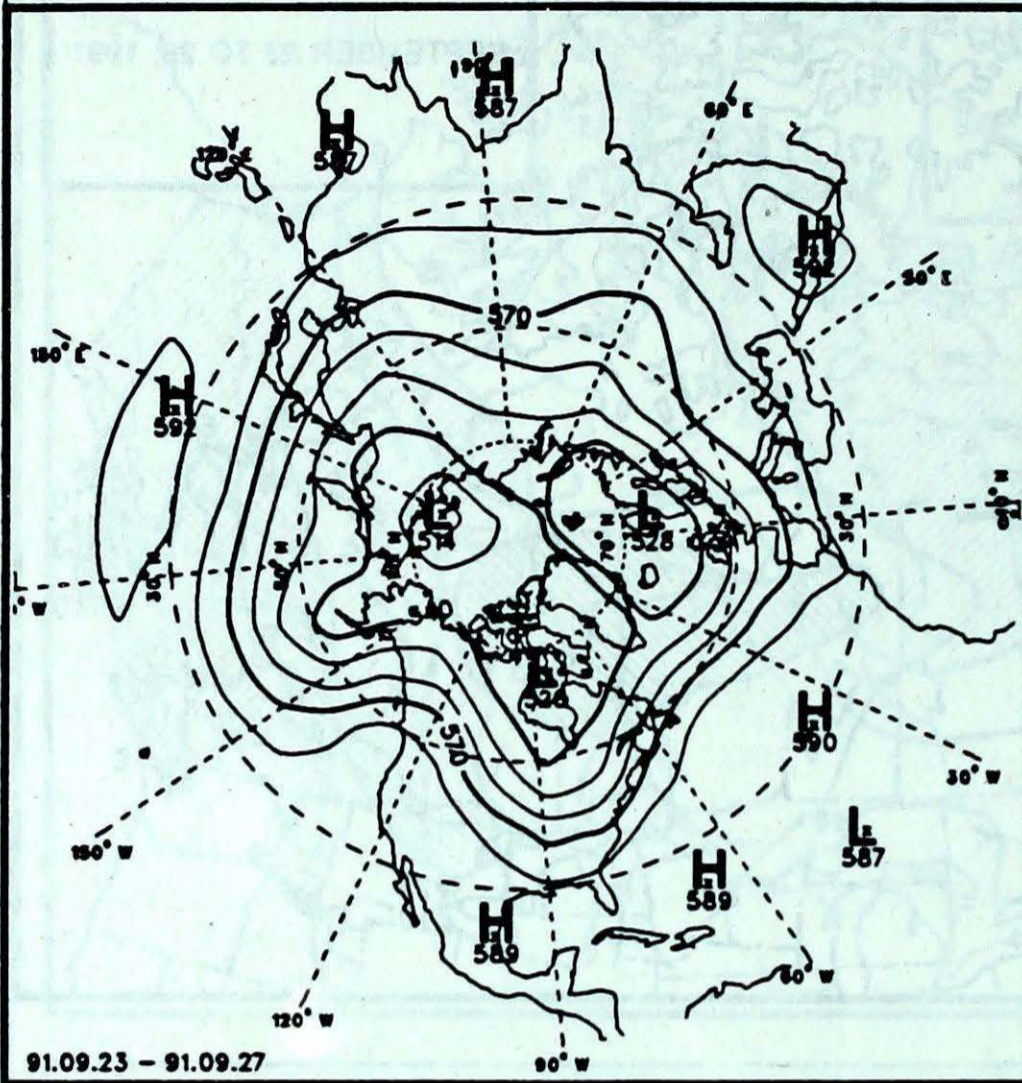
weekly and monthly : \$35.00
foreign: \$42.00
monthly issue: \$10.00
foreign: \$12.00

Orders must be prepaid by money order or cheque payable to Receiver General for Canada. **Canadian Government Publishing Centre, Ottawa, Ontario, Canada K1A 0S9**

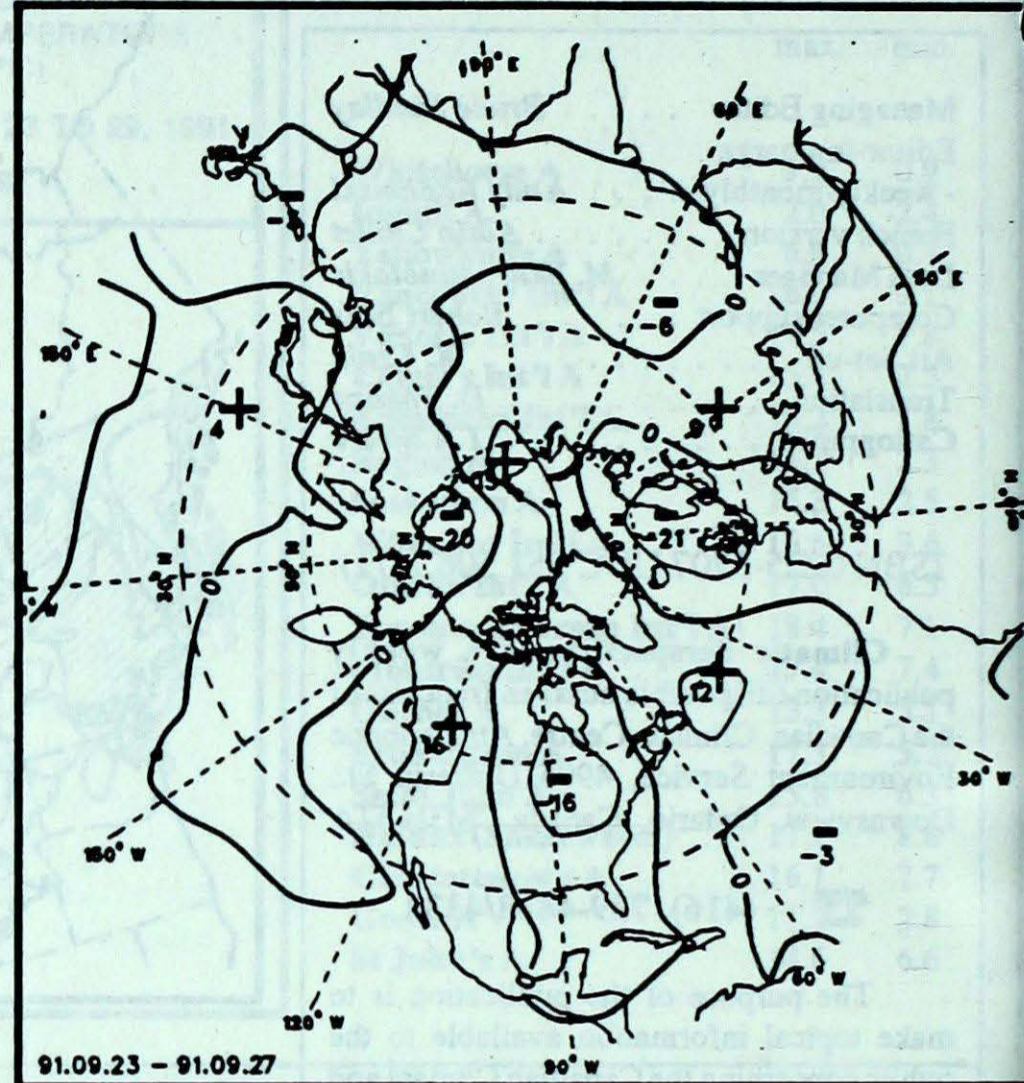
☎ (819) 997-2560



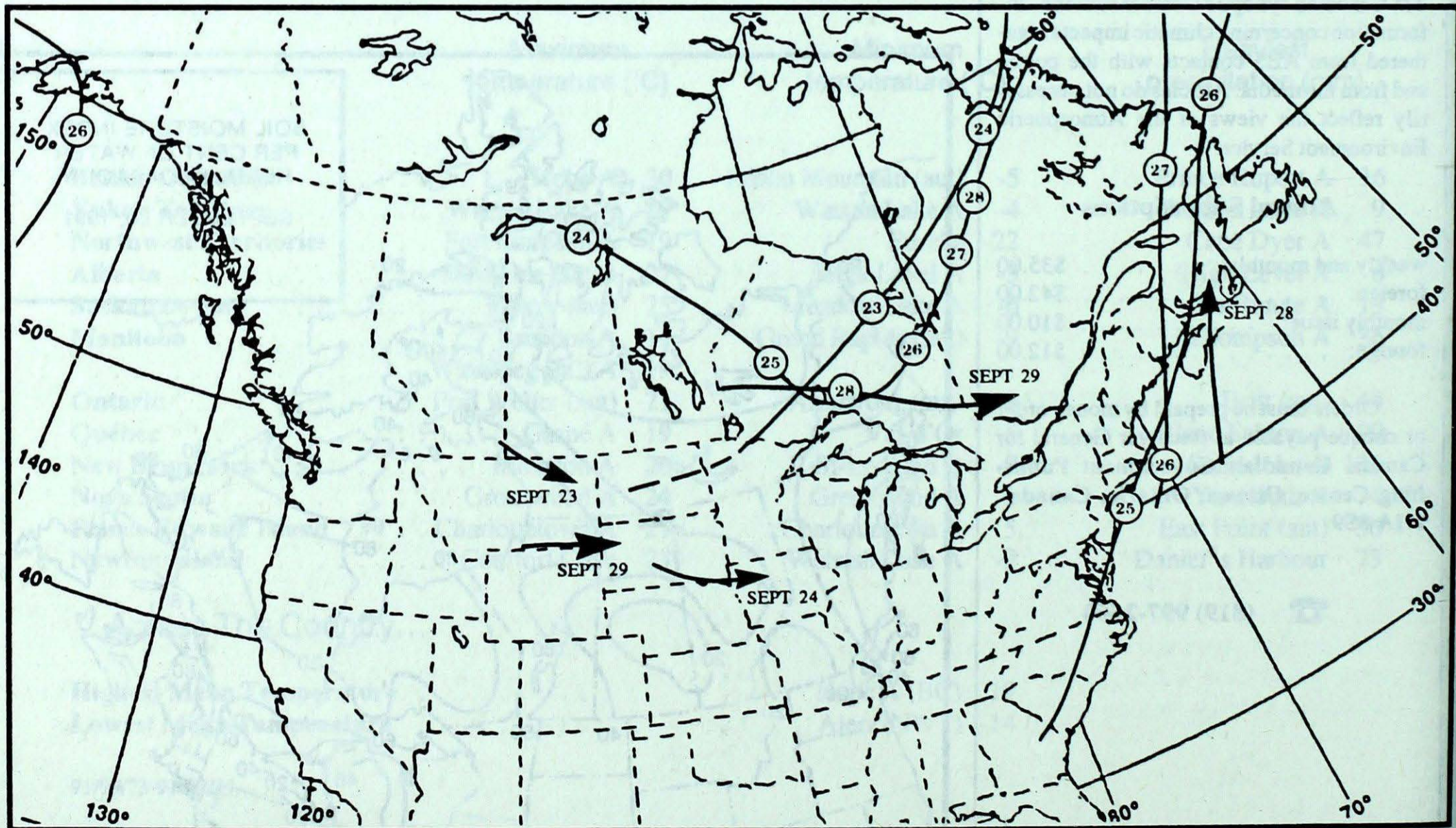
ATMOSPHERIC CIRCULATION



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

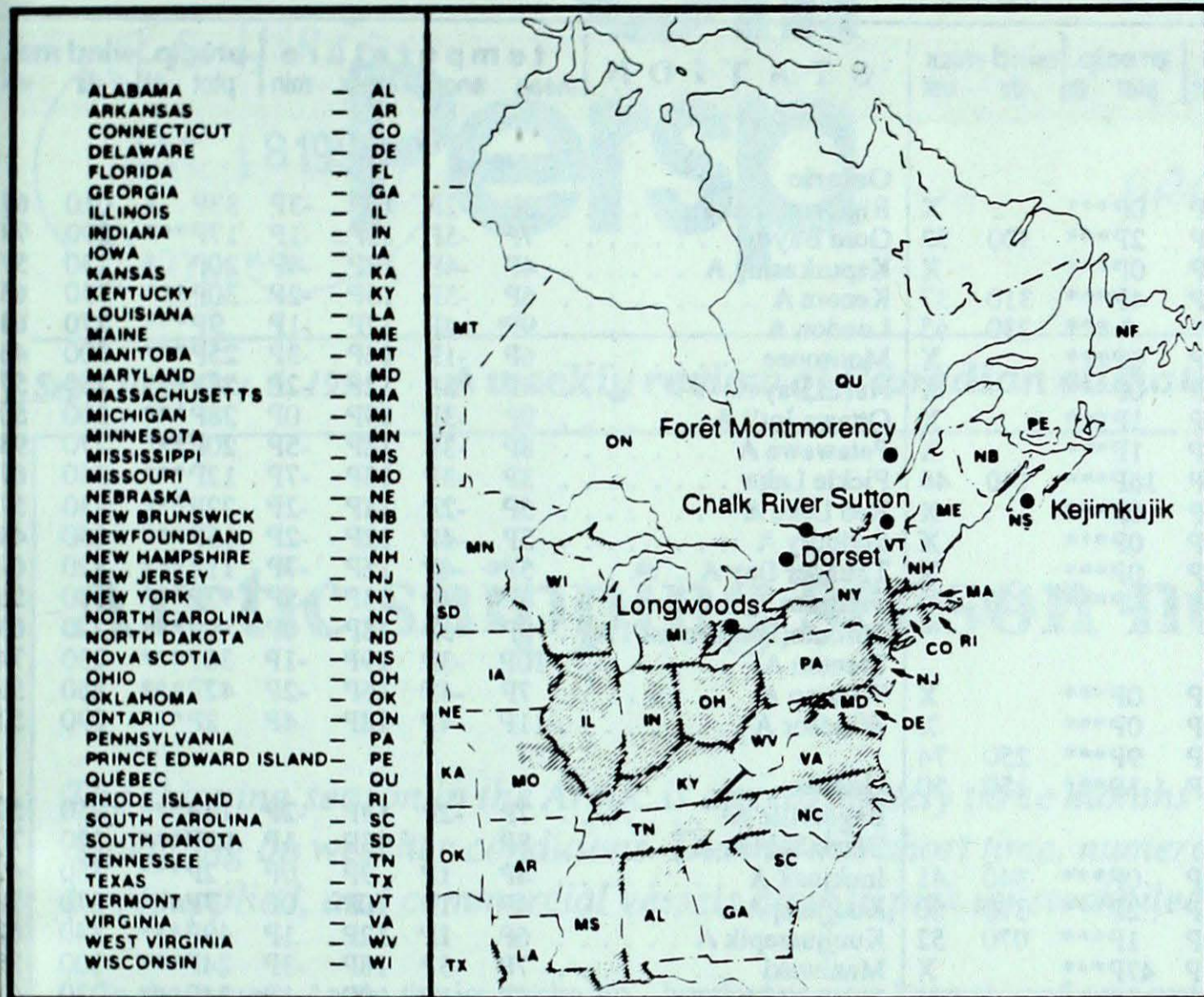


Mean geopotential height anomaly
50-kPa level (10-decametre intervals)



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

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 SO₂ 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.

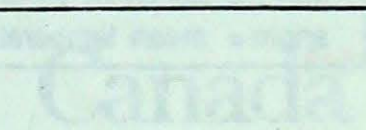
Printed on recycled paper



Imprimé sur du papier recyclé

| Site | day | pH | amount | air path to site |
|--------------------------|-----|-----|--------|--|
| September 22 to 28, 1991 | | | | |
| Longwoods | 22 | 4.0 | 11 R | Northern Indiana, Illinois, Southern Missouri |
| Dorset* | 22 | 4.3 | 14 R | Southern Michigan, Northern Indiana, Northern Illinois |
| | 23 | 4.5 | 2 R | Lake Huron, Northern Michigan, Lake Superior |
| | 26 | 5.1 | 7 R | Lake Huron, Northeastern Michigan |
| | 27 | 4.3 | 1 R | Northwestern Ontario, Northern Michigan, Lake Huron |
| | 28 | 4.7 | 9 R | Lake Huron, Northern Michigan |
| Chalk River | 23 | 4.5 | 9 R | Southern Ontario, Southern Michigan, Indiana |
| | 26 | 5.0 | 1 R | Southern Ontario, Michigan |
| | 27 | 4.4 | 3 R | Northern Ontario |
| | 28 | 4.6 | 4 R | Lake Huron, Northern Michigan |
| Sutton | 23 | 3.9 | 1 R | Central New York, Pennsylvania |
| | 24 | 4.8 | 8 R | New York, Lake Ontario |
| | 25 | 4.8 | 9 R | New England |
| | 26 | 4.4 | 4 R | Western New York, Lake Erie |
| | 27 | 4.7 | 6 R | Eastern and Northern Ontario |
| | 28 | 4.9 | 4 R | Eastern and Northern Ontario |
| Montmorency | 23 | 4.3 | 7 R | Southern Quebec, Center New York, Pennsylvania |
| | 24 | 5.0 | 1 M | Western Quebec, Eastern Ontario |
| | 25 | 5.0 | 10 M | Southern and Northwestern Quebec |
| | 26 | 4.4 | 3 M | Southern Quebec, Eastern Ontario, Northern New York |
| | 27 | 4.8 | 3 M | Western and Northwestern Quebec, Eastern Ontario |
| | 28 | 6.1 | 1 S | Northwestern Quebec |
| Kejimikujik | 23 | 4.7 | 3 R | Southeastern New York, New Jersey |
| | 25 | 4.5 | 7 R | Atlantic Ocean |
| | 26 | 5.0 | 15 R | Atlantic Ocean |

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



| STATION | temperature | | | | precip. ptot | st | wind max | | STATION | temperature | | | | precip. ptot | st | wind max | |
|------------------------------|-------------|------|------|------|--------------|-----|----------|--------------------------|-----------------------------|-------------|------|-----|-----|--------------|----|----------|-----|
| | mean | anom | max | min | | | dir | vel | | mean | anom | max | min | | | dir | vel |
| British Columbia | | | | | | | | Ontario | | | | | | | | | |
| Blue River A | 12P | 3P | 25P | 0P | 0P*** | | | X | Big Trout Lake | 3P | -2P | 10P | -3P | 33P | 1 | 010 | 67 |
| Cape St James | 14P | 2P | 20P | 10P | 2P*** | 300 | 52 | | Gore Bay A | 7P | -5P | 13P | -1P | 17P*** | | 290 | 78 |
| Cranbrook A | 13P | 3P | 23P | 2P | 0P*** | | | X | Kapuskasung A | 4P | -4P | 12P | -4P | 20P | 1 | 230 | 57 |
| Fort Nelson A | 13P | 7P | 21P | 2P | 4P*** | 310 | 37 | | Kenora A | 6P | -3P | 15P | -2P | 30P*** | | 330 | 65 |
| Fort St John A | * | * | 24 | * | **** | 230 | 65 | | London A | 9P | -4P | 17P | -1P | 9P*** | | 270 | 63 |
| Kamloops A | 16P | 3P | 27P | 7P | 0P*** | | | X | Moosonee | 6P | -1P | 14P | -3P | 25P*** | | 300 | 46 |
| Penticton A | 16P | 3P | 24P | 8P | 0P*** | | | X | North Bay A | 4P | -5P | 12P | -2P | 27P*** | | 250 | 57 |
| Port Hardy A | 13P | 2P | 19P | 5P | 1P*** | | | X | Ottawa Int'l A | 9P | -3P | 19P | 0P | 28P*** | | 300 | 50 |
| Prince George A | 12P | 4P | 23P | -4P | 1P*** | | | X | Petawawa A | 8P | -3P | 18P | -5P | 20P*** | | 270 | 98 |
| Prince Rupert A | 12P | 1P | 20P | 4P | 16P*** | 140 | 46 | | Pickle Lake | 3P | -3P | 13P | -7P | 12P*** | | 340 | 67 |
| Smithers A | 12P | 4P | 24P | -3P | 0P*** | | | X | Red Lake A | 5P | -2P | 14P | -2P | 22P*** | | 330 | 57 |
| Vancouver Int'l A | 15P | 2P | 22P | 10P | 0P*** | | | X | Sudbury A | 5P | -4P | 12P | -2P | 15P*** | | 260 | 44 |
| Victoria Int'l A | 15P | 2P | 26P | 7P | 0P*** | | | X | Thunder Bay A | 5P | -4P | 15P | -7P | 11P*** | | 320 | 69 |
| Williams Lake A | 12P | 4P | 24P | 0P | 0P*** | 220 | 74 | | Timmins A | 4P | -4P | 13P | -5P | 7P*** | | 280 | 56 |
| Yukon Territory | | | | | | | | Québec | | | | | | | | | |
| Komakuk Beach A | 2P | 4P | 5P | -1P | 0P*** | | | X | Bagotville A | 7P | -2P | 13P | -2P | 14P*** | | 250 | 50 |
| Teslin (aut) | 7P | * | 15P | -2P | 0P*** | | | X | Blanc Sablon A | 8P | * | 13P | 1P | 99P*** | | 220 | 70 |
| Watson Lake A | 7P | 2P | 17P | -4P | 9P*** | 250 | 74 | | Inukjuak A | 4P | 1P | 9P | 0P | 2P*** | | 350 | 46 |
| Whitehorse A | 7P | 2P | 16P | -1P | 3P*** | 150 | 50 | | Kuujuuaq A | 4P | 1P | 10P | 0P | 7P*** | | 270 | 78 |
| Northwest Territories | | | | | | | | New Brunswick | | | | | | | | | |
| Alert | -14P | 0P | -10P | -18P | 0P*** | 340 | 41 | | Chatham A | * | * | * | * | **** | | | X |
| Baker Lake A | -3P | -1P | 2P | -6P | 2P*** | 310 | 50 | | Fredericton A | 10P | -1P | 20P | 1P | 111P*** | | 200 | 70 |
| Cambridge Bay A | -6P | -2P | -2P | -8P | 1P*** | 070 | 52 | | Miscou Island (aut) | 10P | -2P | 18P | 5P | 0P*** | | | |
| Cape Dyer A | -2P | 3P | 3P | -7P | 47P*** | | | X | Moncton A | 12P | 1P | 20P | 2P | 83P*** | | 160 | 67 |
| Clyde A | 0P | 3P | 2P | -7P | 18P*** | | | X | Saint John A | 12P | 1P | 19P | 3P | 135P*** | | 190 | 95 |
| Coppermine A | -2P | -1P | 3P | -6P | 10P*** | 100 | 50 | | Nova Scotia | | | | | | | | |
| Coral Harbour A | -3P | 0P | 1P | -6P | 1P*** | 330 | 43 | | Greenwood A | 13P | 0P | 24P | 1P | 43P*** | | 190 | 83 |
| Eureka | -13P | 1P | -6P | -22P | 0P*** | | | X | Shearwater A | 14P | 1P | 20P | 7P | 61P*** | | 180 | 59 |
| Fort Smith A | 6P | 1P | 13P | -3P | 4P*** | 320 | 69 | | Sydney A | 15P | 3P | 21P | 3P | 19P*** | | 200 | 67 |
| Hall Beach A | -2P | 2P | 1P | -7P | 6P | 1 | 340 | 46 | Yarmouth A | 12P | 0P | 19P | 5P | 74P*** | | 180 | 61 |
| Inuvik A | 3P | 3P | 7P | -2P | 4P*** | | | X | Prince Edward Island | | | | | | | | |
| Iqaluit A | 1P | 1P | 5P | -4P | 10P*** | 310 | 46 | | Charlottetown A | 13P | 1P | 21P | 5P | 35P*** | | 181 | 54 |
| Mould Bay A | * | * | * | * | **** | | | X | East Point (auto) | 13P | * | 18P | 6P | 36P*** | | | |
| Norman Wells A | 6P | 3P | 16P | -1P | 3P*** | 130 | 44 | | Newfoundland | | | | | | | | |
| Resolute A | -9P | -1P | -4P | -17P | 0P*** | 030 | 57 | | Cartwright | 9P | 3P | 20P | 3P | 40P*** | | 350 | 69 |
| Yellowknife A | 6P | 2P | 12P | 0P | 2P*** | 330 | 57 | | Churchill Falls A | 5P | 2P | 17P | -2P | 11P*** | | 240 | 57 |
| Alberta | | | | | | | | 91/09/23-91/09/29 | | | | | | | | | |
| Calgary Int'l A | 13P | 4P | 26P | 3P | 0P*** | 350 | 44 | | Gander Int'l A | 14P | 4P | 23P | 4P | 7P*** | | 210 | 61 |
| Cold Lake A | 10P | 2P | 20P | 1P | 0P*** | 280 | 78 | | Goose A | 9P | 2P | 21P | 2P | 28P*** | | 230 | 54 |
| Edmonton Namao A | 13P | 5P | 23P | 4P | 0P*** | 310 | 57 | | Port Aux Basques | 11P | 1P | 16P | 4P | 42P*** | | 160 | 70 |
| Fort McMurray A | 10P | 3P | 19P | 1P | 1P*** | 330 | 69 | | St John's A | 14P | 4P | 23P | 5P | 2P*** | | 240 | 65 |
| High Level A | 10P | 3P | 19P | -3P | 6P*** | 310 | 46 | | St Lawrence | 12P | 2P | 16P | 5P | 9P*** | | | X |
| Jasper | 11P | 3P | 23P | 0P | 0P*** | | | X | Wabush Lake A | 4P | 0P | 15P | -3P | 12P | 3 | 270 | 46 |
| Lethbridge A | 14P | 3P | 27P | 2P | 0P*** | 270 | 37 | | | | | | | | | | |
| Medicine Hat A | 14P | 3P | 27P | 3P | 0P*** | 330 | 46 | | | | | | | | | | |
| Peace River A | 12P | 5P | 22P | 1P | 1P*** | 270 | 61 | | | | | | | | | | |
| Saskatchewan | | | | | | | | | | | | | | | | | |
| Cree Lake | 7P | 1P | 17P | -2P | 4P*** | 330 | 106 | | | | | | | | | | |
| Estevan A | 10P | 0P | 22P | 1P | 0P*** | 340 | 74 | | | | | | | | | | |
| La Ronge A | 7P | 0P | 16P | -3P | 13P*** | 350 | 70 | | | | | | | | | | |
| Regina A | 11P | 2P | 24P | 1P | 0P*** | 310 | 78 | | | | | | | | | | |
| Saskatoon A | 10P | 1P | 24P | -1P | 8P*** | 330 | 56 | | | | | | | | | | |
| Swift Current A | 11P | 1P | 25P | 0P | 4P*** | 330 | 57 | | | | | | | | | | |
| Yorkton A | 8P | -1P | 21P | -3P | 3P*** | 300 | 78 | | | | | | | | | | |
| Manitoba | | | | | | | | | | | | | | | | | |
| Brandon A | 7P | -2P | 19P | -4P | 3P*** | 310 | 76 | | | | | | | | | | |
| Churchill A | 0P | -3P | 6P | -3P | 14P*** | 330 | 46 | | | | | | | | | | |
| Lynn Lake A | 3P | -1P | 13P | -5P | 24P*** | 330 | 65 | | | | | | | | | | |
| The Pas A | 5P | -2P | 15P | -3P | 9P*** | 330 | 85 | | | | | | | | | | |
| Thompson A | 2P | -2P | 13P | -4P | 36P*** | 340 | 48 | | | | | | | | | | |
| Winnipeg Int'l A | 8P | -2P | 19P | -4P | 15P*** | 320 | 98 | | | | | | | | | | |

mean = mean weekly temperature, °C ptot = weekly precipitation total in mm
 max = maximum weekly temperature, °C st = snow thickness on the ground in cm
 min = minimum weekly temperature, °C dir = direction of max wind, deg. from north.
 anom = mean temperature anomaly, °C vel = wind speed in km/h

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