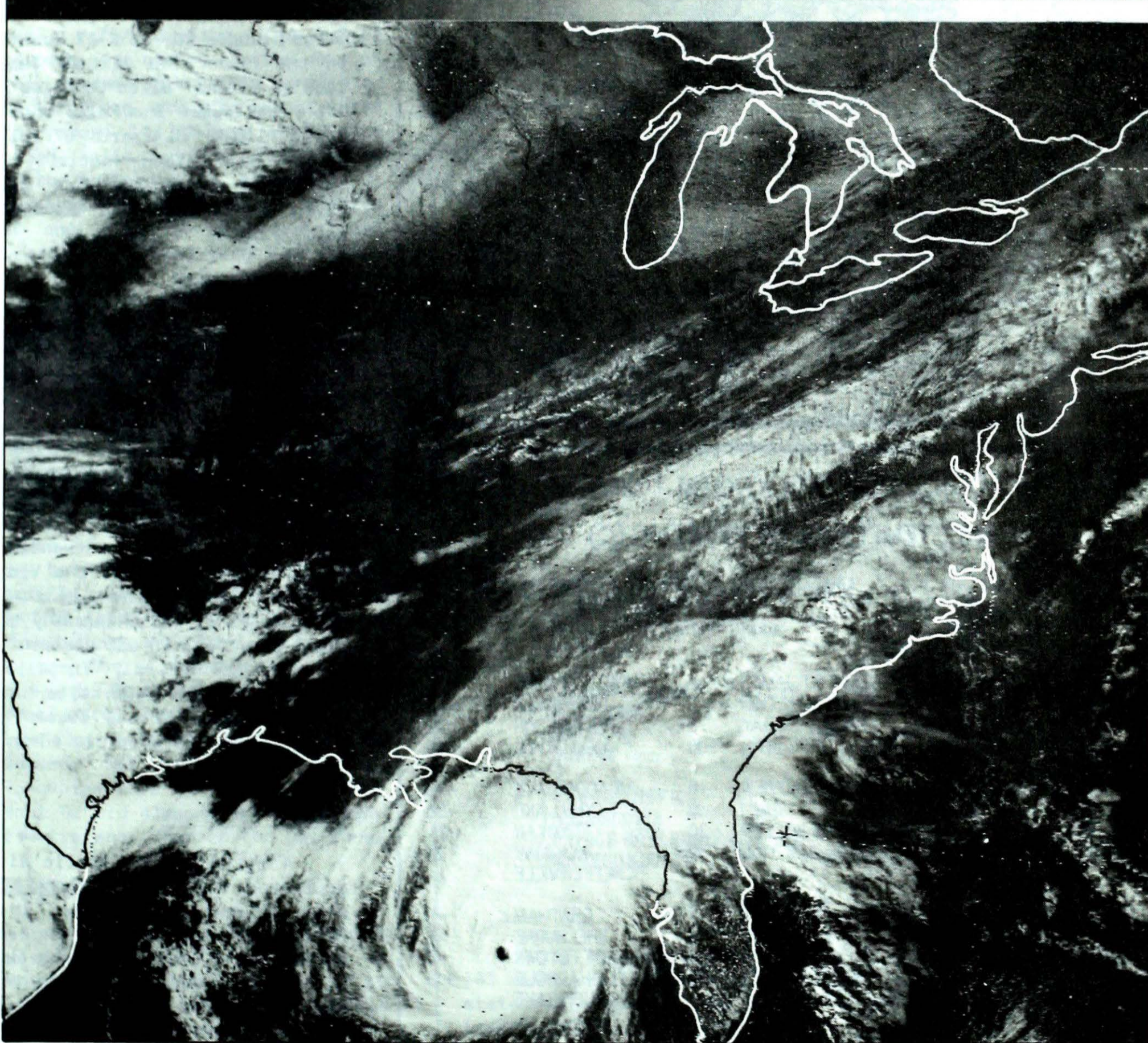


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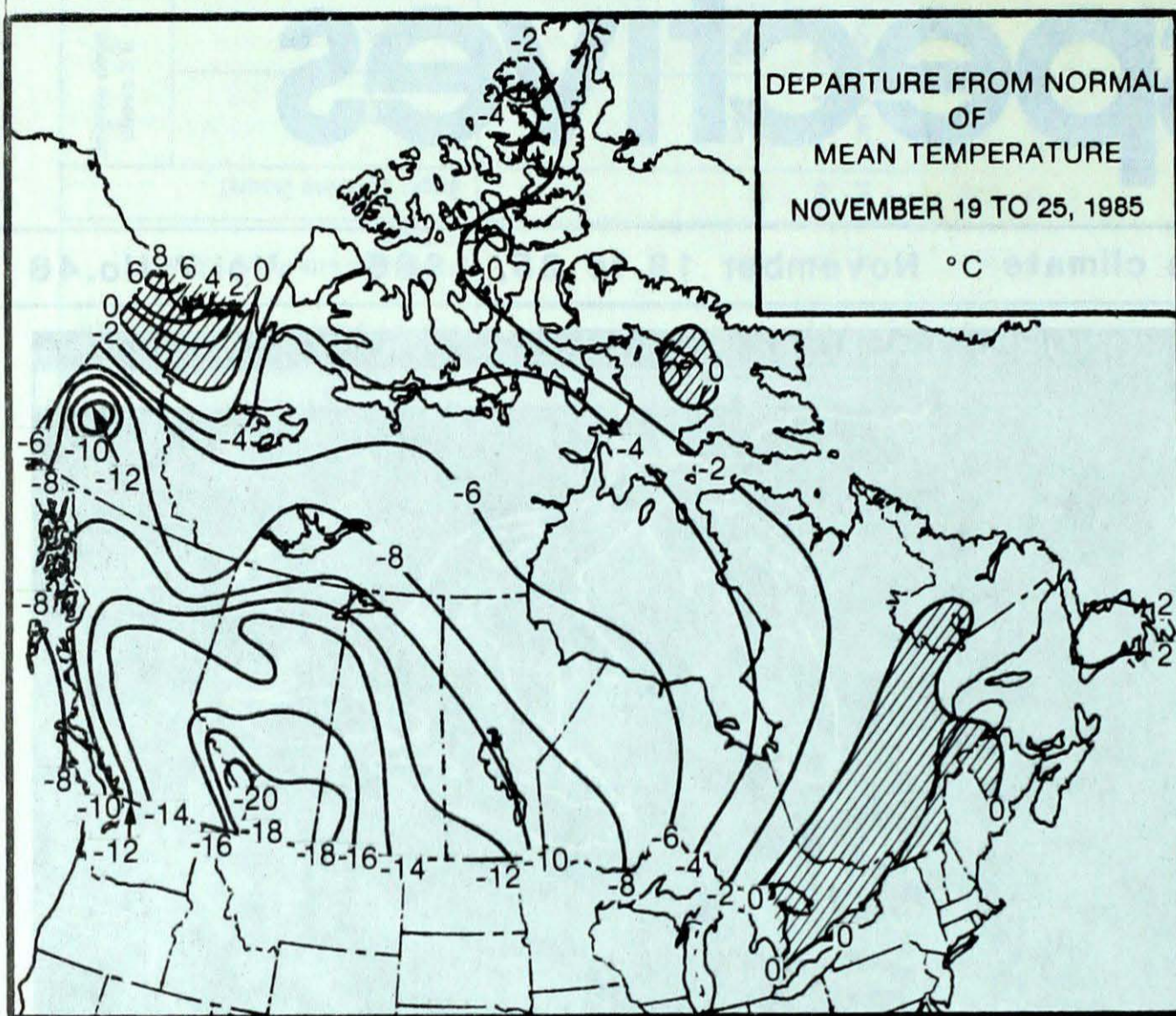


This NOAA 9 photograph taken during the afternoon of November 20, 1985 shows hurricane Kate, with a very well defined eye, in the Gulf of Mexico. On the northern plains, a heavy snowfall deposited by a storm the previous day is clearly evident.

● **Western Canada in a deep freeze**

- many temperature records shattered
- significant snowfalls along the Pacific coast
- blizzards hit Manitoba and Northwestern Ontario

TEMPERATURE



ACROSS THE COUNTRY...

Yukon and Northwest Territories

With the exception of the western Arctic, a very cold airmass continued to have a firm grip over the north. Minimum temperatures in the Territories fell to the minus forties, setting new daily temperature records. On November 25, the thermometer plunged to -46°C at Ross River in the Yukon. The maximum temperature at Eureka failed to climb above -36°C all week. Snowfalls were generally light. Blizzards effectively halted all outdoor activity on a number of occasions. Ice bridges have been established across most major rivers.

British Columbia

Record breaking cold weather plagued the whole province. There were numerous new all-time November temperature records. This is the longest November cold spell since 1955. In the northern half of the province readings dropped to the minus thirties, while in the southern interior minimums frequently registered in the minus twenties. On November 23, Vancouver and Victoria recorded -12.9°C and -11.6°C , respectively. It was changeably sunny; light snow fell in all districts. On November 19 and 21, Victoria received sizable snowfalls, which disrupted traffic and caused power outages; schools were closed in some districts.

Prairie Provinces

A bitterly cold Arctic airmass dominated the weather scene. Skies were predominantly sunny in the north and west. Minimum temperature records were shattered each day as night time readings plunged to the minus thirties. A number of locations established new all-time November records. For the most part snowfalls were light. On November 19, a blizzard swept across southern Manitoba, dumping 20 cm of snow. Strong winds gusting to 60 km/h piled the snow into deep drifts. In many rural areas school buses did not run because of white-outs. Clean up costs in Winnipeg alone have been estimated at 1.5 million.

WEEKLY TEMPERATURE EXTREME (C)

| | MAXIMUM | MINIMUM |
|------------------------------|--------------------|--------------------|
| BRITISH COLUMBIA | CAPE ST JAMES 4 | FORT ST. JOHN -39 |
| YUKON TERRITORY | HAINES JUNCTION -2 | ROSS RIVER -46 |
| NORTHWEST TERRITORIES | FROBISHER BAY 5 | FORT SIMPSON -42 |
| ALBERTA | CALGARY INT'L -10 | HIGH LEVEL -43 |
| SASKATCHEWAN | BROADVIEW -11 | MEADOW LAKE -42 |
| MANITOBA | GIMLI -10 | LYNN LAKE -38 |
| ONTARIO | PORT WELLER 20 | ATIKOKAN -34 |
| QUEBEC | SUTTON JUNCTION 19 | INUKJUAK -23 |
| | | SCHIEFFERVILLE |
| NEW BRUNSWICK | MONCTON 14 | CHATHAM -11 |
| NOVA SCOTIA | GREENWOOD 16 | SHELBURNE -8 |
| PRINCE EDWARD ISLAND | SUMMERSIDE 12 | CHARLOTTETOWN -7 |
| NEWFOUNDLAND | ST LAWRENCE 8 | BATTLE HARBOUR -16 |
| | | WABUSH LAKE |

ACROSS THE NATION

| | | | |
|---------------------------------|-----|--------------|-----|
| WARMEST MEAN TEMPERATURE | 5 | SABLE ISLAND | NS |
| COOLEST MEAN TEMPERATURE | -39 | EUREKA | NWT |

Ontario

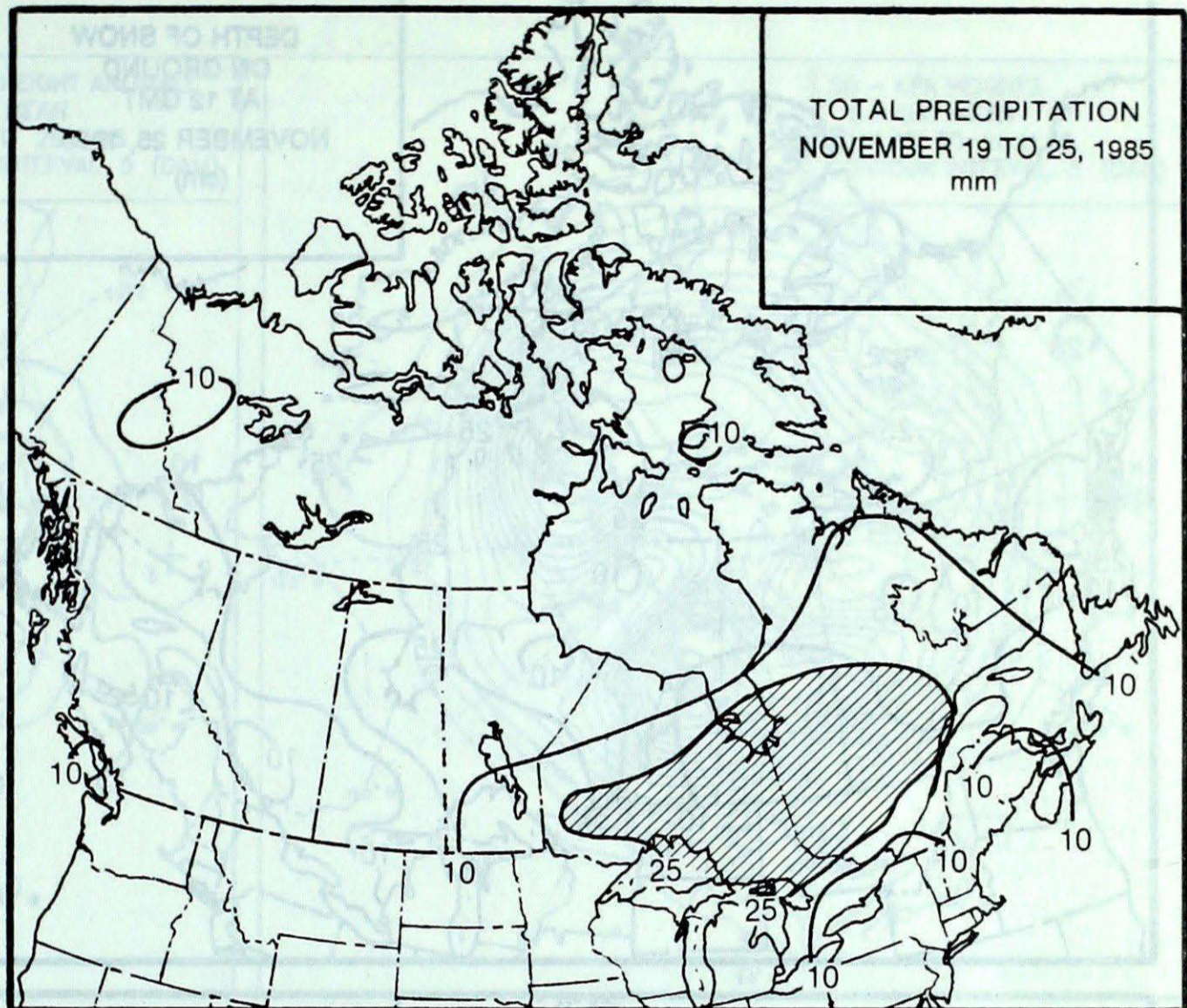
An intense storm moved across northern Ontario on November 19-20, resulting in near blizzard conditions in the northwest. The storm dumped almost 40 cm of snow on some communities. A strong southerly flow pumped record breaking mild weather into southern and central Ontario, and on November 19 and 20 many daily maximum temperature records were broken. In the wake of this system, Arctic air penetrated the province, dropping temperatures to record low values across the north, while day-time values in the south hovered near freezing. On November 22, up to 15 centimetres of snow fell on the lower Great Lakes, disrupting rush hour traffic.

Quebec

A vigorous disturbance moved across central Quebec, resulting in windy conditions on November 20. At Abitibi winds gusting to 89 km/h ripped shingles off roofs, uprooted trees and damaged outdoor structures. Many cars were damaged because of flying debris. The same day temperatures in southern Quebec briefly soared to the upper teens, and at least eleven daily temperature records were tied. In southern Quebec, the rain changed to snow by mid-week. On November 22, a 5 to 10 centimetre snowfall caused many traffic accidents in southern Quebec. Ski centres in Eastern Townships have begun snow making. Mont Orford already has a 100 centimetre snow base on the ski runs.

Atlantic Province

An intense low pressure system moved across northern Labrador on November 21, allowing cold air to push into the region by mid-week. Temperatures dropped to below seasonal values everywhere. In the Maritimes light rain and drizzle early in the period changed to snow flurries. Up to 10 cm of snow fell in Labrador. Above freezing temperatures early in the week ranged from the single digits in the north to as high as the mid-teens in the south. By week's end daytime readings didn't climb much above freezing.

**HEAVIEST WEEKLY PRECIPITATION (mm)**

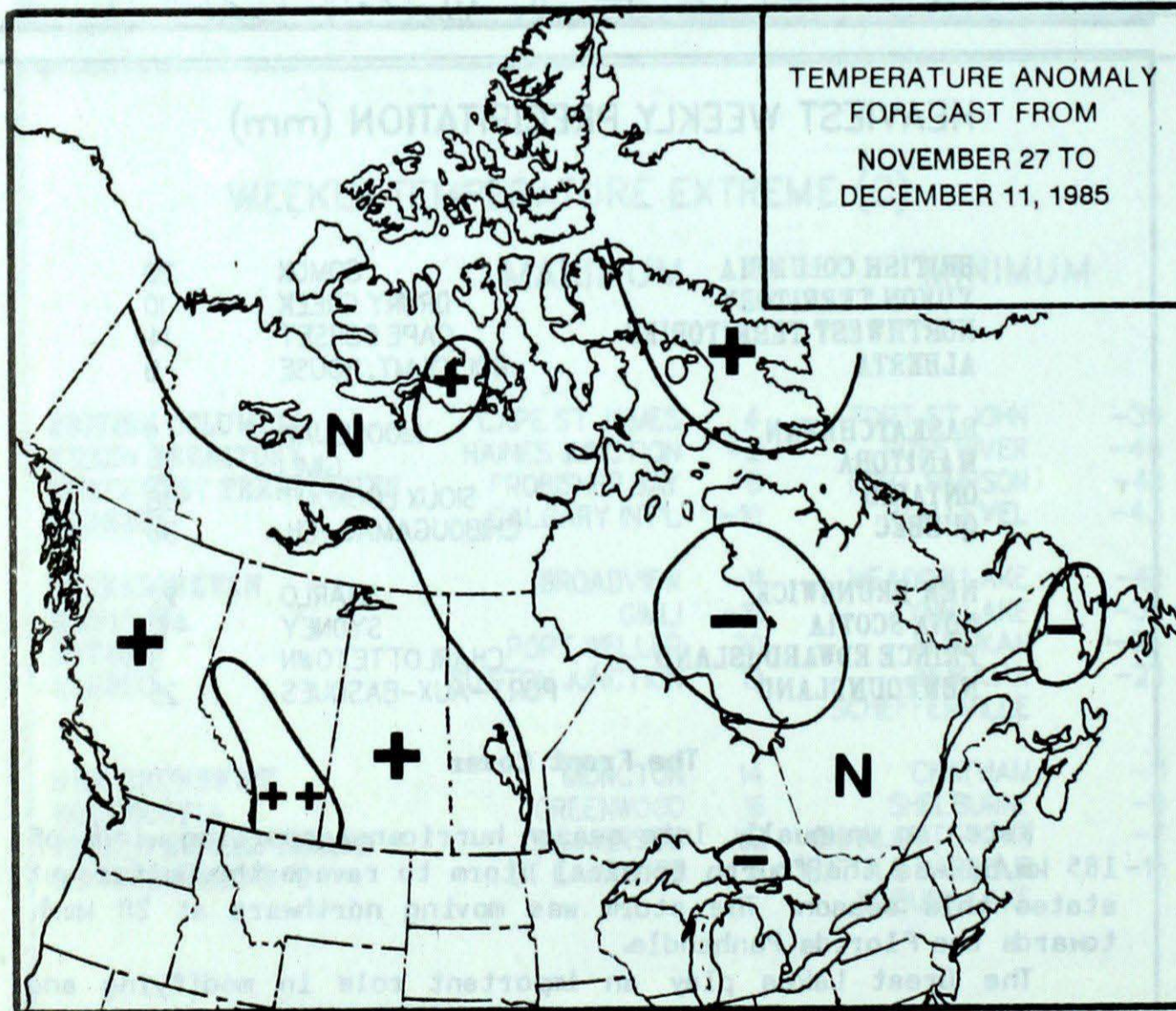
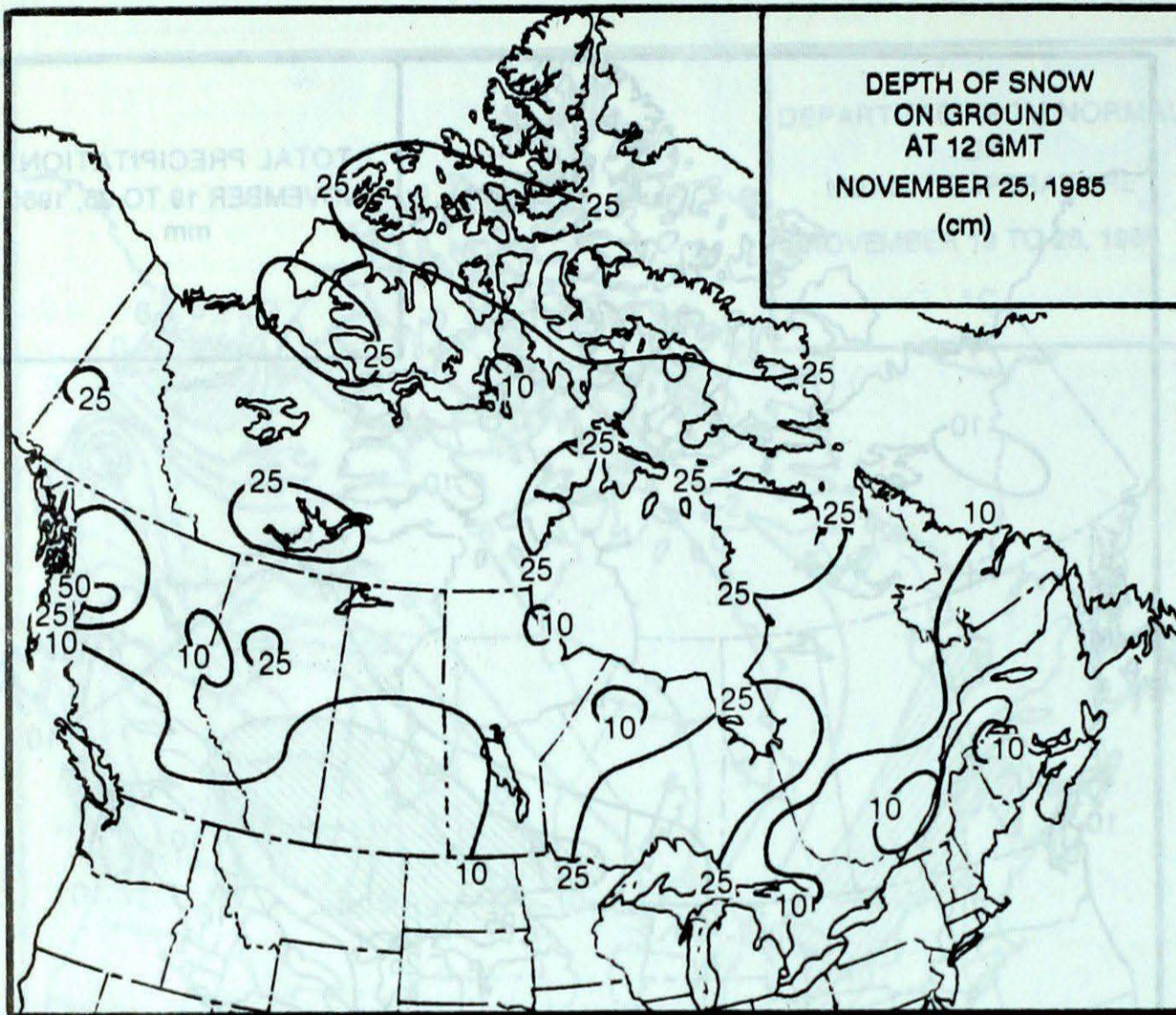
| | | |
|-----------------------|------------------|----|
| BRITISH COLUMBIA | COMOX | 20 |
| YUKON TERRITORY | DRURY CREEK | 10 |
| NORTHWEST TERRITORIES | CAPE DORSET | 14 |
| ALBERTA | ROCKY MT. HOUSE | 8 |
| SASKATCHEWAN | MOOSE JAW | 9 |
| MANITOBA | GIMLI | 28 |
| ONTARIO | SIoux LOOKOUT | 38 |
| QUEBEC | CHIBOUGAMAU-CH. | 36 |
| NEW BRUNSWICK | CHARLO | 22 |
| NOVA SCOTIA | SYDNEY | 12 |
| PRINCE EDWARD ISLAND | CHARLOTTETOWN | 5 |
| NEWFOUNDLAND | PORT-AUX-BASQUES | 25 |

The Front Cover

Kate, an unusually late season hurricane, sporting winds of 185 km/h, was the fourth tropical storm to ravage the Gulf coast states this season. The storm was moving northward at 20 km/h towards the Florida Panhandle.

The Great Lakes play an important role in modifying and shaping local weather patterns. At the top of this photo lake induced cloud is seen stretching hundreds of kilometres east of the Great Lakes. As cold Arctic winds blow across the large expanses of relatively warm water, the air mass becomes saturated and unstable and "streets" of cumulus cloud form to the lee of the lakes. Depending on the instability, these cloud formations can frequently develop into streamers which can produce heavy localized snow squalls and whiteouts.

FORECAST



Temperature Anomaly Forecast

- ++ much above normal
- + above normal
- N normal
- below normal
- much below normal

This forecast is prepared by searching historical weather maps to find cases similar to the present. The historical outcome during the 15 days subsequent to the chosen analogues is assumed to be a forecast for the next 15 days from now.

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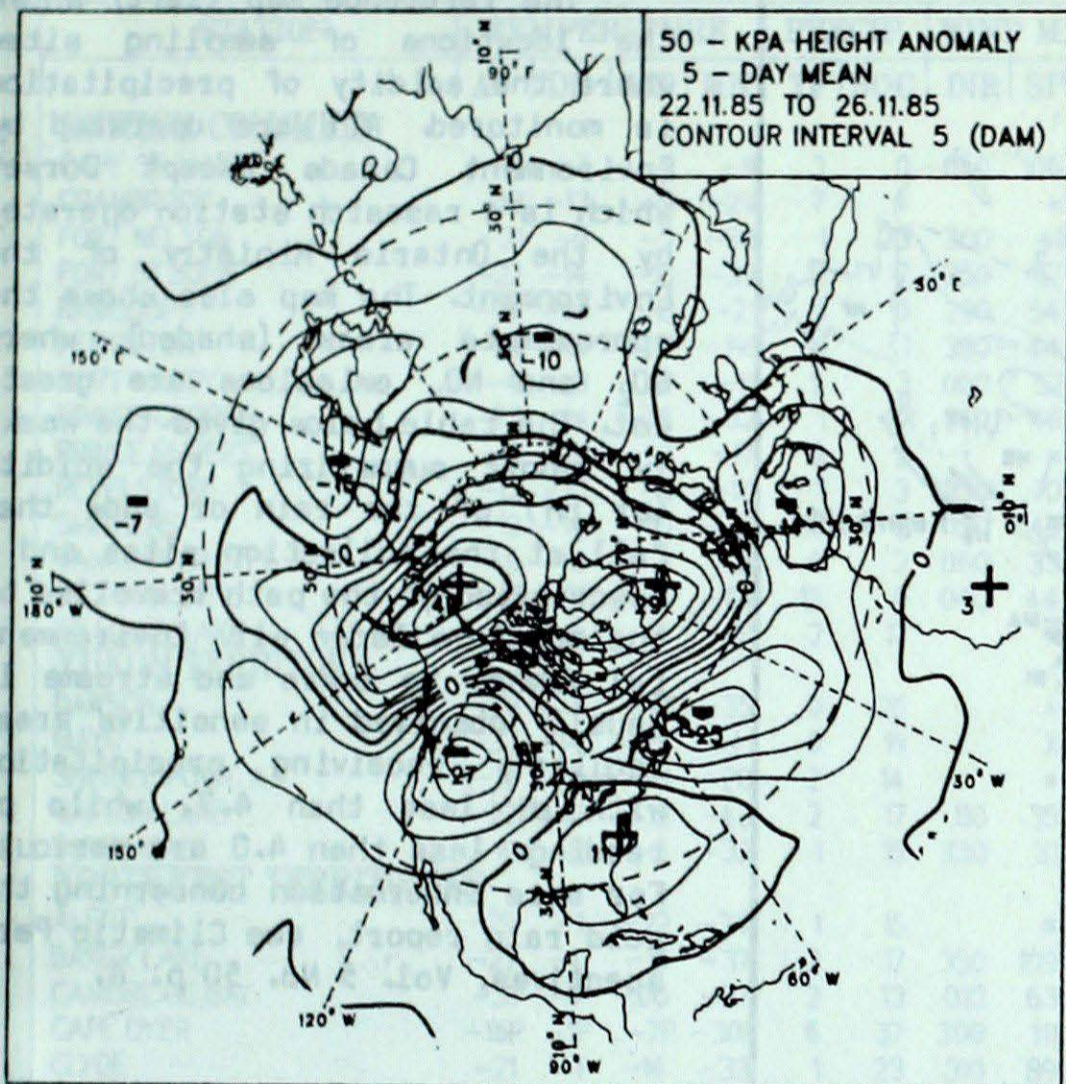
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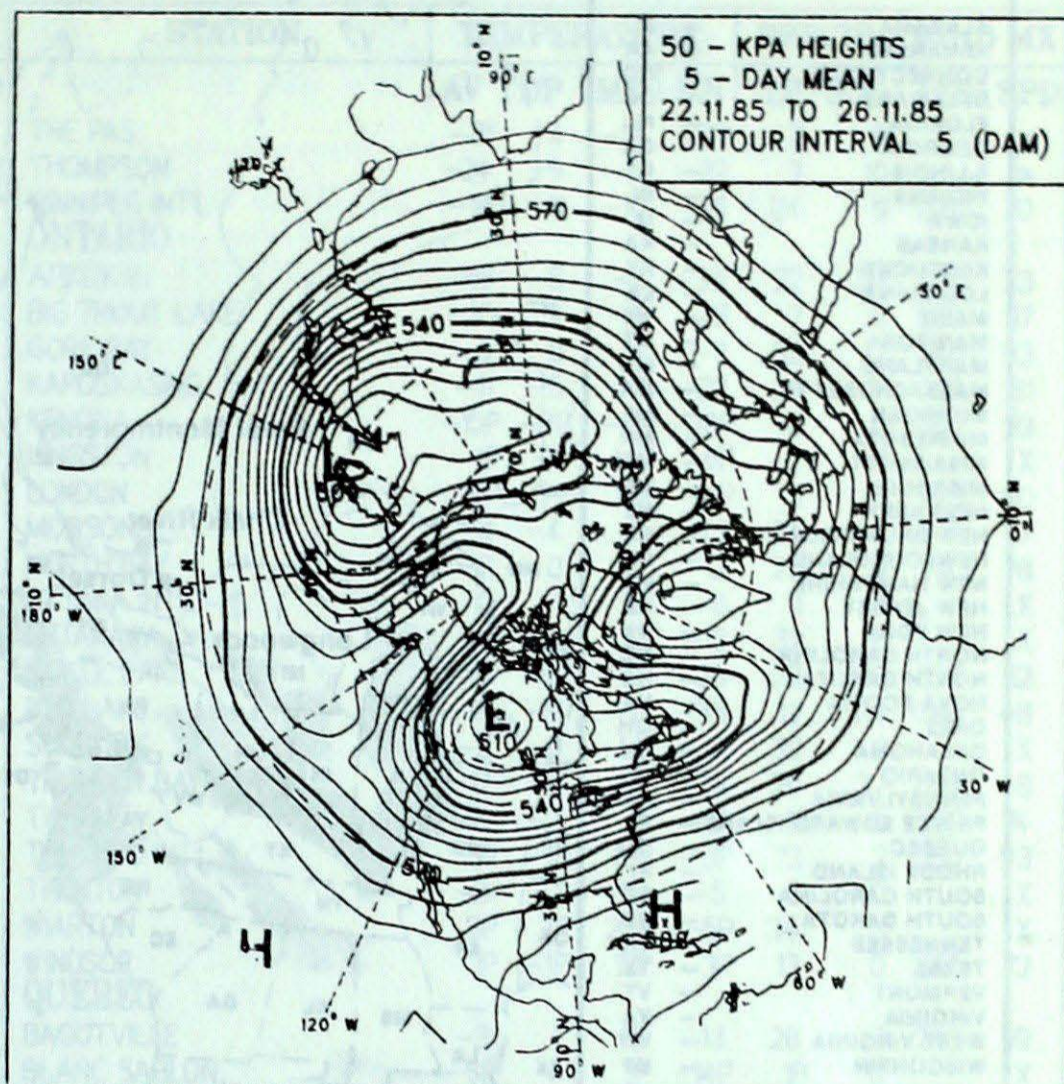
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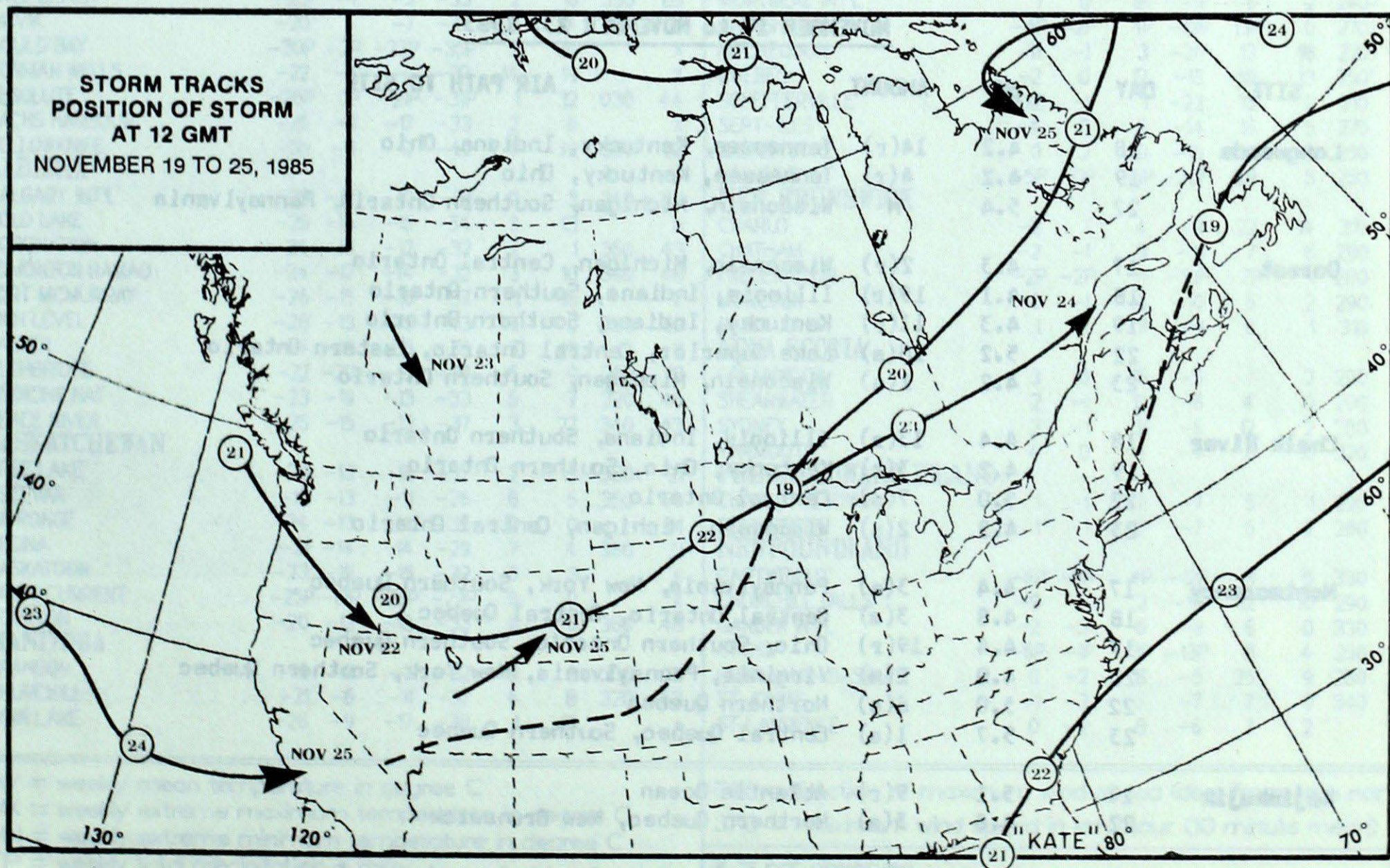
50 KPa ATMOSPHERIC CIRCULATION



MEAN 50 KPa HEIGHT ANOMALY (dam)
November 22 to November 26, 1985

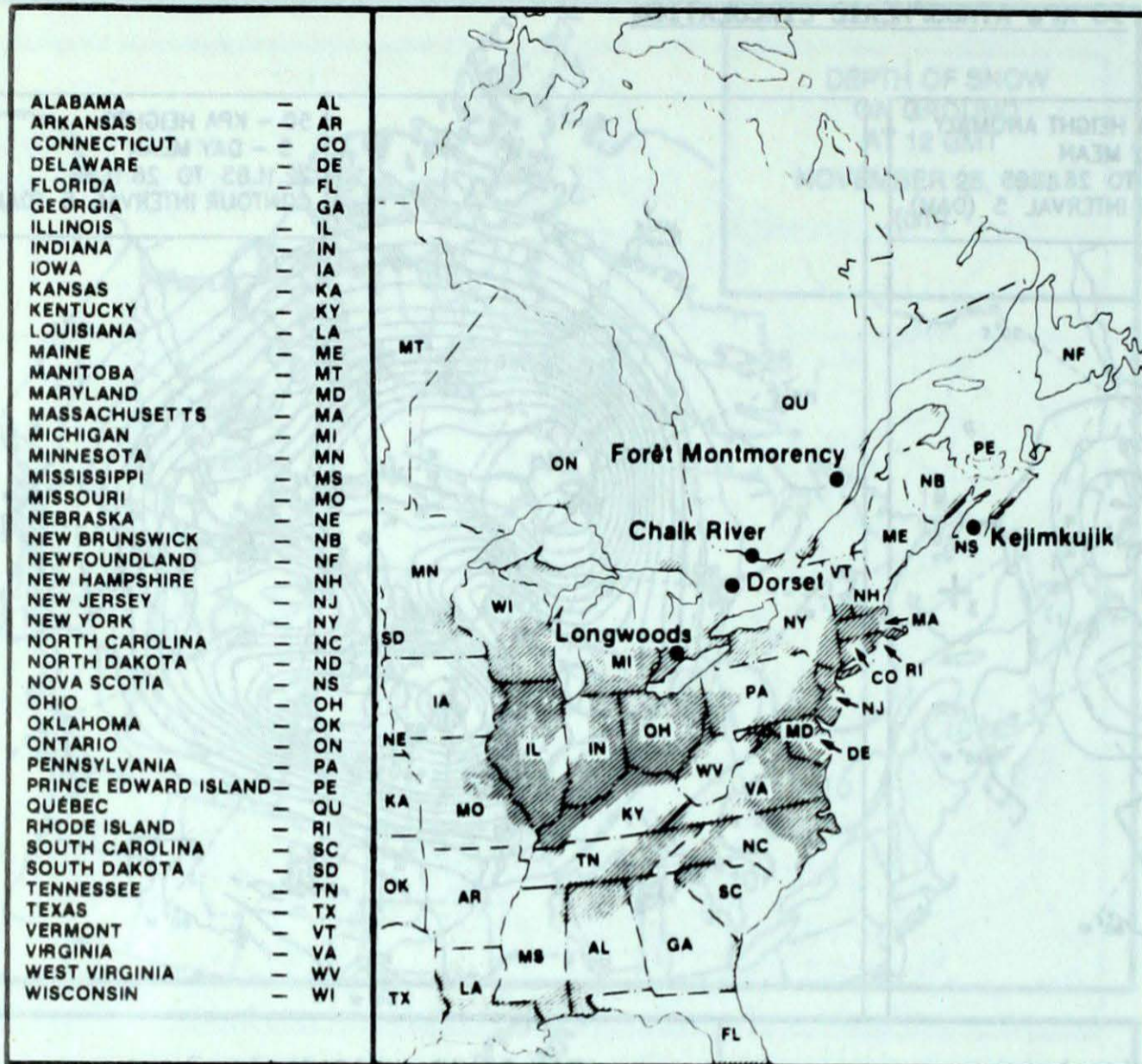


MEAN 50 KPa HEIGHTS (dam)
November 22 to November 26, 1985



ACID RAIN

ACID RAIN REPORT



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 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 less than 4.7, while pH readings less than 4.0 are serious. For more information concerning the acid rain report, see Climatic Perspectives, Vol. 5 No. 50 p. 6.

NOVEMBER 17 to NOVEMBER 23, 1985

| SITE | DAY | pH | AMOUNT | AIR PATH TO SITE |
|-------------|-----|-----|--------|---|
| Longwoods | 18 | 4.2 | 14(r) | Tennessee, Kentucky, Indiana, Ohio |
| | 19 | 4.2 | 4(r) | Tennessee, Kentucky, Ohio |
| | 22 | 5.4 | M | Wisconsin, Michigan, Southern Ontario, Pennsylvania |
| Dorset | 17 | 4.3 | 2(r) | Wisconsin, Michigan, Central Ontario |
| | 18 | 4.1 | 19(r) | Illinois, Indiana, Southern Ontario |
| | 19 | 4.3 | 11(r) | Kentucky, Indiana, Southern Ontario |
| | 22 | 5.2 | 10(s) | Lake Superior, Central Ontario, Eastern Ontario |
| | 23 | 4.2 | 1(s) | Wisconsin, Michigan, Southern Ontario |
| Chalk River | 18 | 4.4 | 13(r) | Illinois, Indiana, Southern Ontario |
| | 19 | 4.2 | 3(r) | Kentucky, Ohio, Southern Ontario |
| | 22 | 5.0 | 7(s) | Central Ontario |
| | 23 | 4.2 | 2(s) | Wisconsin, Michigan, Central Ontario |
| Montmorency | 17 | 4.4 | 3(s) | Pennsylvania, New York, Southern Quebec |
| | 18 | 4.8 | 3(m) | Central Ontario, Central Quebec |
| | 19 | 4.4 | 19(r) | Ohio, Southern Ontario, Southern Quebec |
| | 20 | 4.0 | 2(m) | Virginia, Pennsylvania, New York, Southern Quebec |
| | 22 | 5.0 | 6(s) | Northern Quebec |
| | 23 | 5.7 | 1(s) | Central Quebec, Southern Quebec |
| Kejimikujik | 17 | 5.1 | 9(r) | Atlantic Ocean |
| | 22 | 4.8 | 5(s) | Northern Quebec, New Brunswick |

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

TEMPERATURE, PRECIPITATION AND MAXIMUM WIND DATA FOR THE WEEK ENDING 0600 GMT NOVEMBER 26, 1985

| STATION | TEMPERATURE | | | | PRECIP. | | WIND MX | | STATION | TEMPERATURE | | | | PRECIP. | | WIND MX | |
|------------------------------|-------------|------|------|------|---------|-----|---------|-----|-----------------------------|-------------|-----|-----|------|---------|-----|---------|-----|
| | AV | DP | MX | MN | TP | SOG | DIR | SPD | | AV | DP | MX | MN | TP | SOG | DIR | SPD |
| BRITISH COLUMBIA | | | | | | | | | THE PAS | -21 | * | -14 | -29 | 2 | 8 | | * |
| CAPE ST. JAMES | -1 | -7 | 4 | -9 | 3 | 0 | 050 | 106 | THOMPSON | -24 | -9 | -15 | -32 | 2 | 10 | | * |
| CRANBROOK | -18 | -13 | -9 | -29 | 7 | 4 | | * | WINNIPEG INT'L | -18 | -11 | -10 | -30 | 24 | 9 | 020 | 70 |
| FORT NELSON | -21 | -6 | -5 | -38 | 1 | 23 | 360 | 41 | ONTARIO | | | | | | | | |
| FORT ST. JOHN | -22 | -14 | -10 | -39 | 2 | 7 | 350 | 67 | ATIKOKAN | -16 | -8 | -5 | -34 | 22 | 27 | 070 | 33 |
| KAMLOOPS | -14 | -14 | -8 | -21 | 1 | 0 | 290 | 54 | BIG TROUT LAKE | -16 | * | -11 | -23 | 2 | 5 | 360 | 37 |
| PENTICTON | -12P | -14P | -7P | -19P | 1 | 1 | 350 | 44 | GORE BAY | 0 | 0 | 14 | -7 | 32 | 12 | 240 | 93 |
| PORT HARDY | -4 | -8 | 2 | -11 | 5 | 3 | 060 | 52 | KAPUSKASING | -11 | -5 | 2 | -22 | 29 | 17 | 050 | 31 |
| PRINCE GEORGE | -23 | * | -16 | -32 | 1 | 10 | 360 | 46 | KENORA | -15P | -8P | -8P | -28P | 18 | 0 | 060 | 59 |
| PRINCE RUPERT | -8 | -11 | 0 | -17 | 0 | 2 | | * | KINGSTON | 1P | 0P | 14P | -6P | 2 | 0 | | X |
| REVELSTOKE | -12 | -10 | -5 | -18 | 1 | 3 | 350 | 70 | LONDON | 4P | 2P | 19P | -4P | 11 | 0 | 220 | 80 |
| SMITHERS | -19 | -14 | -10 | -27 | 0 | 8 | 150 | 43 | MOOSONEE | -11 | -4 | 0 | -25 | 36 | 44 | 340 | 67 |
| VANCOUVER INT'L | -5 | -10 | 2 | -13 | 6 | 2 | 060 | 33 | NORTH BAY | -2 | 0 | 15 | -12 | 28 | 9 | 240 | 78 |
| VICTORIA INT'L | -4P | -9P | 1P | -12P | 13 | 6 | 040 | 44 | OTTAWA INT'L | 0 | 1 | 18 | -8 | 11 | 8 | | X |
| WILLIAMS LAKE | -23 | * | -14 | -31 | 2 | 17 | | X | PETAWAWA | -1 | 1 | 18 | -13 | 32 | 8 | | X |
| YUKON TERRITORY | | | | | | | | | PICKLE LAKE | -18 | -8 | -12 | -28 | 22 | 28 | 050 | 52 |
| DAWSON | -29 | * | -21 | -35 | 0 | 26 | | * | RED LAKE | -18 | -9 | -11 | -33 | 19 | 24 | 040 | 48 |
| MAYO | -32 | -14 | -25 | -41 | 0 | 19 | | X | SUDBURY | -3 | 0 | 14 | -13 | 30 | 0 | | X |
| SHINGLE POINT A | -18 | 5 | -8 | -28 | 2 | 14 | | * | THUNDER BAY | -12 | -7 | -1 | -29 | 20 | 32 | 050 | 48 |
| WATSON LAKE | -27 | -10 | -13 | -43 | 2 | 17 | 110 | 35 | TIMMINS | -8 | -2 | 9 | -17 | 11 | 4 | 250 | 74 |
| WHITEHORSE | -19 | -8 | -5 | -32 | 1 | 15 | 330 | 31 | TORONTO INT'L | 3P | 1P | 19P | -3P | 13 | 2 | 250 | 93 |
| NORTHWEST TERRITORIES | | | | | | | | | TRENTON | 3 | 1 | 18 | -5 | 6 | 0 | | X |
| ALERT | -29 | -1 | -22 | -34 | 1 | 15 | | * | WIARTON | 3P | 2P | 20P | -5P | 34 | 1 | | X |
| BAKER LAKE | -27 | -4 | -15 | -37 | 2 | 17 | 350 | 109 | WINDSOR | 1P | -1P | 17P | -3P | 13 | 0 | 230 | 72 |
| CAMBRIDGE BAY | -31 | -4 | -20 | -37 | 2 | 13 | 010 | 63 | QUEBEC | | | | | | | | |
| CAPE DYER | -16P | -1P | -7P | -30P | 6 | 37 | 300 | 111 | BAGOTVILLE | -3 | 1 | 15 | -13 | 28 | 7 | 240 | 69 |
| CLYDE | -21 | -1 | -14 | -33 | 1 | 23 | 310 | 89 | BLANC SABLON | -6P | * | 3P | -14P | 1P | 0 | | X |
| COPPERMINE | -28 | * | -14 | -41 | 2 | 17 | 270 | 70 | INUKJUAK | -12 | -4 | -3 | -23 | 8 | 25 | 290 | 59 |
| CORAL HARBOUR | -24P | -5P | -14P | -34P | 2P | 26 | | X | KUUJJUAQ | -11P | -2P | -1P | -22P | 12 | 28 | 040 | 61 |
| EUREKA | -39 | -6 | -34 | -41 | 2 | 12 | | * | KUUJJUARAPIK | -9P | -3P | -4P | -18P | 4P | 12 | 260 | 74 |
| FORT SMITH | -26 | -11 | -14 | -41 | 3 | 14 | | X | MANIWAKI | -2 | 1 | 16 | -14 | 22 | 9 | 240 | 56 |
| FROBISHER BAY | -14 | -1 | 5 | -26 | 6 | 16 | 060 | 96 | MONT JOLI | -2P | 0P | 13P | -11P | 13 | 4 | 280 | 72 |
| HALL BEACH | -25 | -1 | -5 | -33 | 2 | 16 | 350 | 85 | MONTREAL INT'L | 1 | 0 | 18 | -9 | 6 | 2 | 240 | 72 |
| INUVIK | -20 | 5 | -7 | -35 | 2 | 14 | | X | NATASHQUAN | -4P | -2P | 4P | -12P | 13P | 0 | 270 | 69 |
| MOULD BAY | -30P | -2P | -23P | -35P | 3 | 30 | | X | NITCHEQUON | -11 | -1 | 3 | -20 | 13 | 18 | 270 | 100 |
| NORMAN WELLS | -22 | -1 | -4 | -37 | 14 | 19 | | X | QUEBEC | -2 | 0 | 12 | -13 | 19 | 13 | 250 | 63 |
| RESOLUTE | -26P | 0P | -21P | -31P | 1 | 32 | 030 | 44 | SCHIEFFERVILLE | -12 | -1 | 1 | -23 | 13 | 11 | 310 | 61 |
| SACHS HARBOUR | -25 | -1 | -17 | -33 | 2 | 6 | | X | SEPT-ILES | -4 | 0 | 6 | -14 | 16 | 5 | 270 | 50 |
| YELLOWKNIFE | -26 | -8 | -2 | -40 | 4 | 30 | 350 | 52 | SHERBROOKE | 0 | 2 | 19 | -15 | 13 | 9 | 250 | 57 |
| ALBERTA | | | | | | | | | VAL D'OR | -5P | 0P | 15P | -20P | 29 | 5 | 250 | 89 |
| CALGARY INT'L | -22 | -17 | -10 | -31 | 2 | 3 | 340 | 63 | NEW BRUNSWICK | | | | | | | | |
| COLD LAKE | -25 | -16 | -15 | -34 | 3 | 13 | | * | CHARLO | -2 | 1 | 4 | -9 | 22 | 14 | 310 | 63 |
| CORONATION | -24 | -16 | -12 | -32 | 2 | 1 | 350 | 43 | CHATHAM | -2 | -1 | 9 | -11 | 7 | 6 | 290 | 52 |
| EDMONTON NAMAO | -24 | -17 | -14 | -32 | 3 | 10 | 340 | 48 | FREDERICTON | -2P | -2P | 7P | -10P | 7P | 1 | 280 | 56 |
| FORT MCMURRAY | -26 | -15 | -16 | -37 | 1 | 10 | | X | MONCTON | 0 | -1 | 14 | -10 | 5 | 2 | 290 | 70 |
| HIGH LEVEL | -28 | -13 | -15 | -43 | 3 | 0 | 330 | 59 | SAINT JOHN | 1 | 0 | 11 | -9 | 6 | 1 | 310 | 48 |
| JASPER | -24 | -18 | -16 | -35 | 2 | 19 | | X | NOVA SCOTIA | | | | | | | | |
| LETHBRIDGE | -22 | -20 | -13 | -30 | 5 | 9 | 260 | 78 | GREENWOOD | 3 | 0 | 16 | -5 | 7 | 2 | 290 | 65 |
| MEDICINE HAT | -23 | -19 | -13 | -33 | 5 | 7 | 320 | 46 | SHEARWATER | 2 | -1 | 12 | -6 | 4 | 0 | 290 | 59 |
| PEACE RIVER | -25 | -15 | -13 | -37 | 3 | 27 | 340 | 43 | SYDNEY | 2 | -1 | 11 | -6 | 12 | 2 | 280 | 63 |
| SASKATCHEWAN | | | | | | | | | YARMOUTH | 4 | 0 | 14 | -4 | 8 | 0 | 320 | 70 |
| CREE LAKE | -28 | -13 | -18 | -37 | 2 | 15 | 360 | 31 | PRINCE EDWARD ISLAND | | | | | | | | |
| ESTEVAN | -19 | -13 | -11 | -26 | 8 | 5 | 350 | 50 | CHARLOTTETOWN | 1 | -1 | 11 | -7 | 5 | 1 | 290 | 56 |
| LA RONGE | -24 | -13 | -14 | -35 | 2 | 0 | | * | SUMMERSIDE | 1 | -1 | 12 | -7 | 5 | 2 | 280 | 78 |
| REGINA | -21 | -14 | -14 | -29 | 7 | 4 | 360 | 31 | NEWFOUNDLAND | | | | | | | | |
| SASKATOON | -23 | -15 | -15 | -32 | 3 | 3 | | * | CARTWRIGHT | -5P | -2P | 4P | -12P | 8 | 5 | 330 | 89 |
| SWIFT CURRENT | -25P | -19P | -20P | -29P | 0 | 0 | | X | CHURCHILL FALLS | -9 | 2 | 2 | -16 | 12 | 10 | 290 | 59 |
| YORKTON | -20 | -12 | -13 | -33 | 8 | 6 | 360 | 48 | GANDER INT'L | -2 | -3 | 6 | -9 | 6 | 0 | 330 | 69 |
| MANITOBA | | | | | | | | | GOOSE | -6P | -1P | 3P | -13P | 8 | 4 | 250 | 46 |
| BRANDON | -19 | -11 | -11 | -32 | 9 | 8 | 360 | 76 | PORT-AUX-BASQUES | 0 | -2 | 8 | -5 | 25 | 9 | 280 | 89 |
| CHURCHILL | -21 | -6 | -11 | -32 | 6 | 8 | 320 | 63 | ST JOHN'S | -1 | -3 | 7 | -7 | 7 | 0 | 340 | 78 |
| LYNN LAKE | -26 | -9 | -17 | -38 | 1 | 10 | | * | ST LAWRENCE | 0 | -2 | 8 | -6 | 7 | 2 | | X |

AV = weekly mean temperature in degree C
 MX = weekly extreme maximum temperature in degree C
 MN = weekly extreme minimum temperature in degree C
 TP = weekly total precipitation in mm
 DP = departure of mean temperature from normal in degree C
 SOG = snow depth on ground in cm, last day of the period

DIR = direction of maximum wind speed (deg. from true north)
 SPD = maximum wind speed in km/hour (10 minute mean)
 X = not observed
 P = value based on less than 7 days
 * = missing