



Climatic Perspectives

A WEEKLY REVIEW OF CANADIAN CLIMATE

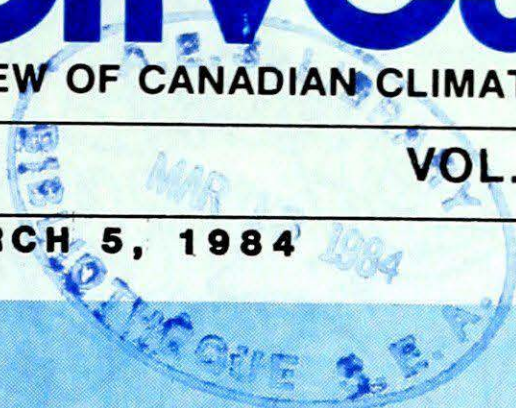
Canadian Climate Centre

MARCH 9, 1984

(Aussi disponible en français)

VOL. 6 NO. 9

FOR THE PERIOD FEBRUARY 28 TO MARCH 5, 1984



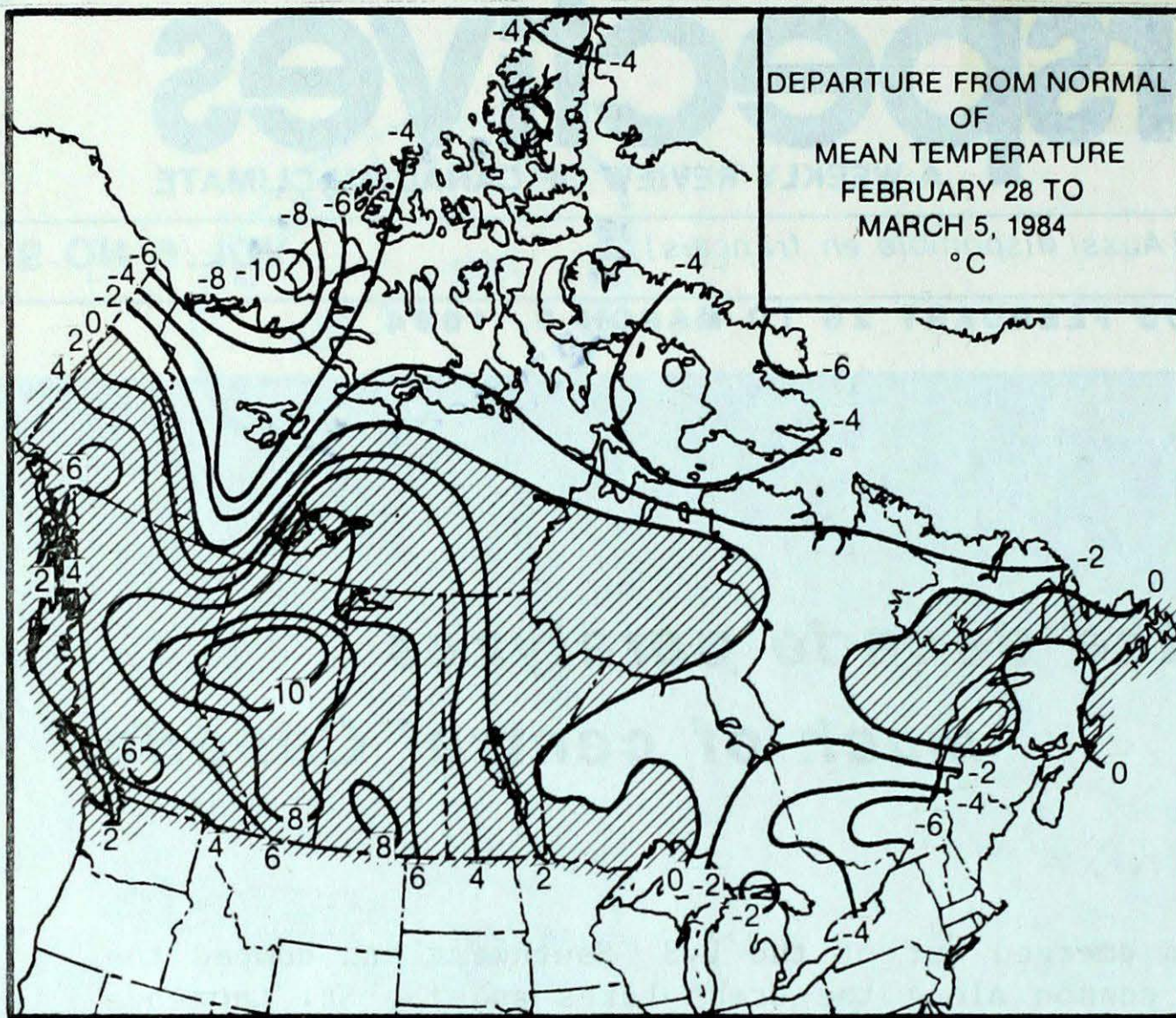
• **Snowstorm of the decade paralyzes much of central Canada**

A major winter storm emerged out of the U.S. Southwest and dumped the heaviest snowfall of the season along the Great Lakes and the St. Lawrence Valley on February 28th-29th. Gale-force winds with gusts near 90 km/h whipped snow in some areas to depths of three metres and brought communities to a standstill. Record amounts of snow, up to 60 cm, clogged major highways and played havoc with rush-hour traffic. Air and rail services were also disrupted throughout the area. The storm claimed 2 lives in Ontario and 4 in Québec in traffic related accidents.

Southwestern Ontario and the Niagara Peninsula were the hardest hit, schools and businesses were closed from 1 to 3 days. St. Catharines, after remaining virtually snow free in January and February, received 58.8 cm. At Niagara, about 55 cm of snow in 30 hours was the heaviest since 1918. The storm then swept eastward into southern Québec. Blizzard conditions made roads treacherous. There were numerous traffic accidents. Atlantic Canada felt the effects of this storm some 18 hours later. In Nova Scotia, widespread freezing precipitation caused extensive power outages.

• **Water supply outlook on the Prairies: Below normal because of the dearth of snow**

ACROSS THE COUNTRY...



Yukon and Northwest Territories

Balmy weather resulted in the second warmest Rendezvous festival in the Yukon, the warmest festival period occurred in 1968. Mean temperatures continued to be 5 to 8 degrees above normal in the Mackenzie District and the southern Yukon. Daytime readings rose to near 10° in the extreme southwest, further increasing the threat of avalanches in the mountainous areas. Once again this week, Baffin Island experienced very cold weather, and at Eureka, the reading plunged to a bitter -50° on March 4. Snowfall was light throughout the North.

British Columbia

After several days of cloudy and dull weather, spring-like weather returned in time for the weekend, with sunny warm days and cool nights. The temperatures were as high as 10° above normal, reaching the mid-teens in the southwest during the latter part of the week. Excellent weather conditions prevailed during the B.C. Winter Games held at Fort St. John between March 1 and 4. Spring garden flowers were in bloom on Vancouver Island and the lower Mainland.

WEEKLY TEMPERATURES EXTREMES (°C)

	<u>MAXIMUM</u>	<u>MINIMUM</u>
YUKON TERRITORY	10.0 Haines Junction	-42.8 Shingle Point
NORTHWEST TERRITORIES	-4.2 Fort Smith	-49.5 Nicholson Pen. Eureka
BRITISH COLUMBIA	16.7 Hope	-21.6 Fort Nelson
ALBERTA	11.4 Lethbridge	-26.5 Fort Chipewyan
SASKATCHEWAN	6.5 Eastend Cypress	-32.7 Collins Bay
MANITOBA	0.6 Dauphin	-41.6 Lynn Lake
ONTARIO	4.5 Windsor	-38.1 Big Trout Lake
QUEBEC	3.5 Mont Joli	-34.0 Inoucdjouac Schefferville
NEW BRUNSWICK	7.0 Moncton	-18.1 St. Stephen
NOVA SCOTIA	9.7 Greenwood	-14.4 Truro
PRINCE EDWARD ISLAND	6.3 Charlottetown	-14.8 Summerside
NEWFOUNDLAND	12.5 St. John's	-33.0 Wabush Lake

Prairies

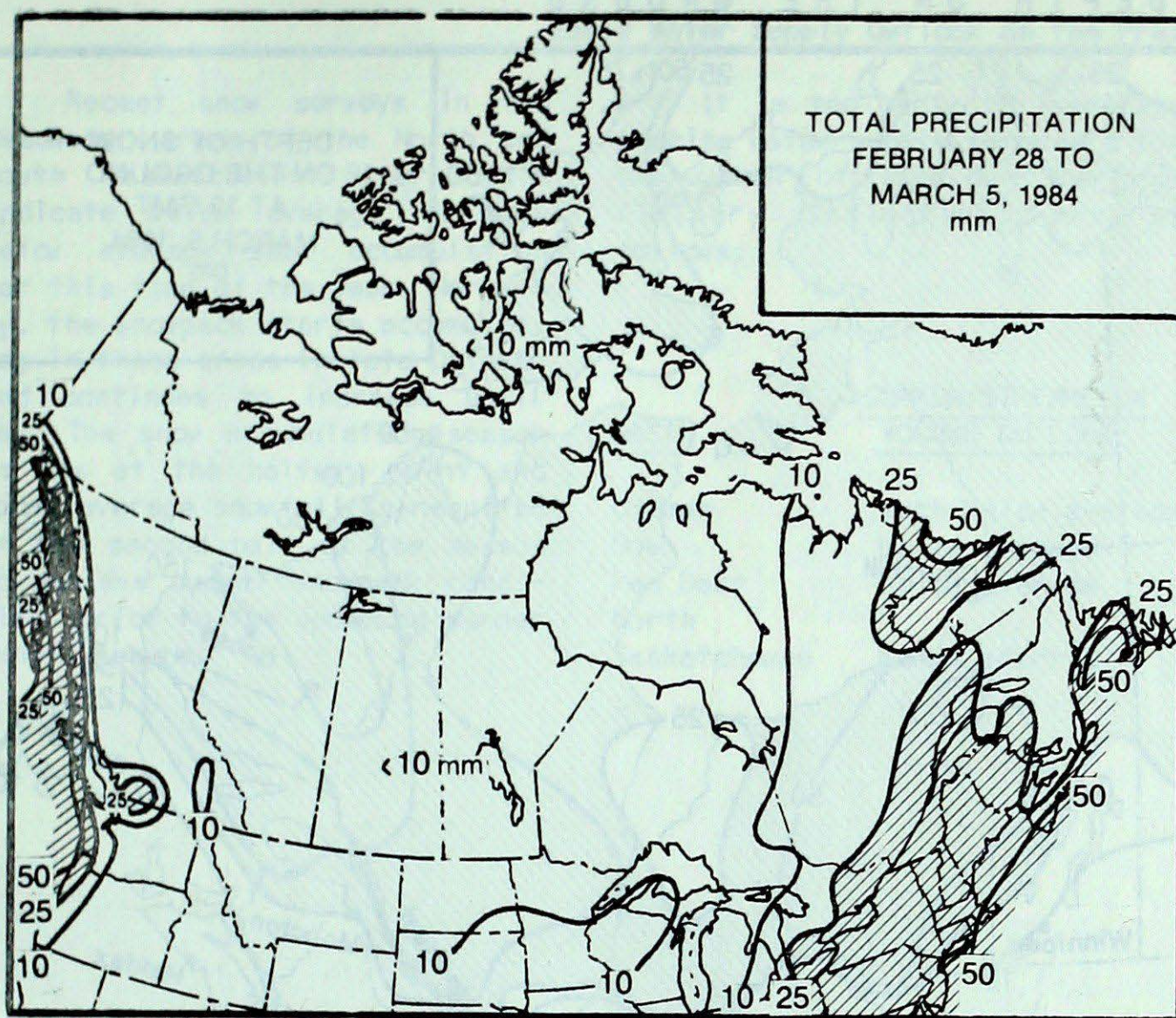
It was a predominantly sunny, pleasant week with little precipitation. The temperatures, although cooler than last week, were relatively mild, climbing above freezing during the day in the west, but remaining several degrees cooler in the east. Skiing in the Rockies remains excellent, with a good snow base and fresh powder. In contrast, no snow remains on the ground on the southern Prairies.

Ontario

The worst winter storm in the last 10 years lashed southern Ontario on February 28th-29th. Records to near-record two-day snowfalls of up to 58 cm and strong winds gusting near 90 km/h brought communities to a standstill. Extensive blowing snow severely restricted visibility

ACROSS THE NATION

Warmest mean temperature	6.5	Abbotsford BC
Coollest mean temperature	-40.5	Eureka, NWT



HEAVIEST WEEKLY PRECIPITATION (mm)

YUKON	4.5 Dawson
NORTHWEST TERRITORIES	11.7 Fort Simpson
BRITISH COLUMBIA	63.8 McInnes Island
ALBERTA	3.9 Edmonton Namao
SASKATCHEWAN	8.5 La Ronge
MANITOBA	2.4 Dauphin
ONTARIO	46.9 Ottawa
QUEBEC	47.6 Ste Agathe Des Monts
NEW BRUNSWICK	29.2 Saint John
NOVA SCOTIA	68.0 Shelburne
PRINCE EDWARD ISLAND	12.2 Summerside
NEWFOUNDLAND	55.3 Hopedale

February Snowfall on the Prairies

Snowfall on the Prairies has been much below normal during February. The table below lists the amount as per cent of normal at a few selected stations.

	Per cent of normal
Calgary	14
Edmonton	20
Red Deer	5
Broadview	30
Regina	10
Saskatoon	8
Brandon	40
Winnipeg	25

and made roads impassable. St. Catharines received the most snow, 58.8 cm, other areas had falls in the 20 to 50 cm range. Ironically, the severe storm ended February that is now recognized as the mildest ever in many parts of Ontario. For example, monthly mean of 0.5° at Toronto was the warmest in 144 years of record, while the mean at Atikokan (-6.7°) exceeded the warmest winter month on record. The storm restored the snow cover in the South, that ranged from 5 to 25 cm.

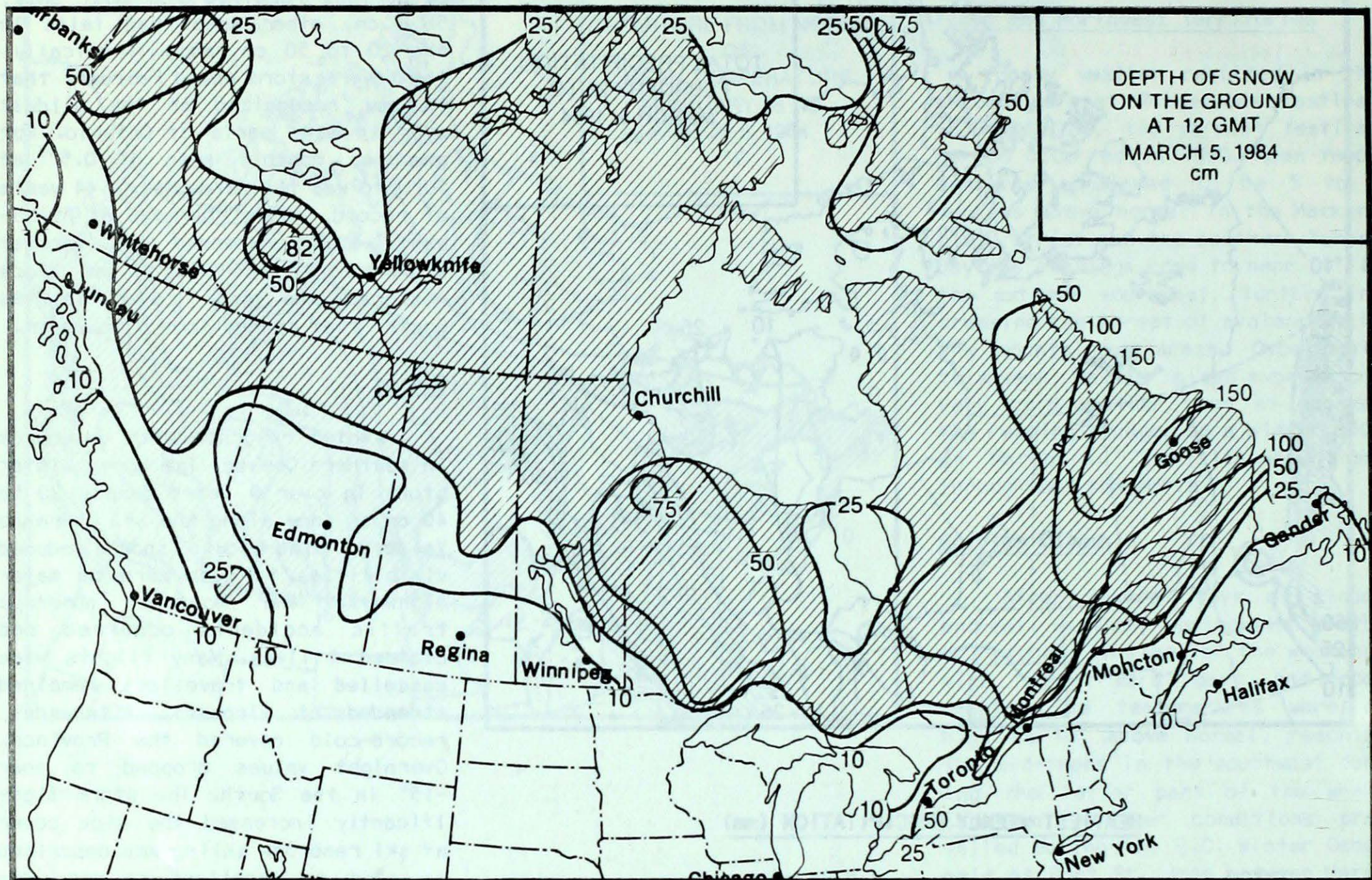
Québec

Winter returned with vengeance in southern Quebec. The worst winter storm in over 5 years dumped 20 to 40 cm of snow along the St. Lawrence Valley. Wind-blown snow reduced visibilities to near zero on major highways. Near Montréal numerous traffic accidents occurred and claimed 4 lives. Many flights were cancelled and travellers remained stranded at airports. Afterwards, record-cold covered the Province. Overnight values dropped to near -15° in the South. The storm significantly increased the snow cover at ski resorts. Skiing was described as good to excellent at many resorts.

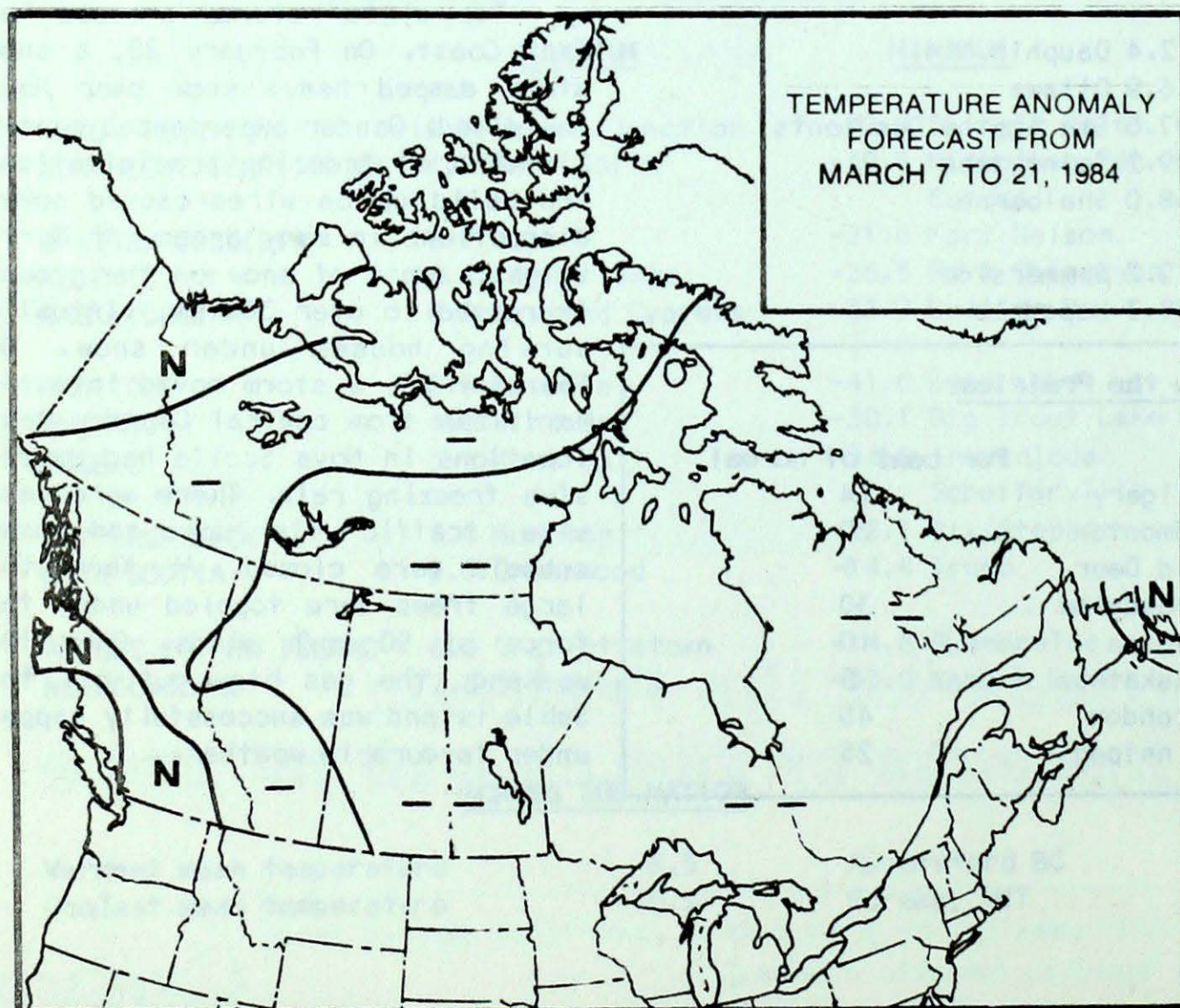
Atlantic Provinces

Two winter storms crossed the East Coast. On February 28, a snow storm dumped heavy snow over Newfoundland. Gander experienced nearly 21 hours of freezing precipitation. Ice build up on wires caused power disruptions in many areas. At Cartwright, depth of snow on the ground increased to over 300 cm, virtually burying houses under snow. On February 29, a storm moved into the Maritimes from central Canada. Many locations in Nova Scotia had extensive freezing rain. There were massive traffic tie ups and many schools were closed. At Yarmouth, large trees were toppled under the force of 90 km/h winds. Over the weekend, the gas blow out off the Sable Island was successfully capped under favourable weather.

SNOW DEPTH ON THE GROUND



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 15-day periods. After the five best cases are selected, the surface temperature anomalies are calculated. This results in five separate forecasts, which are averaged to provide the forecast depicted.

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

Early Water Supply Outlook on the Prairies

Recent snow surveys in the headwater areas of the North and South Saskatchewan River Basin indicate below average to much below average snow accumulation for this time of the year. Normally, the snowpack starts accumulating in these areas in late October and continues to increase until May. The snow accumulation season is now at the halfway point and above average snowfall is required in the second half of the season to achieve normal snowpack conditions prior to the upcoming summer runoff season.

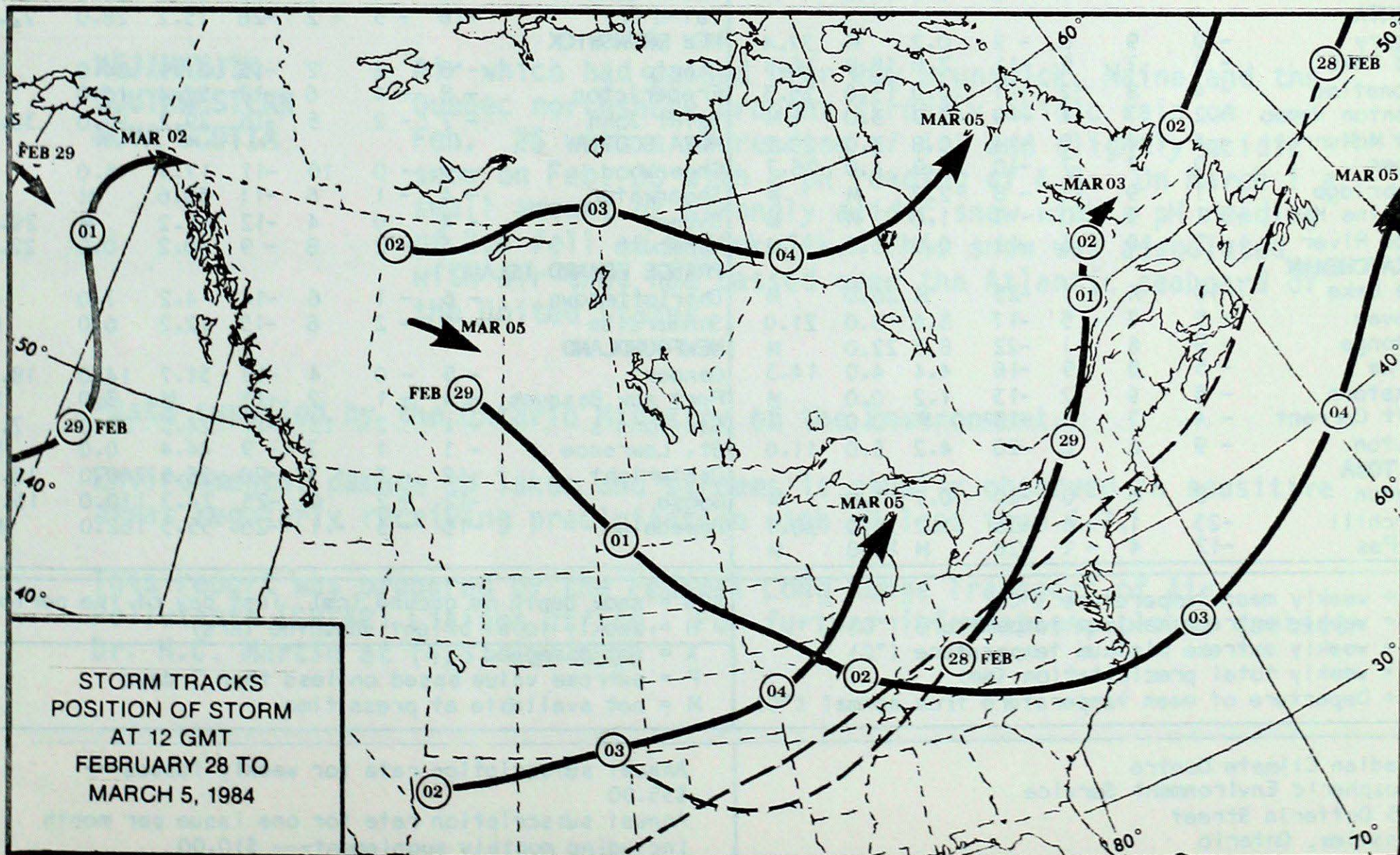
It is too early to issue any precise water supply forecasts for the summer of 1984 but the preliminary indications are as follows:

A change from the present trend of warm, dry weather to an extended period of above snowfall in the North and South Saskatchewan River headwaters is needed for significant improvement of this outlook to occur.

<u>BASIN</u>	<u>SUMMER STREAMFLOW VOLUME OUTLOOK</u>
Oldman	much below average
Bow	below average
Red Deer	below average
North Saskatchewan	below average

River Forecast Centre
Alberta Environment

STORM TRACKS



TEMPERATURE, PRECIPITATION AND BRIGHT SUNSHINE DATA FOR THE WEEK ENDING 0600 GMT MARCH 6, 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	-17	1	1	-40	0.4	32.0	37.4
Dawson	-16	1	-3	-30	4.5	60.0	M	Winnipeg	-10	3	-2	-24	1.8	2.0	36.7
Mayo A	-12	3	3	-27	2.6	46.0	M	ONTARIO							
Watson Lake	-10	4	9	-28	1.4	40.0	18.3	Big Trout Lake	-20	-1	-3	-38	1.0	62.0	M
Whitehorse	-2	8	8	-11	0.0	20.0	31.4	Earlton	-13	-2	-2	-22	M	20.0	M
NORTHWEST TERRITORIES								Kapuskasing	-15	-2	1	-25	6.9	12.0	M
Fort Smith	-12	8	-4	-26	5.6	37.0	12.1	Kenora	-10	2	-1	-24	1.0	22.0	M
Inuvik	-30	-8	-18	-41	2.9	62.0	16.5	London	-7	-3	2	-17	28.7	14.0	14.5
Norman Wells	-24	-2	-11	-34	0.0	16.0	M	Moosonee	-18	-2	1	-31	6.6	23.0	12.2
Yellowknife	-16	7	-7	-29	7.6	24.0	12.7	Muskoka	-11	-4	-1	-23	M	13.0	M
Baker Lake	-30	0	-18	-41	1.5	51.0	M	North Bay	-12	-3	-2	-19	6.1	9.0	26.2
Cape Dyer	-29	-7	-20	-39	0.2	42.0	M	Ottawa	-12	-6	-3	-20	46.9	41.0	29.8
Clyde	M	M	-26P	-42	M	81.0	35.5	Pickle Lake	-17	-2	0	-31	2.2	74.0	M
Frobisher Bay	-29	-4	-15	-37	3.0	22.0	34.0	Red Lake	-14	-1	1	-28	0.2	36.0	45.0
Alert	-38	-4	-27	-45	M	M	M	Sudbury	-12	-4	-1	-19	3.3	5.0	24.3
Eureka	-41	-1	-28	-50	M	17.0	M	Thunder Bay	-9	1	1	-21	3.1	7.0	40.3
Hall Beach	-34	-4	-23	-44	M	25.0	M	Timmins	-15	-5	-0	-23	14.0	46.0	M
Resolute	-37	-3	-27	-47	1.4	25.0	0.0	Toronto	-7	-3	3	-16	19.2	11.0	M
Cambridge Bay	-33	-0	-21	-42	M	32.0	26.8	Trenton	-9	-5	3	-17	33.0	27.0	M
Mould Bay	-40	-5	-30	-49	M	27.0	5.5	Warton	-8	-3	0	-16	15.2	6.0	28.7
Sachs Harbour	-39	-10	-26	-46	0.0	10.0	M	Windsor	-5	-3	5	-15	13.2	0.0	M
BRITISH COLUMBIA								QUEBEC							
Cape St. James	6	2	10	2	11.9	M	22.8	Bagotville	-13	-3	-1	-25	27.9	56.0	M
Cranbrook	2	5	9	-6	0.0	M	41.6	Blanc-Sablon	-7	2	3	-18	9.4	108.0	M
Fort Nelson	-10	2	10	-22	1.4	28.0	25.9	Inukjuak	-22	0	-13	-34	8.4	37.0	32.7
Fort St. John	-2	8	9	-14	0.0	2.0	M	Kuujuuaq	-19	-0	-11	-30	19.0	54.0	23.9
Kamloops	4	5	11	-4	0.0	M	32.5	Kuujuuarapik	-20	-0	-10	-33	8.0	27.0	24.7
Penticton	4	3	10	-5	0.4	M	27.4	Maniwaki	-14	-7	-2	-25	29.4	25.0	20.1
Port Hardy	5	1	11	-2	37.1	M	37.6	Mont-Joli	-8	-0	4	-14	29.6	27.0	18.5
Prince George	2	8	7	-3	0.0	M	32.8	Montréal	-11	-6	2	-19	30.6	7.0	25.7
Prince Rupert	6	2	11	3	59.4	M	8.5	Natashquan	-8	-0	1	-20	21.4	65.0	M
Revelstoke	1	4	6	-6	18.8	30.0	M	Nitchequon	-15	2	-6	-28	17.8	45.0	15.8
Smithers	2	6	7	-4	2.9	M	17.8	Québec	-12	-5	-2	-20	37.0	74.0	23.0
Vancouver	6	2	11	0	18.8	M	36.1	Schefferville	-17	-1	-2	-34	32.4	75.0	13.5
Victoria	6	2	14	-0	5.6	M	39.4	Sept-Îles	-8	1	-0	-18	38.2	86.0	17.2
Williams Lake	1	4	9	-9	0.2	14.0	M	Sherbrooke	-13	-8	0	-26	25.0	26.0	17.7
ALBERTA								Val-d'Or	-16	-5	-2	-28	15.2	28.0	22.4
Calgary	-0	9	8	-9	0.2	M	37.4	NEW BRUNSWICK							
Cold Lake	-5	7	5	-11	3.8	15.0	16.8	Charlo	-8	2	2	-15	21.9	84.0	M
Coronation	-4	8	2	-11	0.0	15.0	25.3	Fredericton	-8	-4	6	-17	27.4	16.0	M
Edmonton Namao	-2	7	4	-9	3.9	3.0	M	Saint John	-7	-2	5	-16	29.2	10.0	38.8
Fort McMurray	-4	10	5	-14	0.8	3.0	20.2	NOVA SCOTIA							
Jasper	0	7	7	-10	0.0	4.0	26.7	Greenwood	-4	-0	10	-11	17.4	5.0	M
Lethbridge	1	9	11	-8	2.2	M	M	Shearwater	-4	-1	6	-11	58.6	M	M
Medicine Hat	1	9	10	-7	1.0	M	M	Sydney	-4	0	4	-12	17.2	M	29.9
Peace River	-2	10	6	-11	0.0	5.0	M	Yarmouth	-3	-2	8	-9	40.2	0.0	22.0
SASKATCHEWAN								PRINCE EDWARD ISLAND							
Cree Lake	-10	X	-1	-25	M	26.0	M	Charlottetown	-6	-1	6	-14	4.2	7.0	M
Estevan	-5	7	5	-17	3.6	3.0	21.0	Summerside	-7	-2	6	-15	12.2	6.0	M
La Ronge	-9	6	1	-22	8.5	22.0	M	NEWFOUNDLAND							
Regina	-5	8	5	-16	4.4	4.0	14.3	Gander	-5	-0	4	-13	31.7	14.0	18.1
Saskatoon	-5	9	2	-13	1.2	0.0	M	Port aux Basques	-4	-1	2	-11	M	3.0	M
Swift Current	-4	7	3	-13	M	0.0	M	St. John's	-1	2	13	-11	24.5	20.0	7.1
Yorkton	-9	6	0	-20	4.2	5.0	11.0	St. Lawrence	-1	1	7	-9	44.4	0.0	M
MANITOBA								Cartwright	-12	-3	3	-28	26.5	260.0	16.8
Brandon	-8	6	0	-20	0.7	1.0	M	Goose	-12	-2	0	-23	24.7	110.0	15.1
Churchill	-23	1	-6	-35	1.2	35.0	38.1	Hopedale	-15	-3	-1	-25	55.3	162.0	M
The Pas	-12	4	-1	-28	M	14.0	M								

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

M = not available at press time

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ACID RAIN REPORT ISSUED BY ENVIRONMENT CANADA FOR FEB. 26-MAR. 3, 1984

**LONGWOODS
NEAR LONDON
ONTARIO**

On Feb. 28 and 29 Longwoods received a large amount of normal snow with pH readings of 6.3 and 5.8 respectively and on March 2 a small amount of normal snow with a pH reading of 6.2. These snowfalls were associated with air that had passed over northern Ontario, northern Michigan and northern Quebec.

**DORSET *
MUSKOKA
ONTARIO**

On Feb. 28 Dorset received slightly acidic snow with a pH reading of 4.9. This snow was produced in air which had passed over northern Quebec and the St. Lawrence Valley.

**CHALK RIVER
OTTAWA VALLEY
ONTARIO**

Slightly acidic snow fell on Feb. 28 and had a pH reading of 5.0. This snow was produced in air which had passed over northern Quebec and the St. Lawrence Valley

**MONTMORENCY
QUEBEC CITY
QUEBEC**

Air which has passed over northern Quebec deposited slightly acidic snow at Montmorency on Feb. 26 and a mixture of normal rain and snow on Feb. 28. The pH readings were 4.8 and 5.2 respectively. On Feb. 29 strongly acidic snow with a pH reading of 4.2 fell in air which had travelled from Maine and the Atlantic Ocean.

**KEJIMKUJIK
SOUTHWESTERN
NOVA SCOTIA**

Air which had passed over New Brunswick, Maine and the Quebec northshore brought strongly acidic rain on Feb. 26 with a pH reading of 4.1 and slightly acidic snow on Feb. 28 with a pH reading of 4.9. On March 1 a small amount of strongly acidic snow with a pH reading of 3.4 fell at Kejimkujik. This snow was associated with air that had passed over the Atlantic seaboard of the United States.

*Data supplied by the Ontario Ministry of the Environment.

Environmental damage to lakes and streams is usually observed in sensitive areas regularly receiving precipitation with pH less than 4.7.

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