MONTHLY SUPPLEMENT INCLUDED

Climatic Perspectives

A WEEKLY REVIEW OF CANADIAN CLIMATE

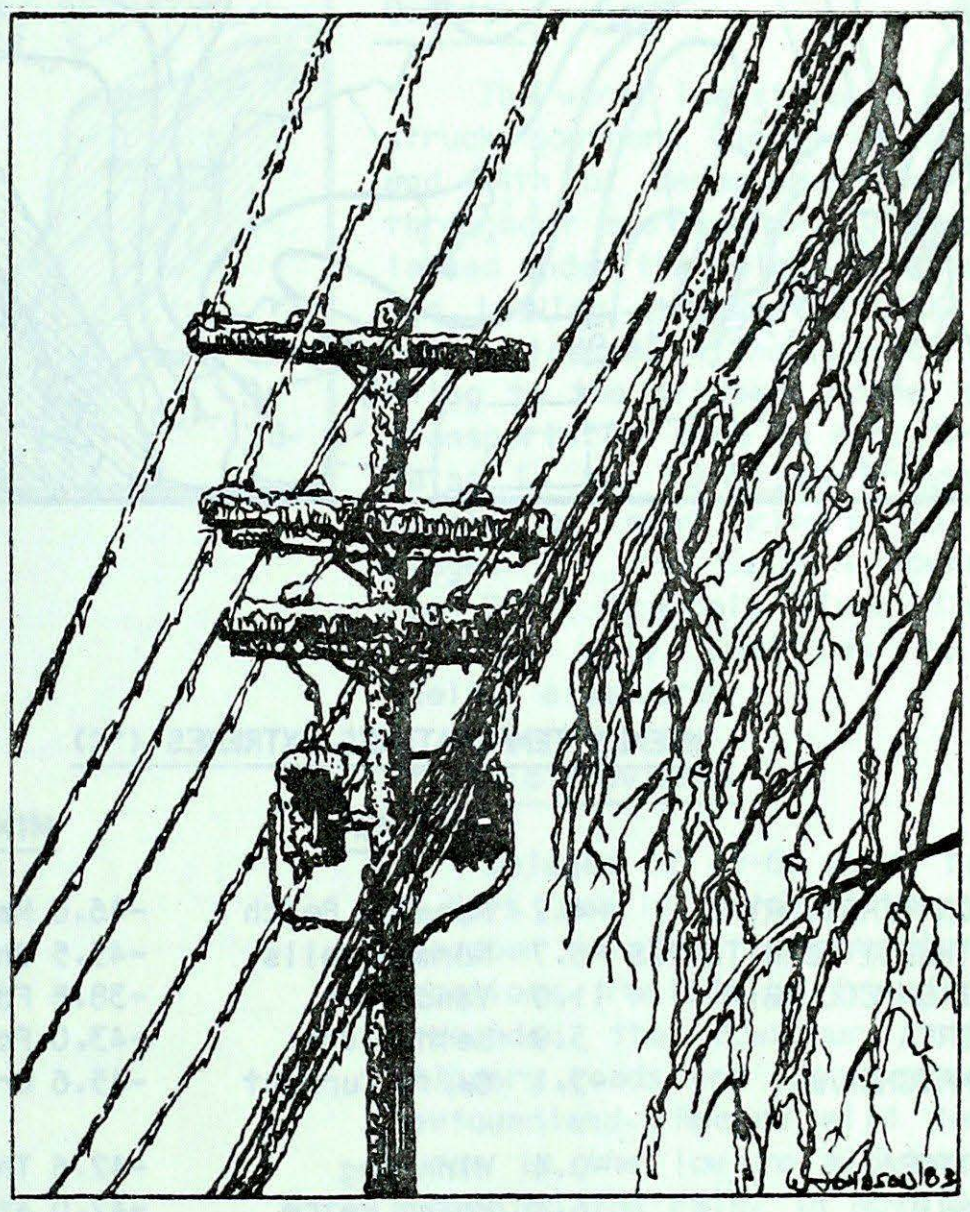
DECEMBER 23 ,1983 (Aussi disponible en français) VOL.5 NO.51

FOR THE PERIOD DECEMBER 13 TO 19, 1983

• Worst ice storm in 22 years leaves Quebecers in the dark

A severe ice storm plaguing southern Québec for nearly 2 days caused widespread power outages, disrupted transportation and flooded many homes. In the Montréal area, it was the most damaging ice storm in over 22 years. Freezing rain and strong winds snapped scores of power lines throughout the area, leaving at least half a million homes and businesses without electricity that lasted from 6 to 18 hours. The storm downed branches from trees laden with ice on to roof tops and power lines. Roads were clogged with slush and ice, bringing public transportation to a standstill. Air and rail services were delayed several hours. Pedestrians were worst off; sidewalks were covered with sheer glaze. At Montréal, deluges of 67 mm of precipitation was about 77 per cent of the December value. Elsewhere in the South, heavy rains caused many rivers to rise to flood stages. The Yamaska River rose nearly a third of a metre, forcing many families to abandon their homes. Ice storms occur with moderate frequency at

(Cont'd on Page 3)



• Bitter cold grips the Prairies and Ontario

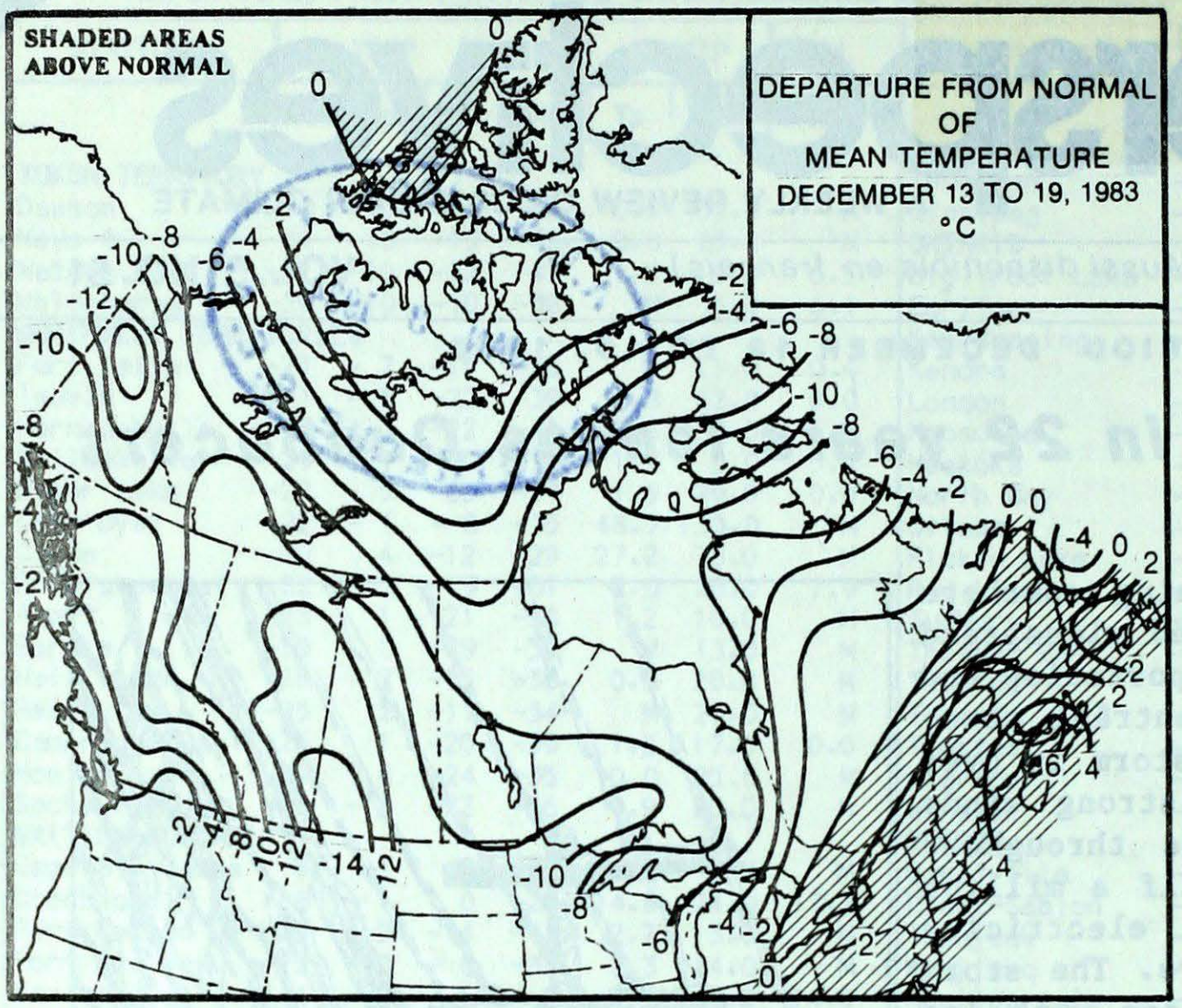
Inside the November monthly supplement.....

- Canadian climate pattern and the question of climate forecast
- Summary of the drilling season in the Beaufort Sea
- Fall of '83.....A review

ISSN 0225-5707
UDC: 551.506.1(71)

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	-4.2	Komakuk Beach	-46.6	Mayo
NORTHWEST TERRITORIES	-6.7	Norman Wells	-45.5	Shepherd Bay
BRITISH COLUMBIA	11.0	Vancouver	-38.5	Fort Nelson
ALBERTA	3.9	Lethbridge	-43.0	Fort Chipewyan
SASKATCHEWAN	-3.1	Swift Current	-45.6	Cree Lake
MANITOBA	-0.4	Winnipeg	-42.6	Thompson
ONTARIO	6.1	Point Petre	-42.0	Atikokan
QUEBEC	6.2	Sherbrooke	-41.4	Nitchequon
NEW BRUNSWICK	12.8	Moncton	-21.6	Charlo
NOVA SCOTIA	16.1	Greenwood	-15.2	Shearwater
PRINCE EDWARD ISLAND	11.7	Charlottetown	-16.0	Summerside
NEWFOUNDLAND	10.2	St. John's	-34.9	Wabush Lake
				Churchill Falls

ACROSS THE NATION

Warmest mean temperature	5.7	Sable Island, NS
Coolest mean temperature	-40.9	Mayo, YT

ACROSS THE COUNTRY...

Yukon and Northwest Territories

Bitterly cold air remained firmly entrenched over the entire Arctic. Mean temperatures were as much as 20° below normal in the central Yukon. For 5 consecutive days, the temperatures did not rise above -36° at Mayo, and several record-low temperatures were set in the extreme cold. Once again this week, precipitation was light across the North. Whitehorse received the most snowfall, 6.4 cm, which increased the snow cover to 8 cm.

British Columbia

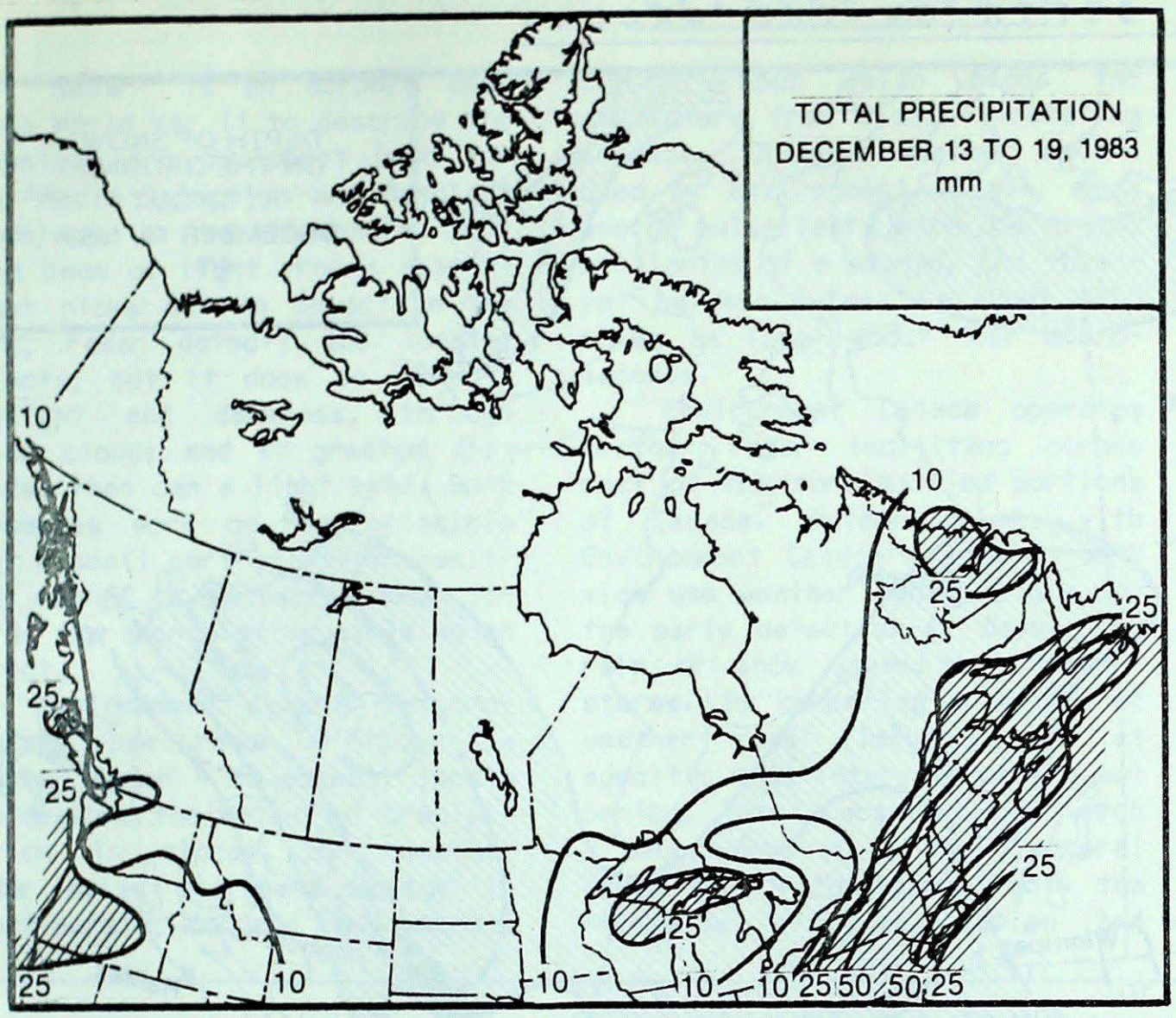
Sunny and very cold weather conditions prevailed in the North and central Districts. Cold weather has been favourable for the logging operations and should also help control insects such as the spruce beetle which has had a low mortality rate the past two years due to milder temperatures and heavy snowfalls. In the South, clouds and showers during the early part of the week gave way to mostly sunny but very cold conditions as a large Arctic high pressure area penetrated the Province.

Prairies

Extremely cold air from the Arctic continued to spill southeastward. Minimum temperatures dropped to the -30 to -40 degrees range, breaking numerous temperature records. An associated area of high pressure kept skies generally clear. Snowfall amounts were very light, mostly ice crystals.

Ontario

The coldest air of the season so far reached the extreme south during the weekend. Overnight temperatures plunged to near -20° in southwestern Ontario and onshore flow of snow streamers provided plenty of snow in the lee of the Great Lakes. Wiarton, Muskoka and



HEAVIEST WEEKLY PRECIPITATION (mm)

YUKON	6.4	Whitehorse
NORTHWEST TERRITORIES	3.2	Pond Inlet
BRITISH COLUMBIA	32.4	Hope
ALBERTA	8.9	Grande Prairie
SASKATCHEWAN	3.1	Meadow Lake
MANITOBA	1.4	Gimli
		Pilot Mound
ONTARIO	33.3	Ottawa
QUEBEC	65.8	Sherbrooke
NEW BRUNSWICK	95.1	Saint John
NOVA SCOTIA	62.0	Shearwater
PRINCE EDWARD ISLAND	59.0	Summerside
NEWFOUNDLAND	73.4	Stephenville

ICE STORM

(Cont'd from Page 1)
Montréal - an average of about 13 days per winter. The resulting damages are usually light. The storm of December 13th-14th cost the Province tens of millions of dollars in lost properties and services. According to Hydro Québec, overtime payment alone to the emergency crew was about $10 million. A look into the past reveals that Montréal suffered the worst ice storm in its history on February 25th-26th, 1961. Residents were forced to exist for nearly a week in their homes without heat, light or cooking facilities. Property damage was estimated near $7 million.

Mount Forest all received snowfalls in excess of 20 cm, setting a favourable scene for the busy Christmas holiday skiing period. Otherwise, damp and dull weather continued across southern Ontario. In Toronto, only 15 hours of bright sunshine and over 65 mm of precipitation made first half of December the cloudiest and the wettest in this century.

In the North, snowfall was light but the temperatures were very cold ranging from -25° during the day to near -40° at night.

Québec

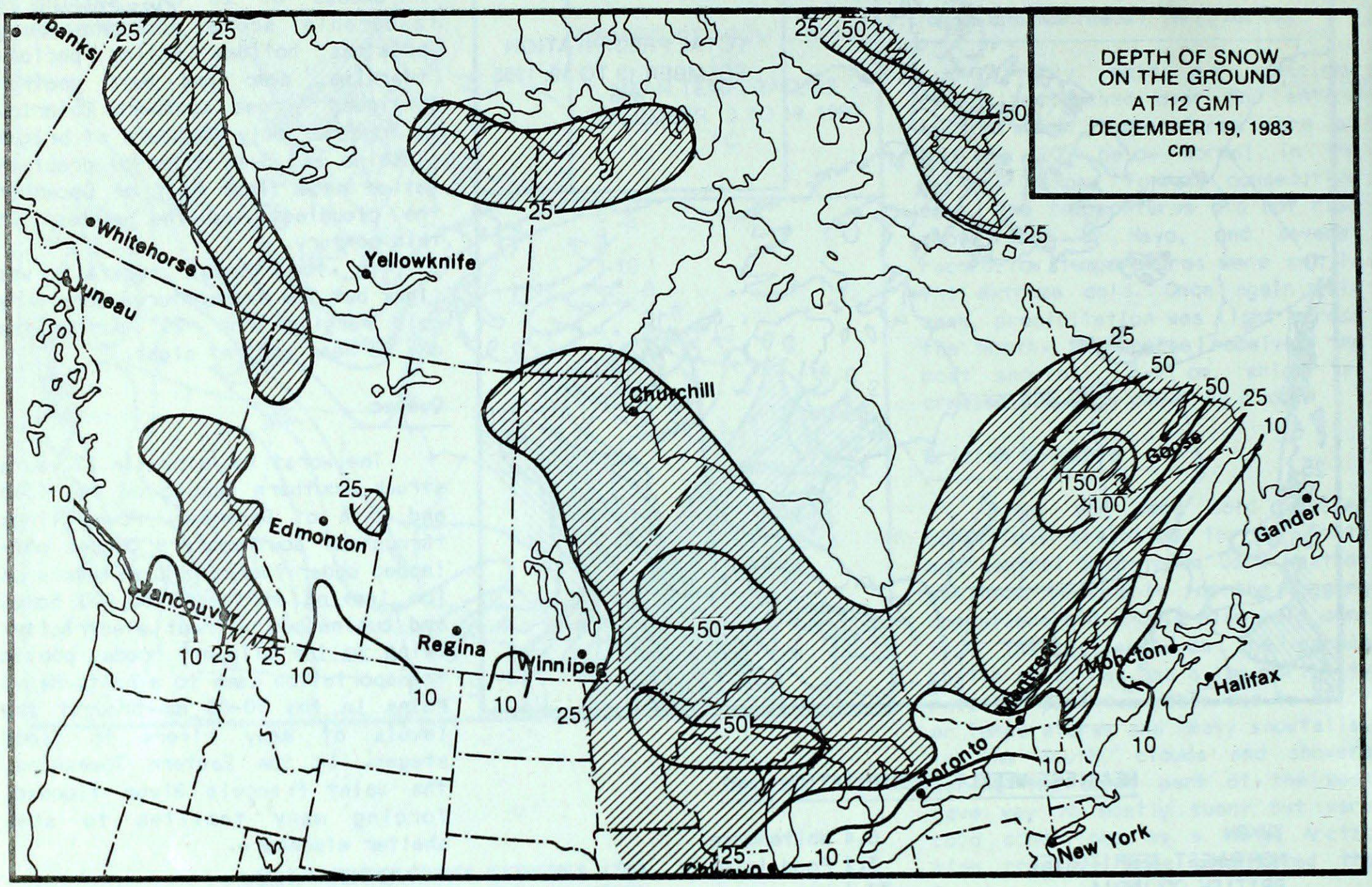
The worst ice storm in 22 years struck southern Québec on the 13th and 14th of December. Power lines throughout southwestern Québec collapsed under the weight of layers of ice leaving at least 500,000 homes and businesses without electricity. Owing to the slippery roads, public transportation came to a halt. Heavy rains in the 50-80 mm brought the levels of many rivers to flood stages. In the Eastern Townships, the Saint François River flooded, forcing many families to seek shelter elsewhere.

Atlantic Provinces

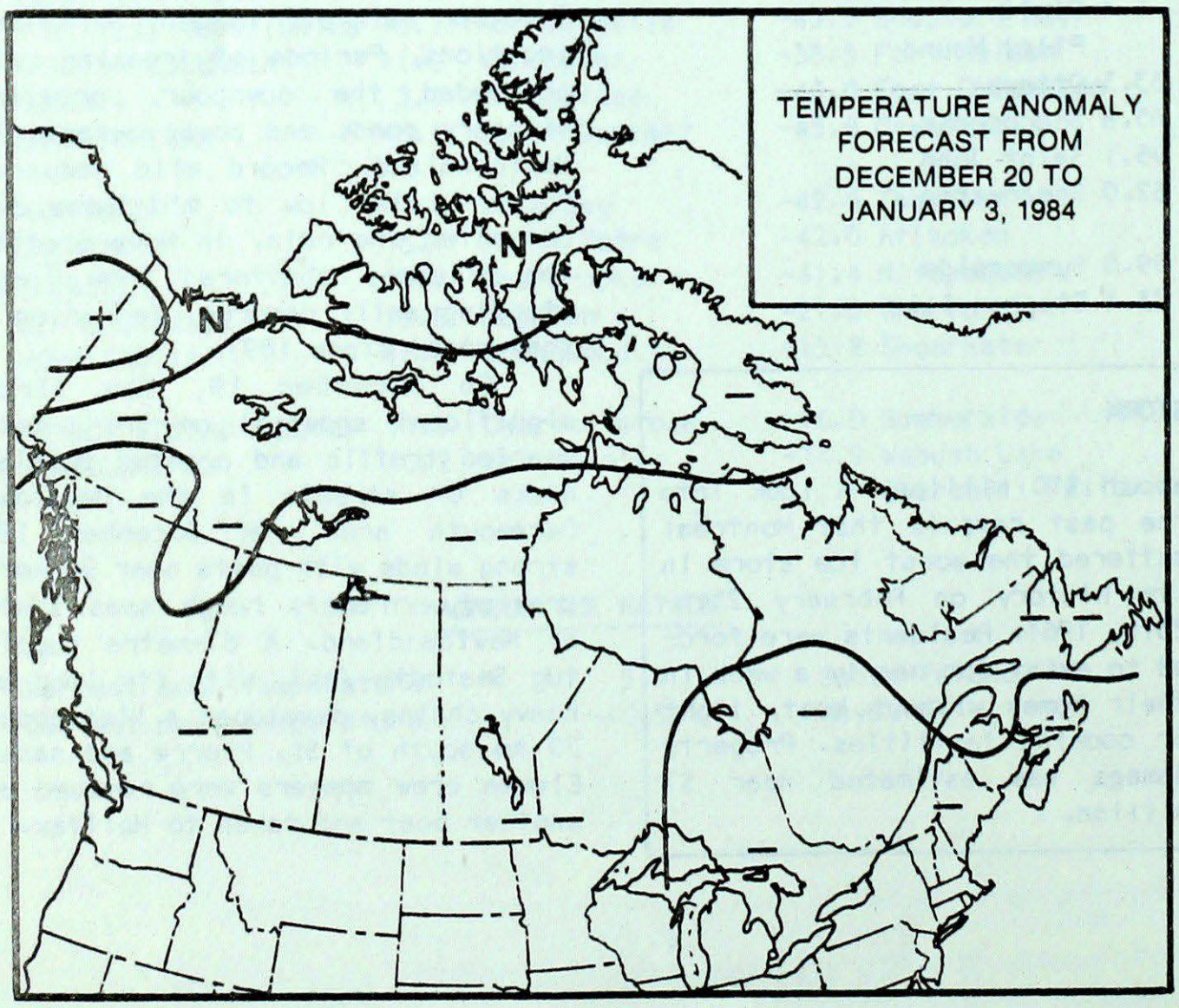
Deluges of 40-60 mm of rain in 2 days nearly matched the normal December rainfall in many Maritimes locations. Periods of freezing rain preceeded the downpour, creating slippery roads and power outages in Newfoundland. Record mild temperatures in the low to mid-teens accompanied the rain. In Nova Scotia, the mildness shattered some long-standing daily records, including 2 that stood since 1897.

On December 19, the first significant snowfall of the season snarled traffic and created bottlenecks on streets in the Halifax-Dartmouth area. On December 18, strong winds with gusts near 90 km/h created extremely rough seas south of Newfoundland. A 67-metre supply tug Seaforth Jarl, with its load of heavy chains, developed a list about 70 km south of St. Pierre and sank. Eleven crew members were rescued by another boat and taken to Halifax.

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

WEATHER RADAR

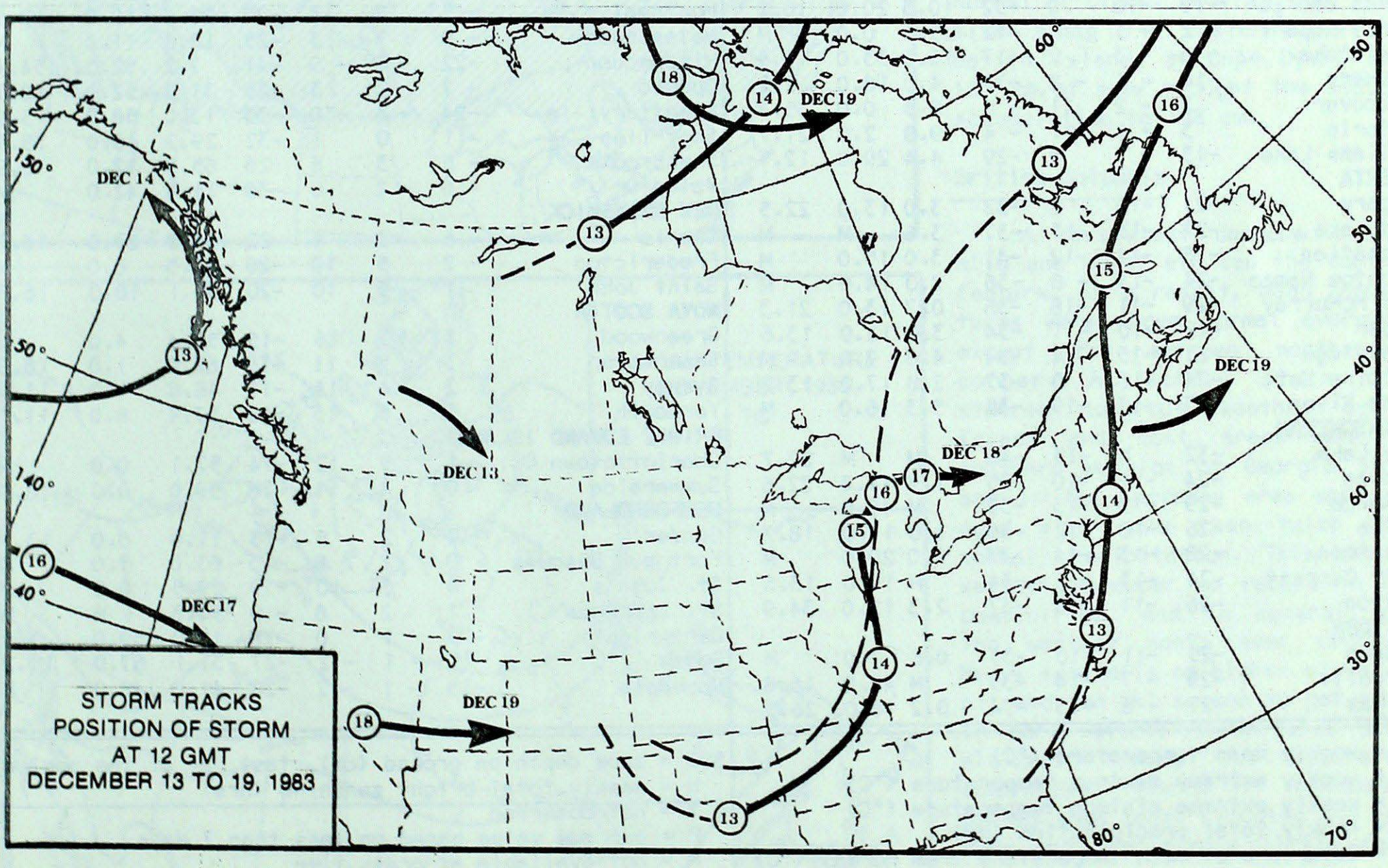
"Radar" is an acronym used since World War II to describe the technique and equipment used for the "Radio Detection and Ranging" of objects in the atmosphere. Just as a beam of light from a searchlight picks out an object in the dark, radar detects and locates objects, but it does so both in daylight and darkness, through thick clouds and at greater distances than can a light beam. Both processes work on the principle that a small part of the transmitted energy is reflected back towards the source after striking an object.

Environment Canada Meteorologists use radar - known as weather radar - to detect, locate and measure the amount of precipitation in clouds. The weather radar emits microwave energy in short bursts, focused in a narrow, conical beam which scans the atmosphere from a slowly-rotating antenna. In most weather radars used by Environment Canada, each energy pulse lasts only one or two millionths of a second, and interval between pulses is about 2000 times as long, about four microseconds.

Environment Canada operates weather radar facilities across most of the more settled portions of Canada. Meteorologists with Environment Canada's weather service use weather radar mainly for the early detection of developing rain or snow areas and thunderstorms. By comparing a series of weather radar images taken at specific time intervals over a set period, the forecasters can watch a storm develop in their general area, track its course, note the intensity of precipitation and issue a weather warning and more accurate forecasts.

Research meteorologists use weather radar extensively to investigate the processes by which precipitation develops in clouds, and to study such weather phenomena as heavy rain, hail, flooding and tornadoes.

STORM TRACKS



TEMPERATURE, PRECIPITATION AND BRIGHT SUNSHINE DATA FOR THE WEEK ENDING 0600 GMT DECEMBER 20, 1983

STATION	TEMP				PRECIP		SUN
	Av	Dp	Mx	Mn	Tp	SOG	H
YUKON TERRITORY							
Dawson	-36	-12	-28	-45	0.7	34.0	M
Mayo A	-41	-19	-31	-47	0.0	21.0	M
Watson Lake	-31	- 9	-20	-44	2.6	19.0	4.4
Whitehorse	-23	- 8	-15	-34	2.4	13.0	0.2
NORTHWEST TERRITORIES							
Fort Smith	-31	-10	-23	-41	M	11.0	M
Inuvik	-27	0	- 9	-40	1.4	47.0	0.0
Norman Wells	-30	- 6	- 7	-42	M	10.0	M
Yellowknife	-33	- 9	-27	-39	M	4.0	0.0
Baker Lake	-31	- 4	-24	-36	M	20.0	M
Cape Dyer	-28	- 9	-13	-39	5.2	48.0	M
Clyde	-27	- 3	-20	-33	1.8	77.0	M
Frobisher Bay	-30	-10	-10	-38	0.2	26.0	M
Alert	-32	- 1	-25	-37	M	12.0	M
Eureka	-36	- 1	-27	-41	0.4	13.0	M
Hall Beach	-29	- 3	-18	-40	M	20.0	M
Resolute	-29	- 1	-25	-34	M	20.0	M
Cambridge Bay	-30	- 2	-24	-39	0.3	17.0	0.0
Mould Bay	-30	1	-20	-36	0.2	24.0	M
Sachs Harbour	-27	0	-17	-33	M	M	M
BRITISH COLUMBIA							
Cape St. James	4	- 1	8	- 1	3.4	M	25.3
Cranbrook	-13	- 7	1	-27	2.2	23.0	M
Fort Nelson	-26	- 6	-11	-39	M	18.0	M
Fort St. John	-26	-13	-19	-35	8.4	24.0	M
Kamloops	- 6	- 3	2	-16	2.4	6.0	15.7
Penticton	- 2	- 1	3	-12	3.6	10.0	17.4
Port Hardy	2	- 1	9	- 3	19.0	M	14.7
Prince George	-19	-10	0	-32	10.3	20.0	10.2
Prince Rupert	- 2	- 3	5	-12	25.1	0.0	M
Revelstoke	- 6	- 3	2	-17	16.5	33.0	15.5
Smithers	-14	- 5	- 2	-31	4.0	16.0	2.2
Vancouver	2	- 2	11	- 6	8.5	0.0	35.1
Victoria	3	- 1	11	- 4	9.8	2.0	21.7
Williams Lake	-15	- 7	0	-29	4.4	29.0	12.1
ALBERTA							
Calgary	-21	-13	1	-32	3.0	13.0	22.5
Cold Lake	-27	-13	-13	-37	3.6	M	M
Coronation	-26	-14	-12	-41	3.0	15.0	M
Edmonton Namao	-24	-13	- 8	-36	2.0	14.0	M
Fort McMurray	-29	-11	-18	-36	0.7	13.0	21.3
Jasper	-19	-10	- 1	-34	3.0	12.0	13.6
Lethbridge	-21	-15	4	-34	4.8	7.0	M
Medicine Hat	-24	-16	0	-37	2.8	17.0	13.2
Peace River	-27	-13	-19	-35	5.3	16.0	M
SASKATCHEWAN							
Cree Lake	-32	X	-15	-46	M	M	22.7
Estevan	-24	-11	-10	-35	1.9	11.0	22.6
La Ronge	-29	-13	-13	-39	M	19.0	M
Regina	-26	-12	-12	-36	1.0	17.0	18.7
Saskatoon	-28	-13	-14	-37	1.0	20.0	M
Swift Current	-24	-13	- 3	-34	M	15.0	13.6
Yorkton	-26	-11	-10	-37	2.3	12.0	34.9
MANITOBA							
Brandon	-25	-11	-10	-35	0.6	7.0	M
Churchill	-29	- 7	-14	-35	M	42.0	16.8
The Pas	-27	- 8	-13	-34	0.2	18.0	26.5
Thompson	-29	- 7	-11	-43	0.0	29.0	13.7
Winnipeg	-23	- 9	0	-33	0.4	5.0	40.5
ONTARIO							
Big Trout Lake	-29	- 9	-14	-36	0.6	50.0	M
Earlton	-19	- 6	- 8	-35	M	M	M
Kapuskasing	-23	- 8	- 9	-36	16.4	40.0	M
Kenora	-23	- 8	- 9	-34	4.4	M	M
London	- 3	1	15	-17	M	2.0	M
Moosonee	-22	- 5	- 7	-38	2.6	21.0	18.6
Muskoka	- 7	1	2	-26	M	37.0	M
North Bay	-14	- 4	0	-31	7.1	12.0	20.9
Ottawa	- 5	3	4	-23	33.3	20.0	12.7
Pickle Lake	-27	- 8	-14	-37	3.8	58.0	M
Red Lake	-26	- 9	-13	-38	0.0	44.0	22.2
Sudbury	-17	- 7	- 6	-33	17.4	30.0	19.6
Thunder Bay	-19	- 7	- 7	-33	6.7	28.0	M
Timmins	-22	- 9	-10	-40	10.3	54.0	M
Toronto	- 4	0	5	-19	0.8	0.0	M
Trenton	- 3	2	5	-20	20.6	6.0	M
Wiarton	- 5	- 1	3	-18	27.4	32.0	4.6
Windsor	- 4	- 1	6	-16	M	2.0	M
QUEBEC							
Bagotville	-11	1	4	-30	15.5	39.0	M
Blanc-Sablon	- 9	- 1	2	-25	16.7	14.0	M
Inukjuak	-24	- 6	- 8	-32	0.0	13.0	5.0
Kuujjuaq	-26	- 7	-13	-35	6.0	18.0	M
Kuujjuarapik	-22	- 6	- 9	-34	1.0	21.0	M
Manlwaki	-11	- 1	3	-35	14.0	21.0	14.5
Mont-Joli	- 7	2	4	-22	38.4	29.0	M
Montréal	- 5	2	5	-26	28.7	19.0	12.9
Natashquan	- 9	1	3	-25	18.8	11.0	M
Nitchequon	-22	- 1	- 9	-41	7.2	52.0	54.4
Québec	- 7	2	3	-25	31.9	52.0	12.7
Schefferville	-24	- 4	-10	-35	13.0	58.0	13.9
Sept-Iles	-11	0	1	-32	29.2	46.0	18.3
Sherbrooke	- 5	3	6	-26	65.8	12.0	8.9
Val-d'Or	-16	- 2	0	-38	11.4	42.0	M
NEW BRUNSWICK							
Charlo	- 6	3	4	-22	31.2	27.0	16.8
Fredericton	- 2	5	10	-20	82.5	6.0	M
Saint John	1	5	10	-20	95.1	10.0	16.8
NOVA SCOTIA							
Greenwood	3	7	16	-15	50.4	4.0	M
Shearwater	3	5	11	-15	62.0	1.0	18.0
Sydney	2	4	11	-11	48.8	1.0	11.9
Yarmouth	5	6	15	-12	57.4	8.0	11.1
PRINCE EDWARD ISLAND							
Charlottetown	1	5	12	-14	57.1	0.0	M
Summerside	0	4	11	-16	59.0	0.0	10.3
NEWFOUNDLAND							
Gander	- 2	2	8	-13	11.0	0.0	13.7
Port aux Basques	0	1	8	-13	63.0	7.0	M
St. John's	0	2	10	- 9	29.5	0.0	M
St. Lawrence	1	2	8	- 9	51.3	M	M
Cartwright	- 9	1	0	-18	11.0	59.0	3.5
Goose	-15	- 1	- 2	-27	31.1	67.0	13.2
Hopedale	-13	- 1	- 2	-20	41.8	48.0	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