



Environment
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Climatic Perspectives

MONTHLY
SUPPLEMENT
INCLUDED

December 13 to 19, 1988

A weekly review of the Canadian climate

Vol. 10 No. 51

Canadian Climate Centre



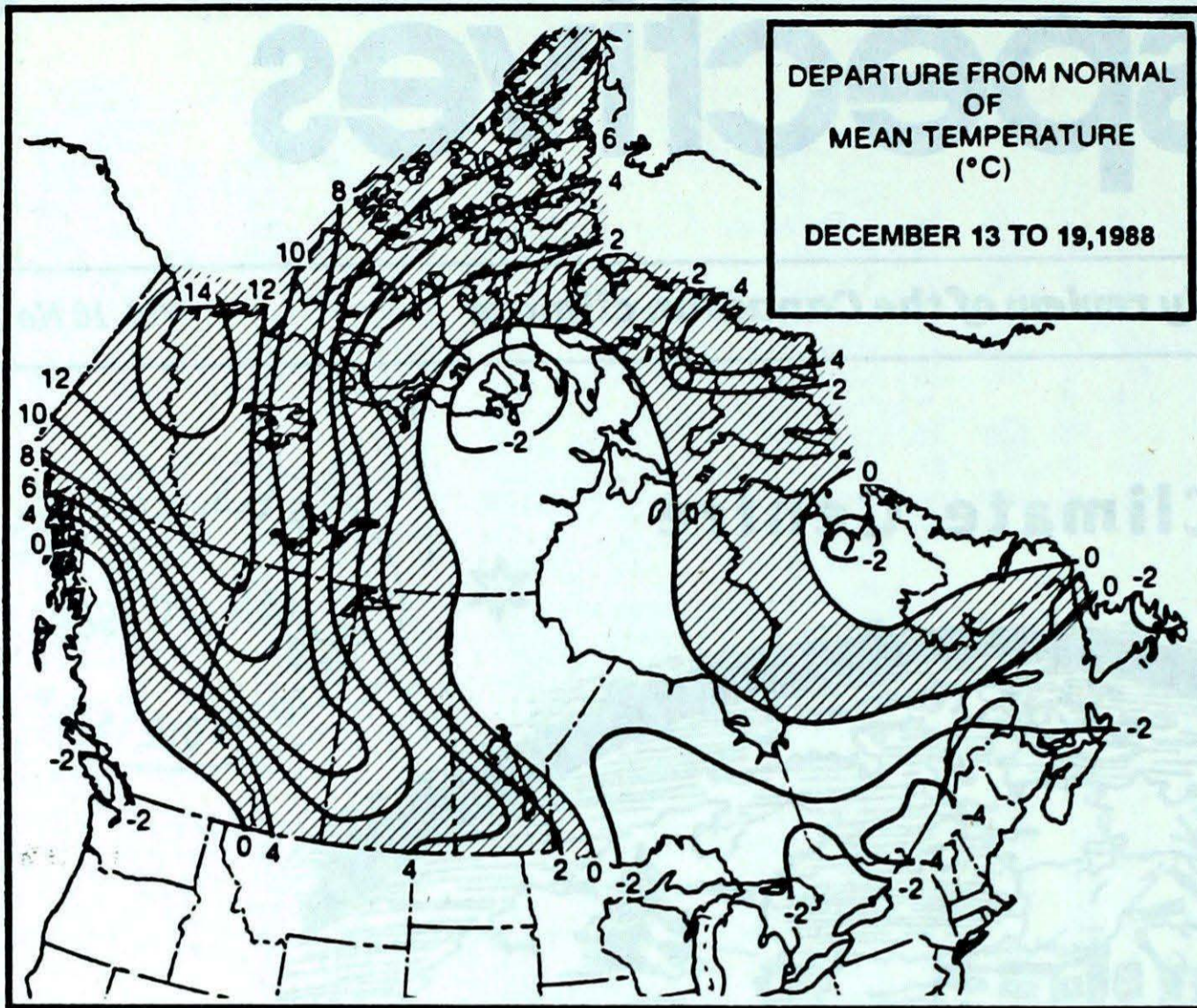
MERRY

CHRISTMAS

The staff of Climatic Perspectives would like to wish all our readers a Merry Christmas and a Happy New Year. As usual Climatic Perspectives will not be published during the holiday period. All maps and tables will be included in the New Year.

- **Heavy snowfalls blanket various parts of the country**
- **Oil rig capsizes in heavy Atlantic seas**

Canada



ACROSS THE COUNTRY

Yukon and Northwest Territories

An atmospheric ridge prevailed over northwestern Canada, while the Arctic vortex stalled over the east. High pressure influenced the weather pattern over the Yukon. Coastal mountain areas of the south received the heaviest snowfalls, with amounts approaching 50 cm., while in the interior it was relatively mild and dry. Strong southerly winds in the valleys and through mountain passes, reaching 100 km/h, caused whiteouts and some road closures. Record warm temperatures near the freezing mark were reported in the Mackenzie Delta over the weekend. Work continues on strengthening ice bridges at Fort Providence and Fort Simpson. Ice and high water levels are disrupting ferry services at Fort Providence. A series of low pressure systems affected the eastern Arctic, resulting in mostly cloudy and windy conditions. On Baffin Island, northwest winds gusted up to 102 km/h. Blizzards were common in the Keewatin District and on Baffin Island.

British Columbia

A heavy snowfall buried parts of the central interior on December 13, causing major power outages. Some communities were without hydro for two days. Prince George broke the previous all time high 24-hour snowfall record of 29 cm set in January 1958 by 2 cm. For the most part, it was a relatively serene week. Coastal areas were relatively sunny for most of the period. An influx of milder air produced above freezing temperatures in the interior; a number of daily temperature records were also broken.

Prairie Provinces

A welcomed snowfall covered most of southern Alberta's farm land at the beginning of the period. Amounts ranged from 5 to 10 centimetres, but heavier amounts of up to 20 cm were reported in the foothills. In central Alberta, rain followed by rapidly dropping temperatures made for slick conditions over the weekend, but the precipitation fell as snow across northern Alberta.

In Saskatchewan and Manitoba, the

Weekly Temperature extreme (°C)

Location	Maximum	Minimum
British Columbia Hope	14	Dease Lake -26
Yukon Territory Burwash	7	Ross River -34
Northwest Territories . . Norman Wells	4	Shepherd Bay A -42
Alberta Calgary Int'l	12	Fort Chipewyan -36
Saskatchewan Swift Current	5	Cree Lake -39
Manitoba Portage La Prairie	0	Lynn Lake -34
Ontario Windsor	8	Petawawa -33
Québec Sherbrooke	1	Schefferville -33
New Brunswick Saint John	2	Charlo -25
Nova Scotia Yarmouth	6	Truro -20
Prince Edward Island . . . Summerside	1	Charlottetown -16
Newfoundland Cape Race	6	Churchill Falls -35

Across The Country...

Warmest Mean Temperature	Cape St.James (BC)	6
Coollest Mean Temperature	Shepherd Bay A (NWT)	-33

88/12/13-88/12/19

pattern of above freezing temperatures in the southwest and cold in the east continued. During the mid-week, another dome of Arctic air moved down from the north, dropping temperatures to the minus-thirties. Brisk winds resulted in high wind chills. On December 13th, much needed snow spread into southwestern Saskatchewan. Swift Current received 24 cm.

Ontario

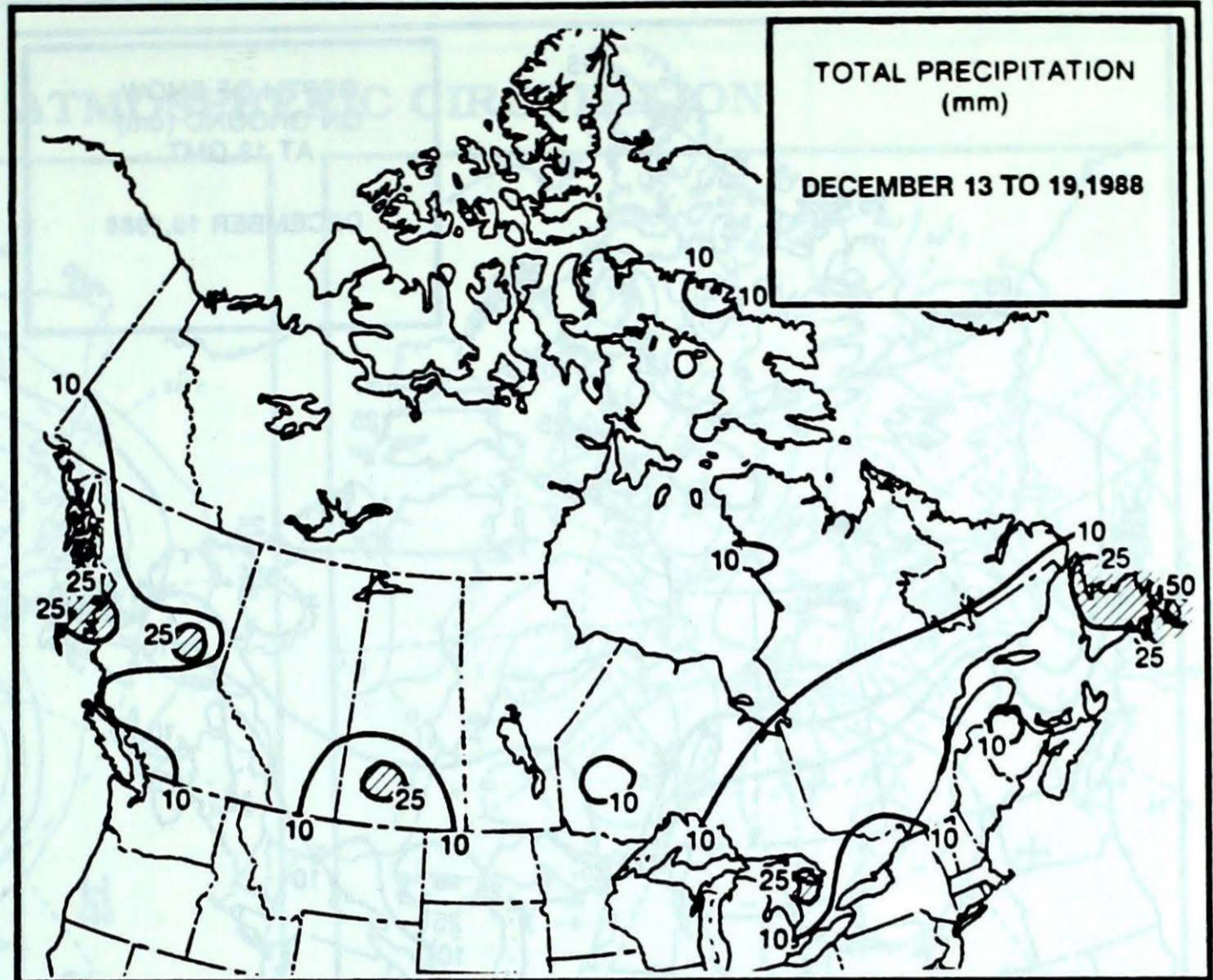
Arctic air streamed southwards, and snow covered the whole province for the first time this season. Cold temperatures and heavy snow squall activity to the lee of the Lakes made it seem like winter had arrived. The downhill ski season got into full swing, but getting to these areas at times, was difficult at best. Multi-car accidents, due to blowing and drifting snow, closed highway 400 north of Toronto on December 15, the main route for recreationists and commuters into the snowbelt. Relatively dry disturbances dumped the heaviest snowfalls, in the 10 to 20 centimetre range, over the eastern half of the province, but most of southern Ontario did not receive much more than a light covering. Old man winter seemed to relinquish his grip the last day of the period, with substantially warmer temperature readings, resulting in the possibility of a green Christmas in the south.

Quebec

Mild, near freezing temperatures on December 14 and 15 were short lived, as another surge of Arctic air covered the province. Temperatures dropped to daily record low values over the weekend. Even in the Eastern Townships minimum readings got down to the minus thirties. Heaviest snowfalls of up to 25 cm occurred in eastern Quebec, most notably along the north shore and the north coast of the Gulf of St. Lawrence. This week's cold weather allowed ski resort operators to make artificial snow to compensate for Mother Nature's lack of cooperation.

Atlantic Provinces

Two Atlantic storms affected the region, the second one tracking across the Island of Newfoundland. The first system

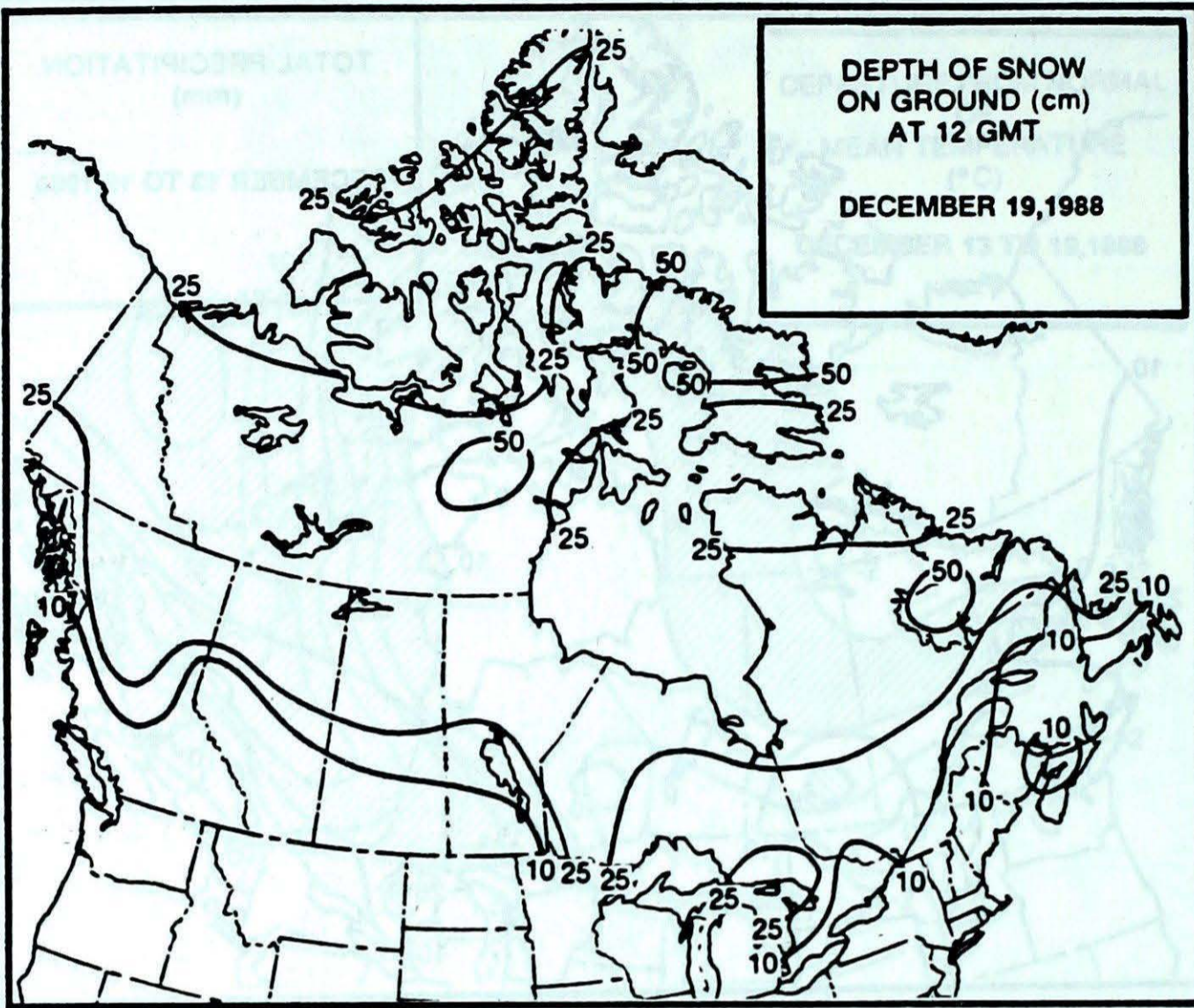


Heaviest Weekly Precipitation (mm)

British Columbia	Prince Rupert	40
Yukon Territory	Blanchard River	58
Northwest Territories	Clyde	12
Alberta	Medicine Hat	11
Saskatchewan	Swift Current	29
Manitoba	Gimli	6
Ontario	Wiarton	26
Québec	Sept-Iles	22
New Brunswick	St. John	10
Nova Scotia	Sable	33
Prince Edward Island	Charlottetown	20
Newfoundland	Cape Race	53

on December 15, brushed past the Maritimes, but dumped 15 to 30 centimetres of snow on the west Newfoundland coast. At Bonavista, winds gusted to 119 km/h. On the same day, the oil rig Rowan Gorilla 1, which was being towed across the Atlantic, ran into the severe storm southeast of Newfoundland. Winds estimated to be hurricane-force produced towering seas, with waves higher than the rig itself. Twenty-seven crew members had to be abandoned the rig Thursday morning when it started to list, shortly before it capsized and presumably

sunk. The crew had to ride out the storm in an enclosed life capsule until being rescued the next day. The first major snow storm of the season struck the Maritimes on Sunday, and then moved off towards Newfoundland. Up to 34 cm of snow fell on Nova Scotia, causing the cancellation of a number of Christmas events. The snow changed to freezing rain and then rain in Newfoundland. Winds at Gander were clocked gusting to 130 km/h. In Labrador, cold temperatures moderated late in the week. A snow storm dumped up to 20 cm of snow Sunday night.



CLIMATIC PERSPECTIVES VOLUME 10

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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.

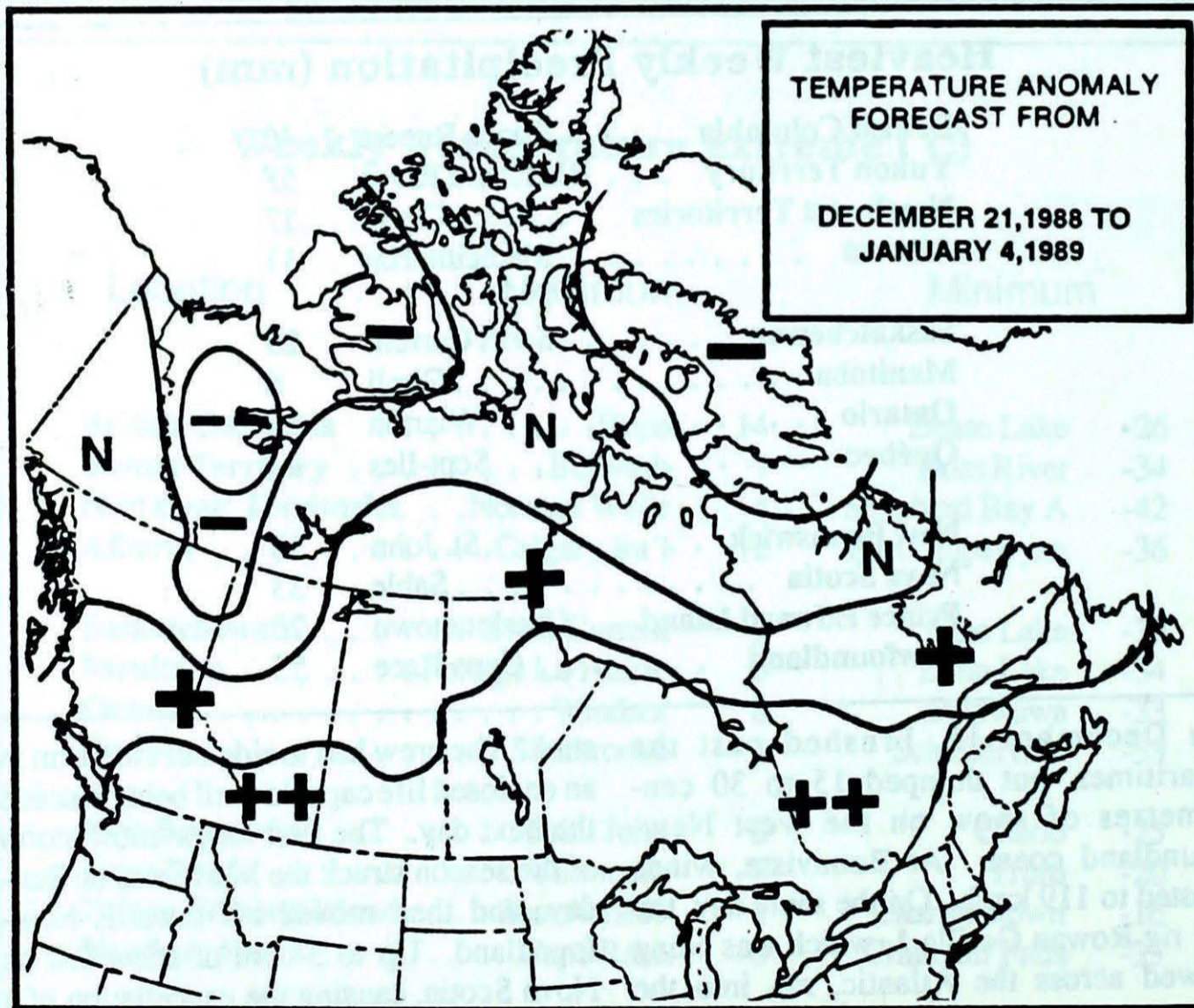
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The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily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

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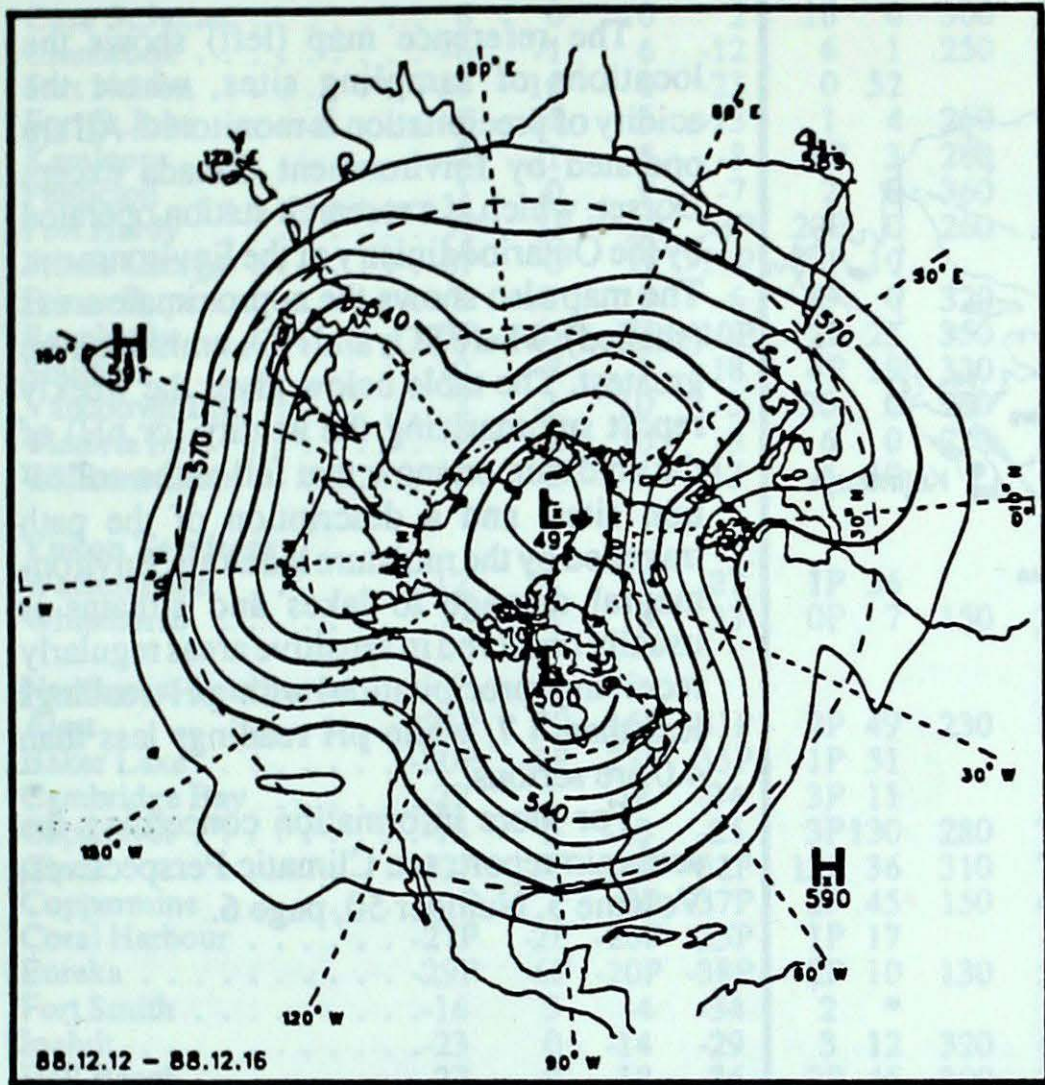


- ++ much above normal
- + above normal
- N normal
- below normal
- much below normal

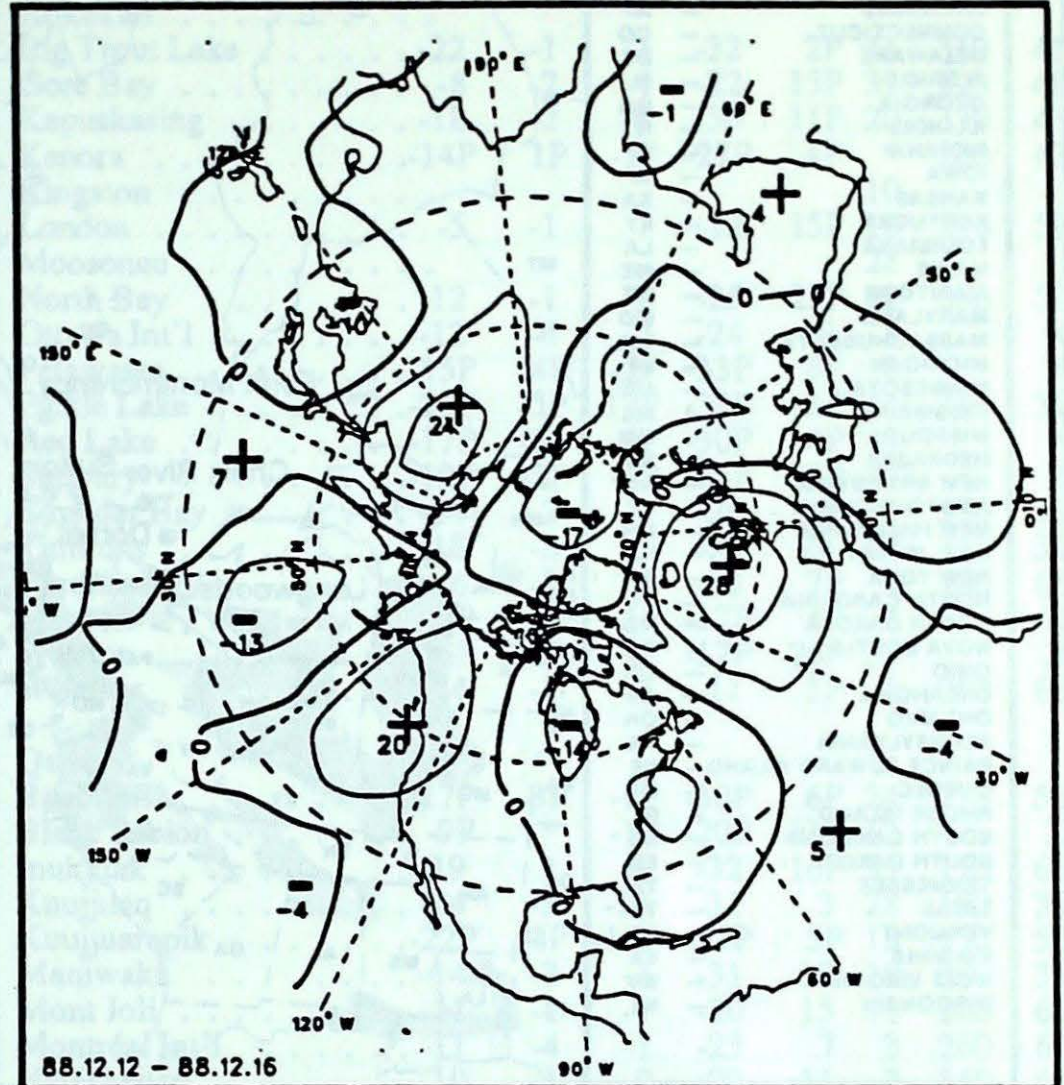
Temperature Anomaly Forecast

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.

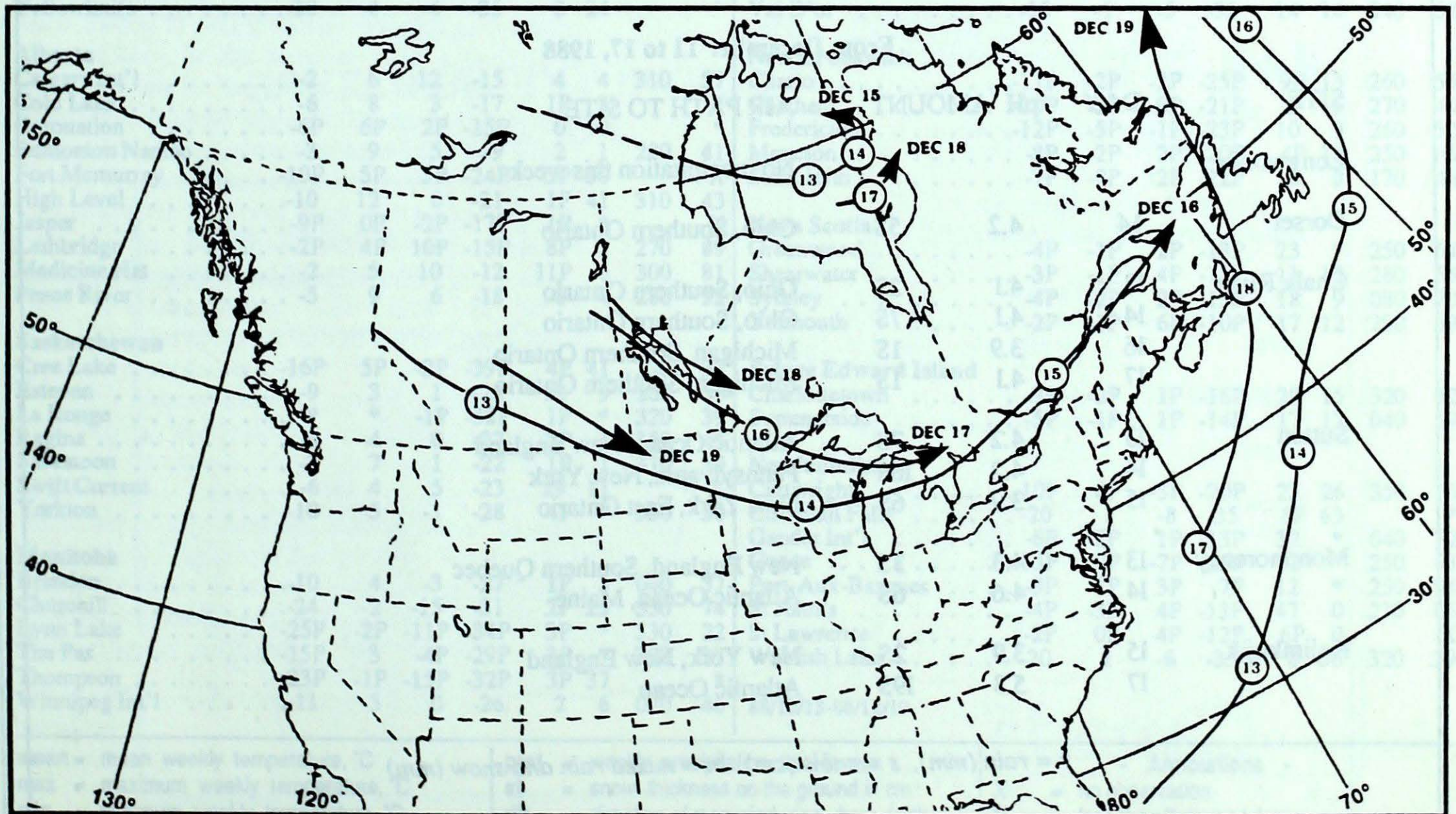
50 kPa ATMOSPHERIC CIRCULATION



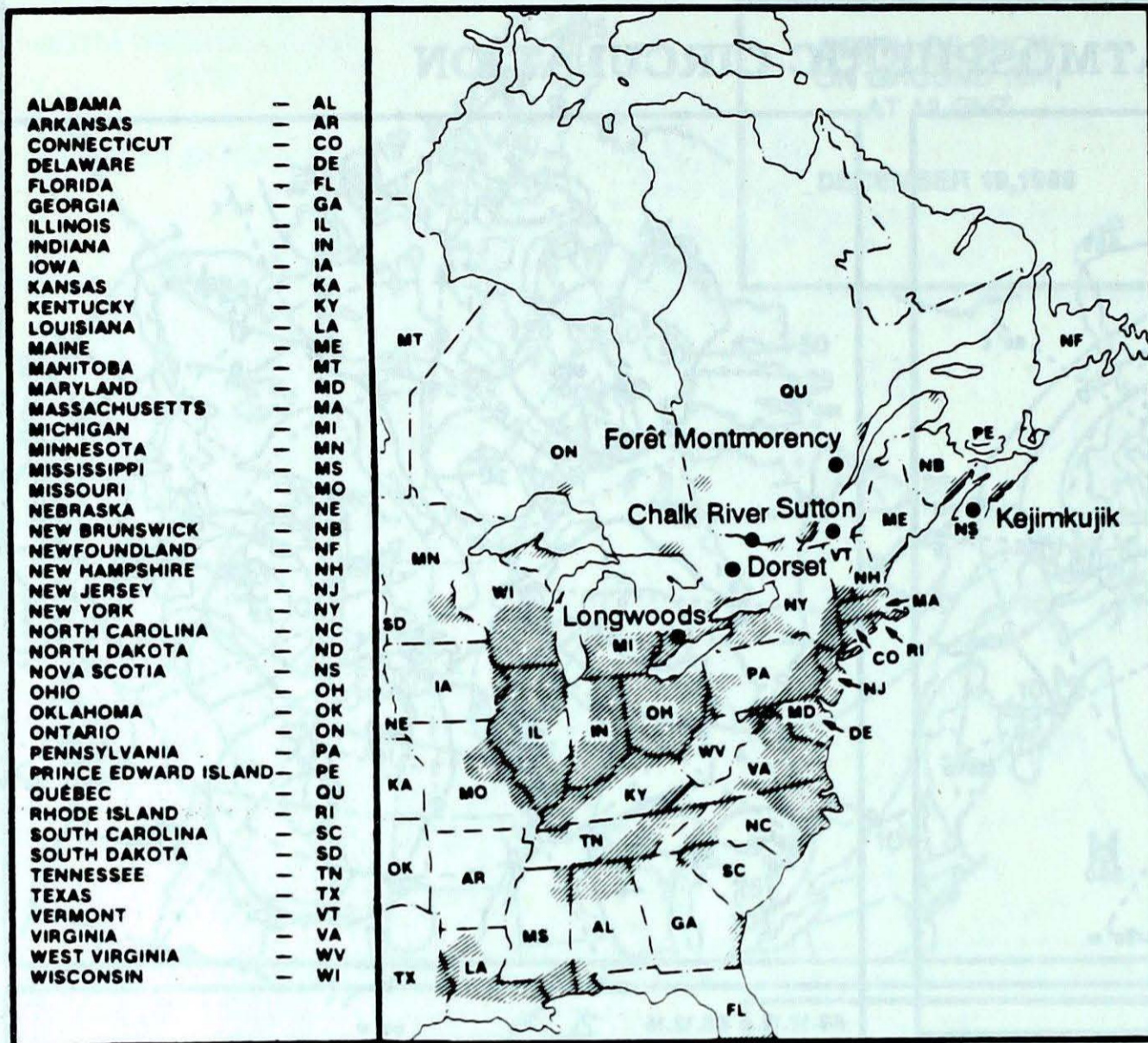
Mean geopotential height
50 kPa level (10 decameter intervals)



Mean geopotential height anomaly
50 kPa level (10 decameter intervals)



Storm track - Position of storm at 12 GMT each day during the period.



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 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.

For more information concerning the acid rain report, see Climatic Perspectives, Volume 5, Number 50, page 6.

From December 11 to 17, 1988

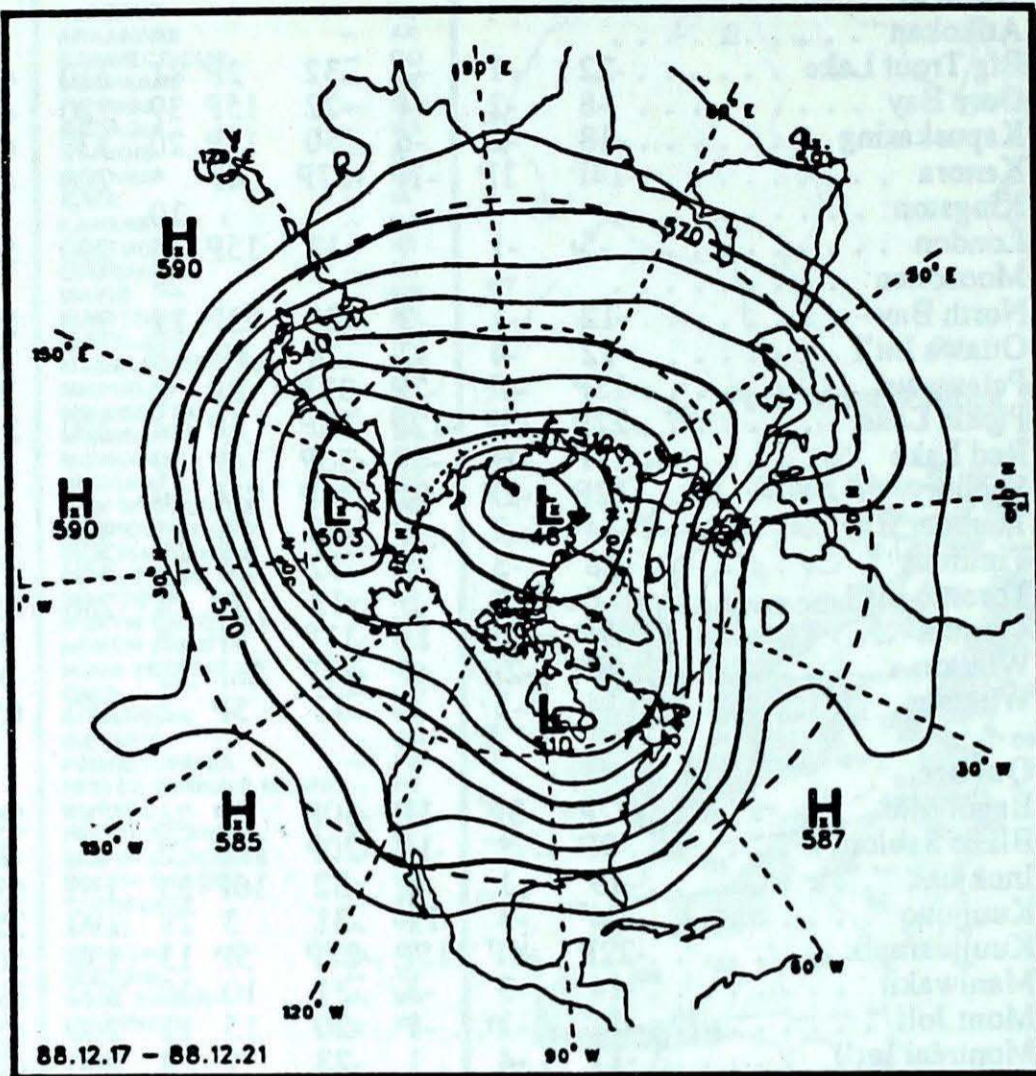
SITE	DAY	pH	AMOUNT	AIR PATH TO SITE
Longwoods				No precipitation this week
Dorset	14	4.2	5S	Ohio, Southern Ontario
Chalk River	13	4.1	2S	Ohio, Southern Ontario
	14	4.1	7S	Ohio, Southern Ontario
	16	3.9	1S	Michigan, Southern Ontario
	17	4.1	1S	Michigan, Southern Ontario
Sutton	13	4.2	7S	Atlantic Ocean, New England
	14	4.2	10S	Pennsylvania, New York
	15	3.9	6S	New York, East Ontario
Montmorency	13	4.3	3S	New England, Southern Quebec
	14	4.6	6S	Atlantic Ocean, Maine
Kejimikujik	15	3.9	2S	New York, New England
	17	5.3	19S	Atlantic Ocean

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

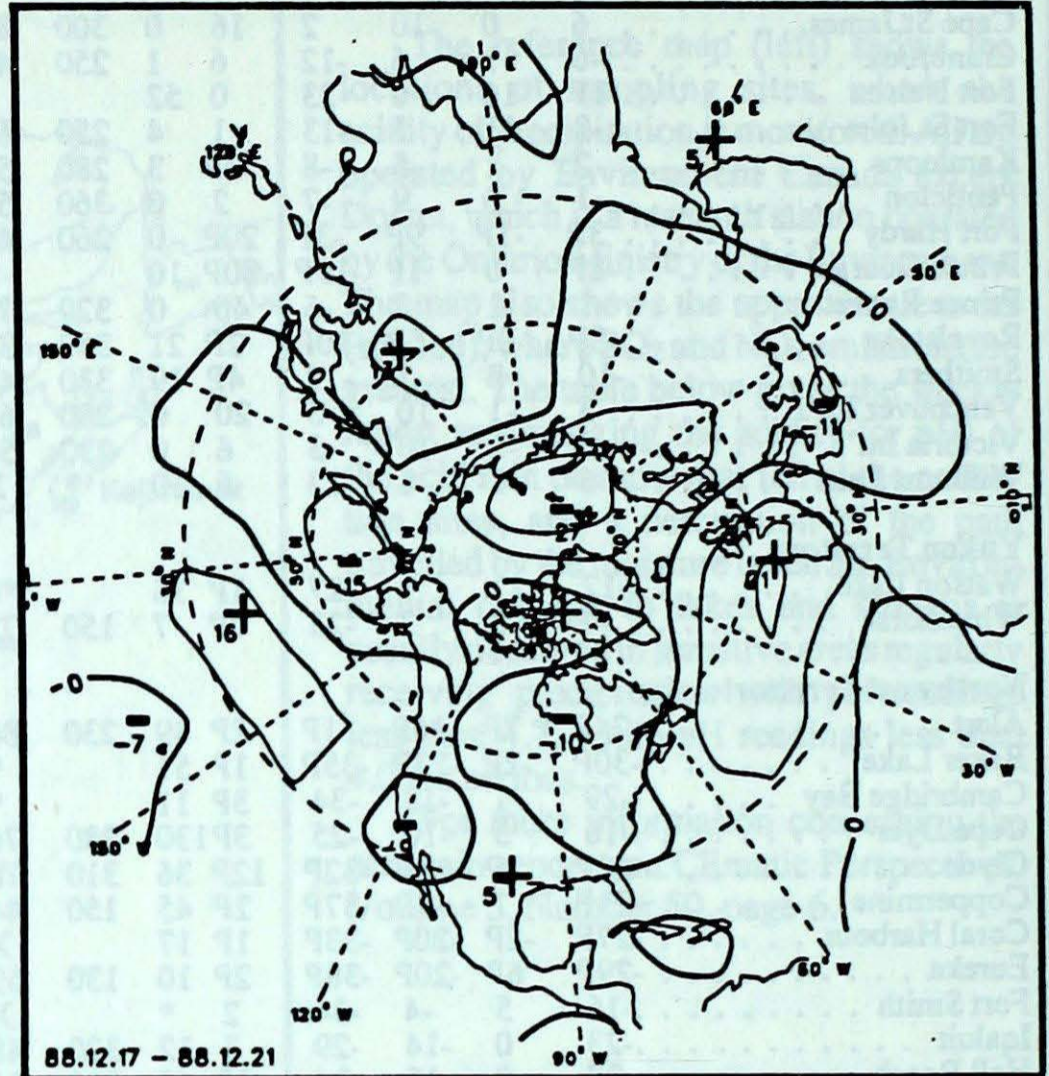
STATION	temperature				precip.		wind max		STATION	temperature				precip.		wind max	
	mean	anom	max	min	ptot	st	dir	vit		mean	anom	max	min	ptot	st	dir	vit
British Columbia									Ontario								
Cape St. James	6	0	10	2	16	0	300	87	Atikokan								*
Cranbrook	-6	-1	6	-12	6	1	250	43	Big Trout Lake	-22	-1	-2	-32	2P	41	310	41
Fort Nelson	-11	10	0	-23	0	52		*	Gore Bay	-8	-2	4	-22	15P	39	220	48
Fort St. John	-2	11	5	-13	1	4	250	65	Kapusking	-18	-2	-6	-30	11P	20	330	43
Kamloops	-2	1	5	-8	3P	3	280	59	Kenora	-14P	1P	-1P	-27P	4P	*	200	43
Penticton	-1	0	9	-7	2	0	360	56	Kingston							10	
Port Hardy	3P	-1P	9P	-3P	20P	0	260	46	London	-5	-1	7	-12	15P	10	290	59
Prince George	-8P	0	1P	-19P	30P	10		*	Moosonee							28	
Prince Rupert	1	-1	8	-6	40	0	320	78	North Bay	-12	-1	-2	-25	23P	22	350	59
Revelstoke	-3P	0P	5P	-10P	2P	21	350	33	Ottawa Int'l	-12	-4	-2	-24	10	8		X
Smithers	-10	-2	1	-18	4P	19	330	46	Petawawa	-15P	-4P	-2P	-33P	8P	8		X
Vancouver Int'l	3	-1	10	-3	20	0	280	67	Pickle Lake	-22P	-5P	-12P	-32P	3P	44	260	37
Victoria Int'l	2	-2	10	-3	6	0	230	54	Red Lake	-17P	-1P	-6P	-30P	4P	49		*
Williams Lake	-6	1	1	-13	6	10		X	Sudbury	-12P	-2P	-2P	-24P	21P	29		X
Yukon Territory									Thunder Bay	-14	-2	-1	-26	6	15	350	33
Watson Lake	-12	11	1	-27	1P	36		*	Timmins	-18	-3	-5	-32	24	24	310	37
Whitehorse	-7	8	3	-23	0P	7	150	72	Toronto Int'l	-6	-2	5	-13	7P	4	280	65
Northwest Territories									Trenton	-7P	-2P	5P	-17P	4P	*		X
Alert	-24P	7P	-16P	-31P	2P	49	230	80	Warton	-6P	-2P	4P	-17P	26P	35		X
Baker Lake	-30P	-2P	-23P	-35P	1P	51		*	Windsor	-4	-1	8	-11	5P	1	260	65
Cambridge Bay	-29	1	-18	-34	3P	11		*	Québec								
Cape Dyer	-16	5	-10	-25	3P	130	280	76	Bagotville	-17P	-3P	-1P	-30P	6P	24	270	56
Clyde	-22P	3P	-16P	-32P	12P	36	310	78	Blanc Sablon	-9P	*	-1P	-20P	11P	12		X
Coppermine	-21P	7	-8P	-37P	2P	45	150	44	Inukjuak	-19	1	-9	-32	16P	33	110	63
Coral Harbour	-27P	-2P	-20P	-33P	1P	17		X	Kuujuuaq	-24	-3	-13	-31	3	28	190	35
Eureka	-29P	6P	-20P	-38P	2P	10	130	59	Kuujuarapik	-22P	-4P	-15P	-27P	5P	13	130	50
Fort Smith	-16	5	-4	-34	2	*		X	Maniwaki	-14	-3	-3	-31	10	10	300	39
Iqaluit	-23	0	-14	-29	3	12	320	48	Mont Joli	-11	-1	-1	-20	15	11	260	65
Hall Beach	-27	0	-18	-36	2P	45	300	35	Montréal Int'l	-11	-4	1	-23	7	3	260	67
Inuvik	-11P	16P	2P	-29P	2P	36		X	Natashquan	-10	1	0	-20	11	7	360	61
Mould Bay	-24P	7P	-16P	-35P	4P	28		X	Québec	-14	-4	-1	-28	18	19	230	59
Norman Wells	-11	15	4	-22	2P	7		X	Schefferville	-22	-1	-10	-33	4P	38	220	56
Resolute	-26	3	-20	-32	2P	22		*	Sept-Îles	-12	0	-1	-24	22P	24	210	39
Yellowknife	-20	4	-4	-35	2	24		*	Sherbrooke	-14	-5	1	-31	17	12	270	67
Alberta									Val D'or	-15	-1	-5	-32	14	14	340	52
Calgary Int'l	-2	6	12	-15	4	4	310	57	New Brunswick								
Cold Lake	-6	8	3	-17	1P	3		*	Charlo	-11P	-2P	-2P	-25P	9P	13	260	56
Coronation	-6P	6P	2P	-15P	0	0		*	Chatham	-10P	-2P	0P	-21P	5	5	270	44
Edmonton Namao	-3	9	5	-9	2	1	280	41	Fredericton	-12P	-5P	-1P	-23P	10	9	260	52
Fort McMurray	-10P	5P	3P	-24P	3P	30		X	Moncton	-8P	-2P	2P	-20P	4P	18	250	65
High Level	-10	12	6	-21	1P	41	310	43	Saint John	-7P	-2P	2P	-22P	10	8	170	46
Jasper	-9P	0P	-2P	-17P	1P	*		X	Nova Scotia								
Lethbridge	-2P	4P	10P	-15P	8P	1	270	89	Greenwood	-4P	-1P	2P	-13P	23	*	250	54
Medicine Hat	-2	5	10	-12	11P	6	300	81	Shearwater	-3P	-1P	4P	-15P	11	12	280	56
Peace River	-5	9	6	-18	0	4	280	52	Sydney	-4P	-2P	2P	-13P	18	9	080	70
Saskatchewan									Yarmouth	-2P	-1P	6P	-10P	17	12	290	59
Cree Lake	-16P	5P	-2P	-39P	4P	41	320	37	Prince Edward Island								
Estevan	-9	3	1	-28	18	9	260	56	Charlottetown	-7P	-2P	1P	-16P	20	15	320	52
La Ronge	*	*	-1P	-32P	1P	*	320	39	Summerside	-5P	-1P	1P	-14P	17	12	040	59
Regina	-9	4	0	-27	2P	4	350	43	Newfoundland								
Saskatoon	-7	7	1	-22	1P	1	310	39	Cartwright	-10P	0P	-3P	-20P	23	26	350	76
Swift Current	-6	4	5	-23	29	11		X	Churchill Falls	-20	1	-8	-35	6P	63		*
Yorkton	-10	5	-1	-28	4P	*	330	50	Gander Int'l	-6P	-2P	1P	-13P	37	*	040	72
Manitoba									Goose	-15P	0P	-7P	-25P	12	*	250	63
Brandon	-10	4	-3	-27	1P	3	040	57	Port-Aux-Basques	-3P	-1P	3P	-7P	12	*	250	94
Churchill	-24	-2	-15	-31	2P	25	330	74	St John's	-4P	-3P	4P	-13P	47	0	230	85
Lynn Lake	-25P	-2P	-11P	-34P	3P	*	330	22	St Lawrence	-2P	0P	4P	-12P	6P	0		X
The Pas	-15P	3	-4P	-29P	3P	*	320	37	Wabush Lake	-20	1	-6	-35	8	36	320	39
Thompson	-23P	-1P	-15P	-32P	3P	37		*	88/12/13-88/12/19								
Winnipeg Int'l	-11	3	0	-26	2	6	020	46									

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.
 vit = wind speed in km/h
 - Annotations -
 X = no observation
 P = less than 7 days of data.
 * = missing data when going to printing.

50 kPa ATMOSPHERIC CIRCULATION



Mean geopotential height
50 kPa level (5 decameter intervals)



Mean geopotential height anomaly
50 kPa level (5 decameter intervals)



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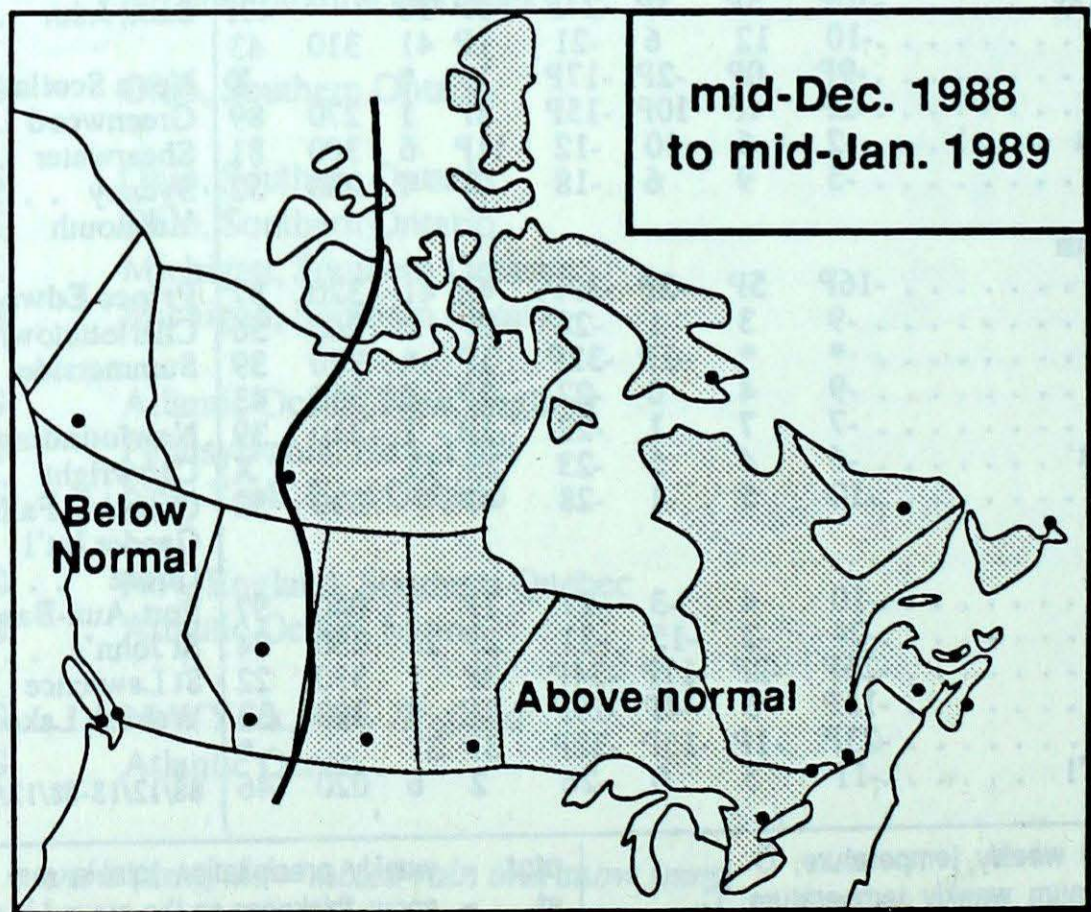
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MONTHLY TEMPERATURE FORECAST

*Normal temperatures for
mid-December to mid-January, °C*

Whitehorse	-19	Toronto	-5
Yellowknife	-26	Ottawa	-9
Iqaluit	-24	Montreal	-9
Vancouver	3	Quebec	-11
Victoria	4	Fredericton	-8
Calgary	-10	Halifax	-3
Edmonton	-14	Charlottetown	-6
Regina	-15	Goose Bay	-15
Winnipeg	-17	St. John's	-3



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