

Climatic Perspectives

MONTHLY
SUPPLEMENT
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Ref # C-2

January 15 to 21, 1990

A weekly review of Canadian climate

Vol.12 No.3

Respite from winter continues across most of Canada

Except for the Canadian east coast, January 1990 to-date has been relatively mild, with temperatures during the first three weeks of the year running as much as 12 degrees above normal. This is in stark contrast to last month, when many Canadians shivered in bitter cold, thinking this was an ominous sign of the winter to come. Many might characterize this current prolonged warm spell as the "January Thaw".

January Thaw

The latter part of January is statistically the coldest time of the year in Canada, occurring after the winter solstice, when the sun's rays are the weakest. Every so often, the cold weather regime breaks down, and a mild Pacific air mass covers a good portion of the country, resulting in a significant thaw that might last from a few days to a week, but seldom longer. This has come to be known as the "January Thaw".

While such a phenomenon can occur at any time during the winter, statistically there is indeed a good chance that such a thaw will occur during the latter half of January. What is also surprising, is that climatological records from a number of major centres across the country, except

Vancouver, all show that there is usually on the average a definite mild period showing up after mid-January. It is also significant that the high frequency of such mild days occurs progressively later in the month as one moves eastwards across Canada.

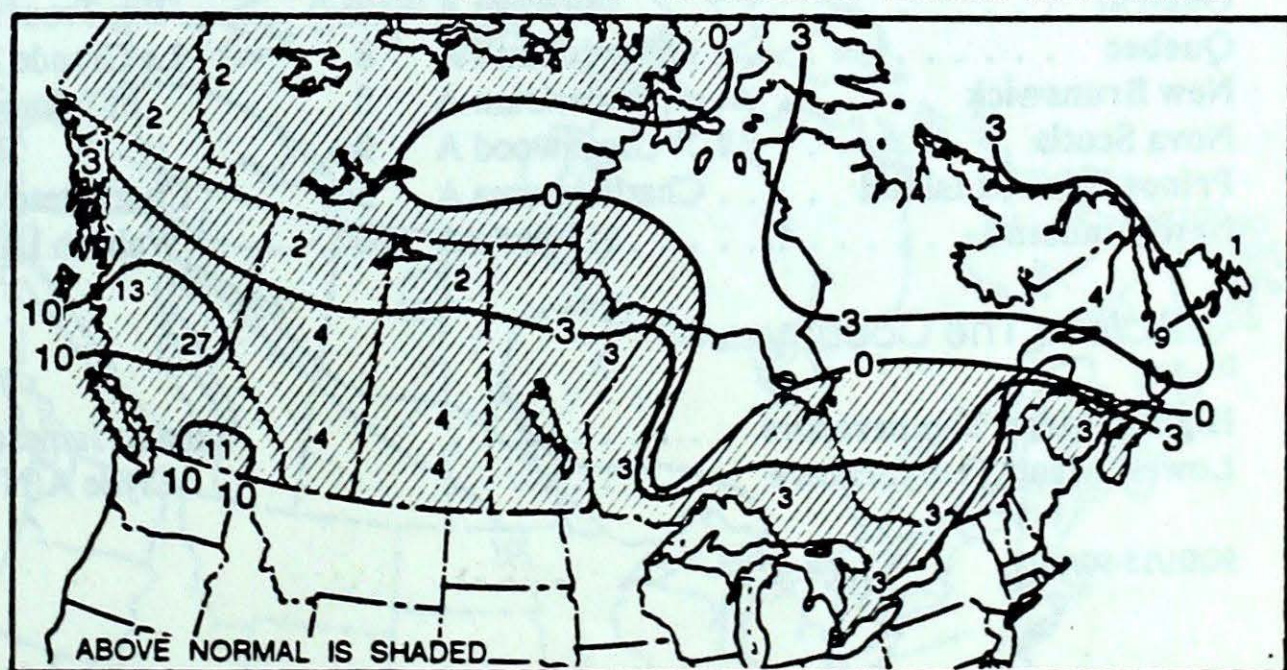
The cause of the "January Thaw" is a breakdown in the prevailing northwesterly steering flow across North America in the upper atmosphere. Normally such a flow causes frequent cold outbreaks of Arctic air to stream southeastwards across the continent, as was the case this past December. Every so often this steering current shifts more westerly or southwesterly, spreading a mild Pacific air mass inland and across the country. Moderation

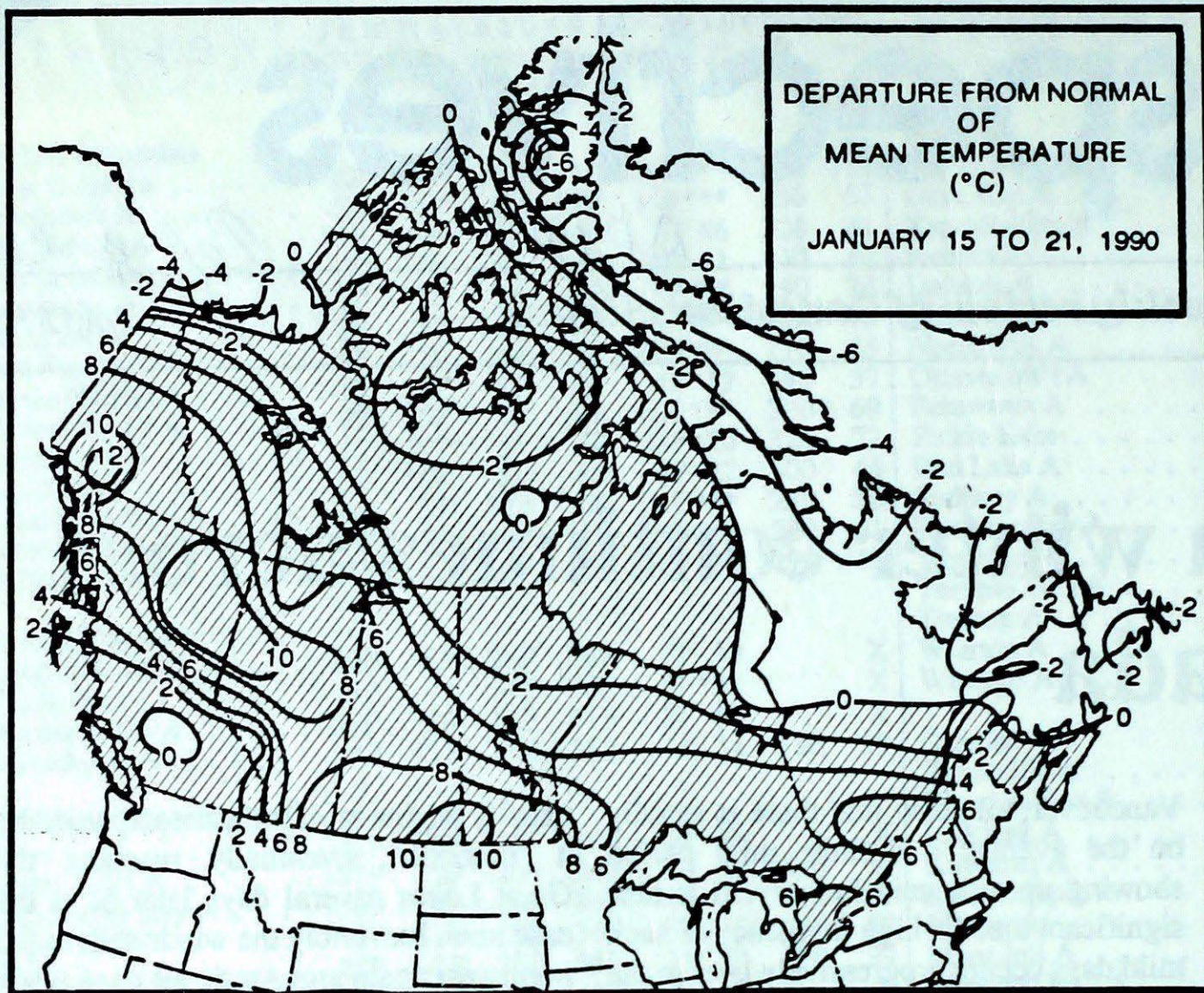
usually begins in Alberta accompanied by a "chinook", eventually reaching the Great Lakes several days later as is the case now. Inevitably the winds shift to the northwest again and Arctic air once again spills southwards.

Most of the country to return to below-normal temperatures...

For the week of January 29, near-normal temperatures are anticipated for the Arctic islands, southern and central Ontario, and the southeastern half of Quebec. The Atlantic provinces can expect above-normal temperatures. For the rest of the country, below-normal temperatures are likely.

NUMBER OF CONSECUTIVE WEEKS OF ABOVE/BELOW NORMAL TEMPERATURE





Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-15.1	-23.3
Iqaluit A	-21.4	-29.7
Yellowknife A	-23.9	-32.4
Vancouver Int'l A	5.7	0.4
Victoria Int'l A	6.5	0.6
Calgary Int'l A	-4.0	-16.5
Edmonton Int'l A	-8.3	-19.9
Regina A	-11.6	-22.6
Saskatoon A	-12.9	-23.6
Winnipeg Int'l A	-14.1	-24.4
Ottawa Int'l A	-6.9	-16.1
Toronto Int'l A	-2.7	-11.7
Montréal Int'l A	-6.2	-15.3
Québec A	-7.6	-17.3
Fredericton A	-4.0	-15.4
Saint John A	-2.7	-13.7
Halifax (Shearwater)	0.1	-8.3
Charlottetown A	-2.9	-11.7
Goose A	-10.9	-20.1
St John's A	-0.3	-7.3

Weekly temperature and precipitation extremes

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Abbotsford A 11	Puntzi Mountain (aut) -29	Estevan Point (aut) 58
Yukon Territory	Whitehorse A 1	Komakuk Beach A -39	Shingle Point A 4
Northwest Territories	Hay River -2	Eureka -52	Yellowknife A 13
Alberta	Calgary Int'l A 9	High Level A -27	Cold Lake A 6
Saskatchewan	Swift Current A 4	Cree Lake -38	Meadow Lake 6
Manitoba	Portage La Prairie A 2	Thompson A -41	Norway House A 10
Ontario	Windsor A 12	Big Trout Lake -37	North Bay A 30
Quebec	Montréal Int'l A 8	La Grande IV A -46	Ste-Agathe-des-Monts 40
New Brunswick	Fredericton A 8	St-Léonard A -29	Fredericton A 17
Nova Scotia	Greenwood A 9	Truro -18	Sable Island 28
Prince Edward Island	Charlottetown A 5	Charlottetown A -20	Charlottetown A 25
Newfoundland	St John's A 6	Wabush Lake A -36	Burgeo 64

Across The Country...

Highest Mean Temperature	Cape St James(BC) 6
Lowest Mean Temperature	Clyde A(NWT) -36

90/01/15-90/01/21

CLIMATIC PERSPECTIVES
VOLUME 12

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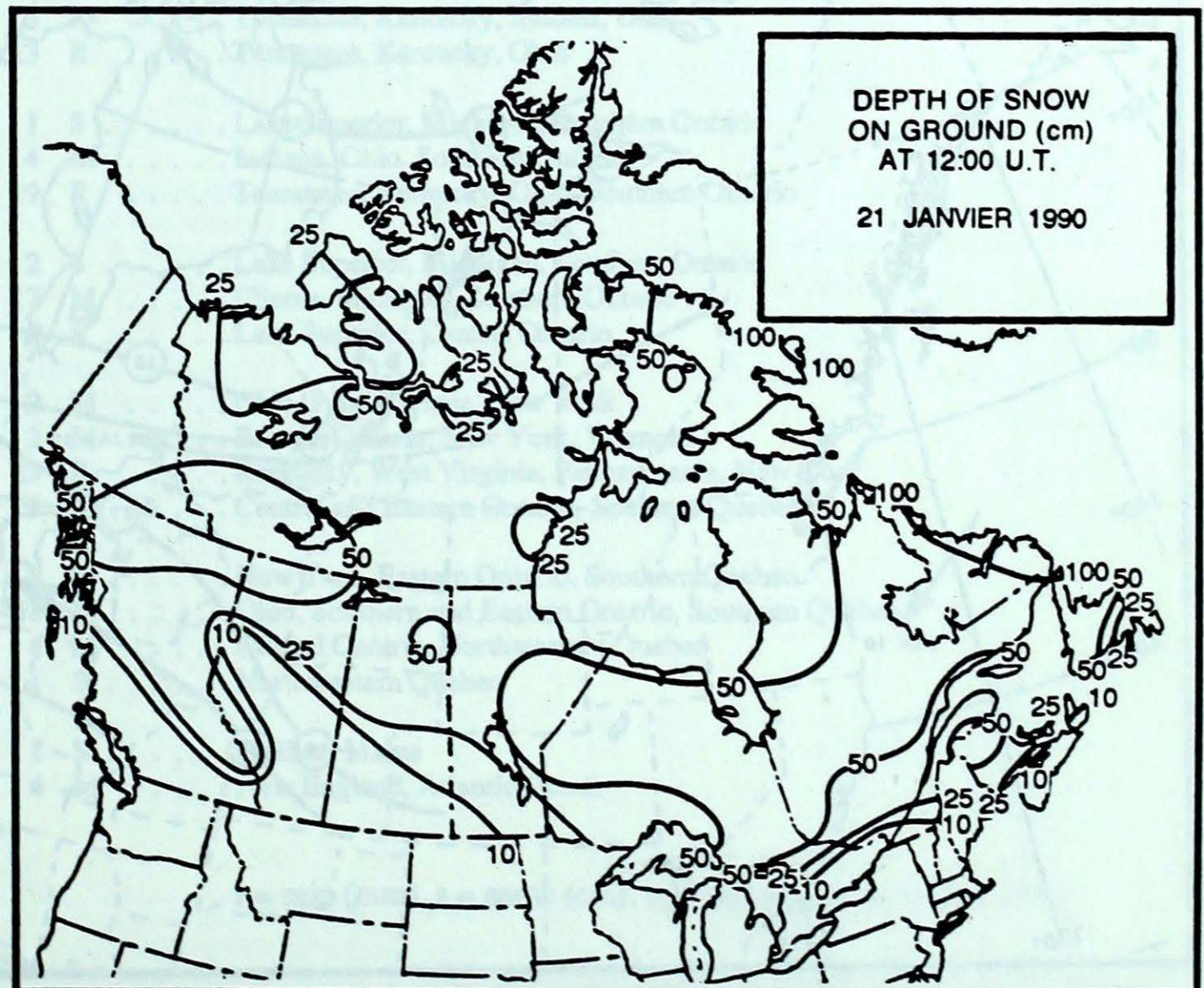
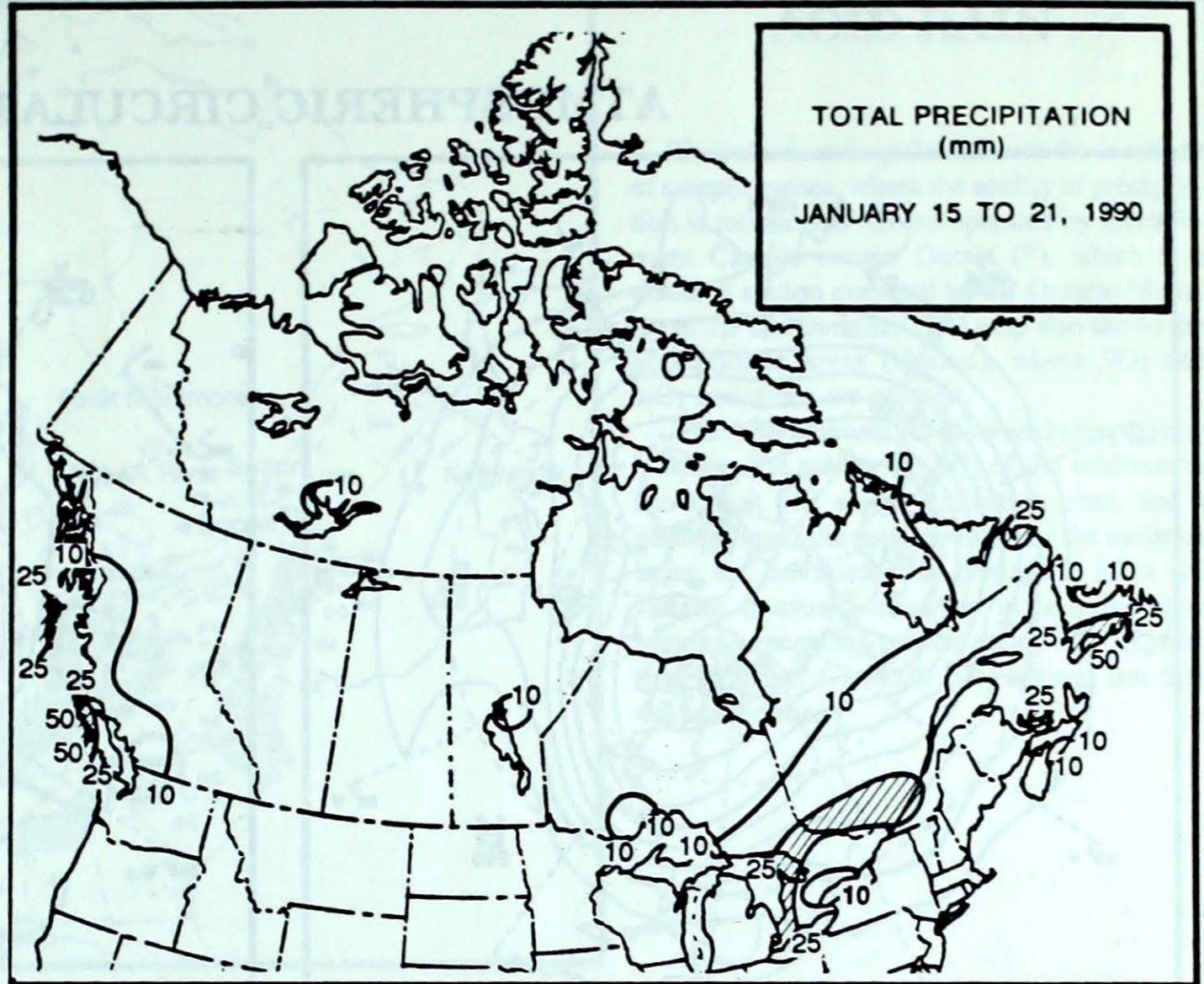
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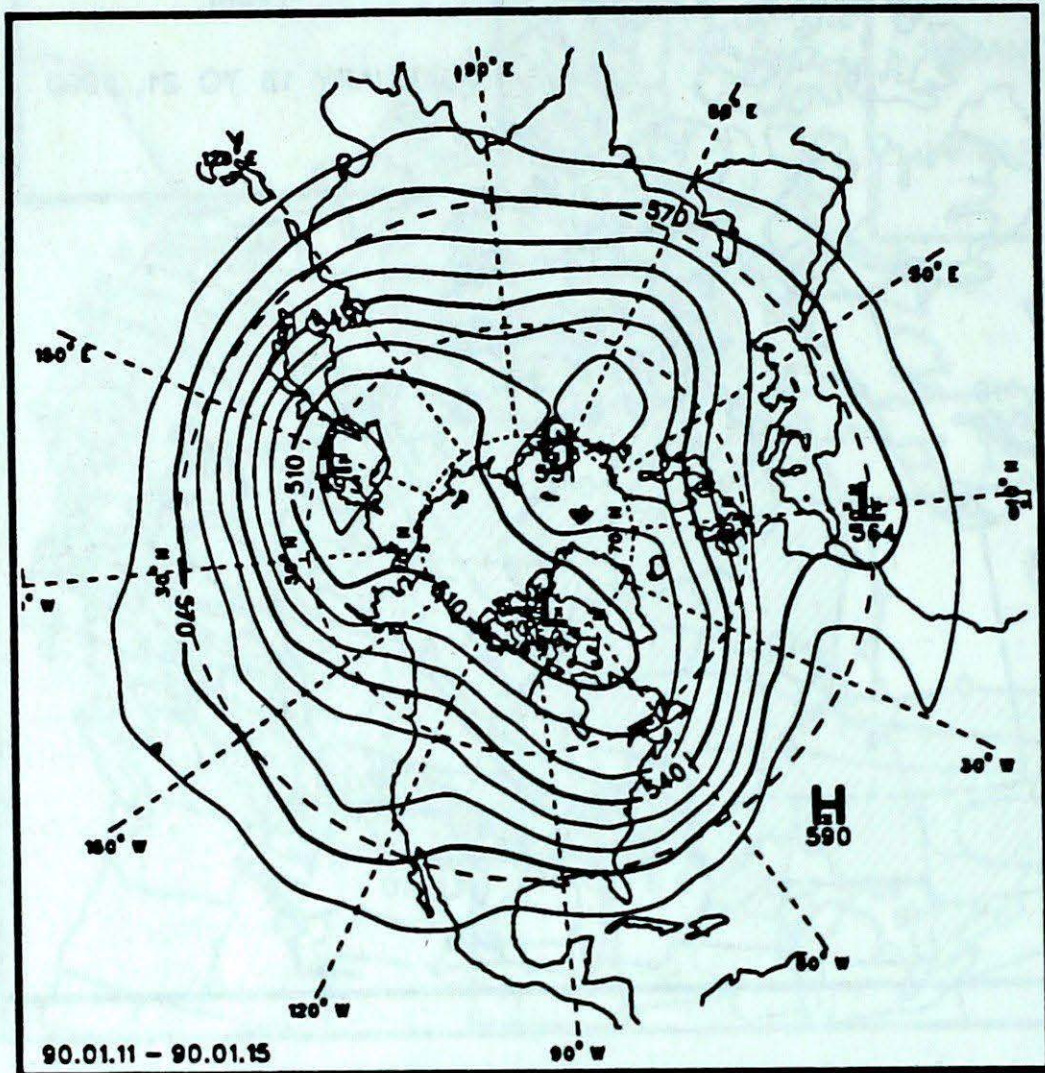
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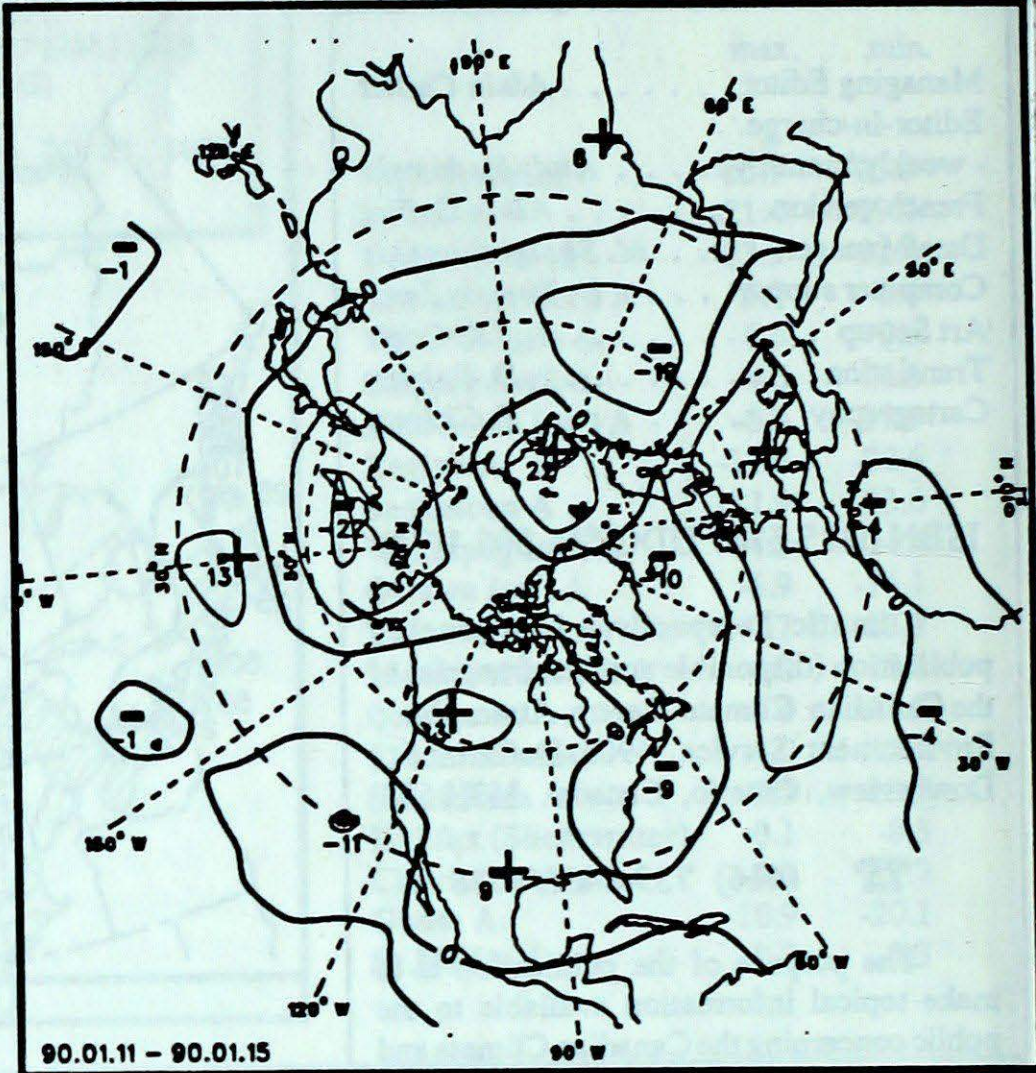
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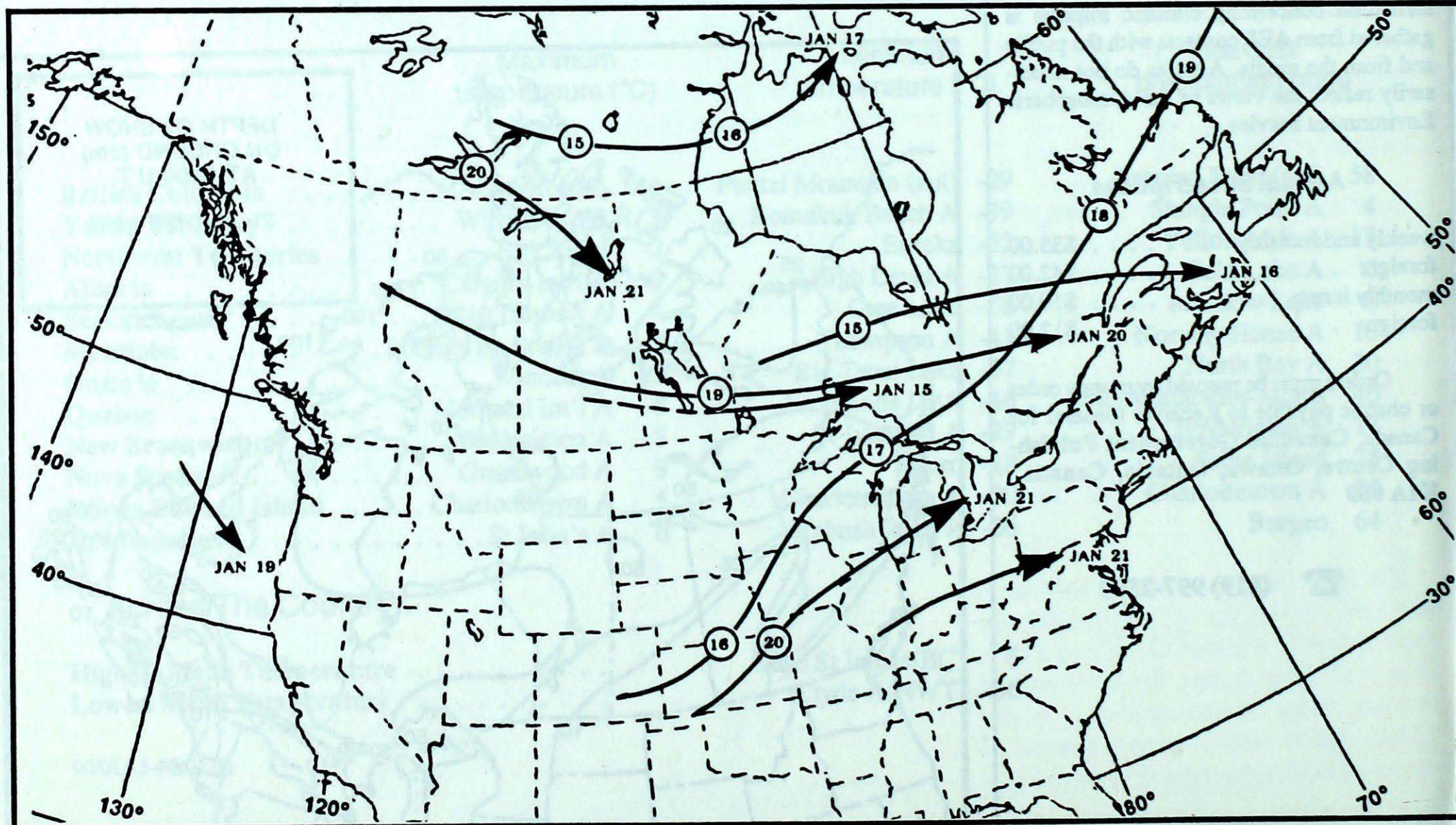
ATMOSPHERIC CIRCULATION



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

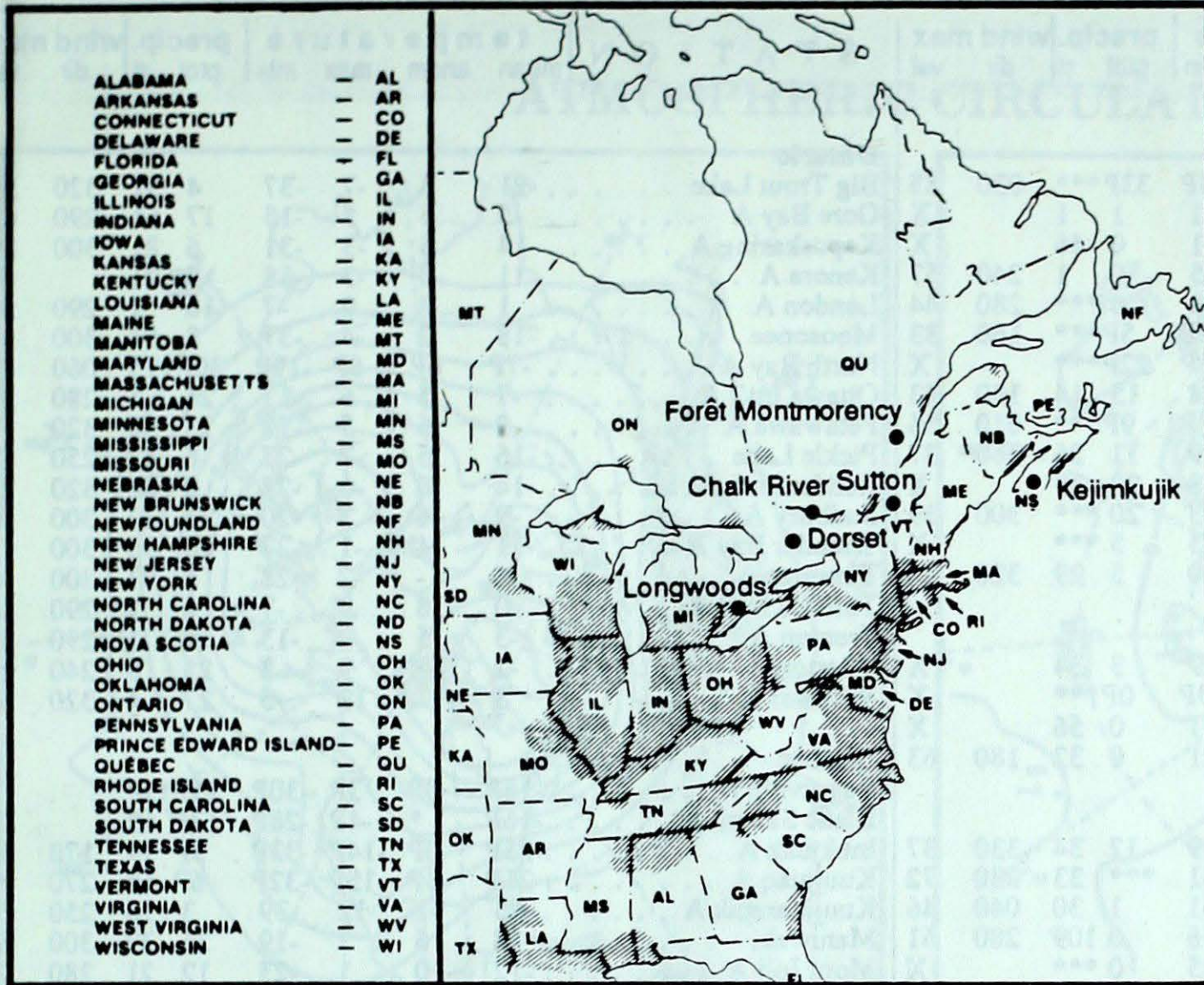


Mean geopotential height anomaly
50-kPa level (10-decametre intervals)



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.

Site	day	pH	amount	air path to site
January 14 to 20, 1990				
Longwoods	16	3.8	5 R	Tennessee, Kentucky, Indiana, Ohio
	17	3.5	13 R	Tennessee, Kentucky, Ohio
Dorset *	14	4.4	1 S	Lake Superior, Michigan, Southern Ontario
	16	4.2	4 M	Indiana, Ohio, Southern Ontario
	17	4.2	19 R	Tennessee, Kentucky, Ohio, Southern Ontario
Chalk River	14	4.2	2 S	Lake Superior, Michigan, Southern Ontario
	16	4.1	17 M	Illinois, Michigan, Southern Ontario
	18	3.9	2 S	Lake Superior, Central Ontario
Sutton	15	3.7	2 M	Ohio, Pennsylvania, New York
	16	4.0	2 M	Eastern Ontario, New York, Vermont
	17	3.8	23 R	Kentucky, West Virginia, Pennsylvania, New York
	18	4.0	5 M	Central and Eastern Ontario, Southern Quebec
Montmorency	15	3.9	3 S	New York, Eastern Ontario, Southern Quebec
	17	4.3	38 M	Ohio, Southern and Eastern Ontario, Southern Quebec
	18	3.2	4 M	Central Ontario, Northwestern Quebec
	19	3.1	1 S	Northwestern Quebec
Kejimikujik	14	5.2	1 S	Quebec, Maine
	15	4.4	4 M	New England, Atlantic Ocean

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

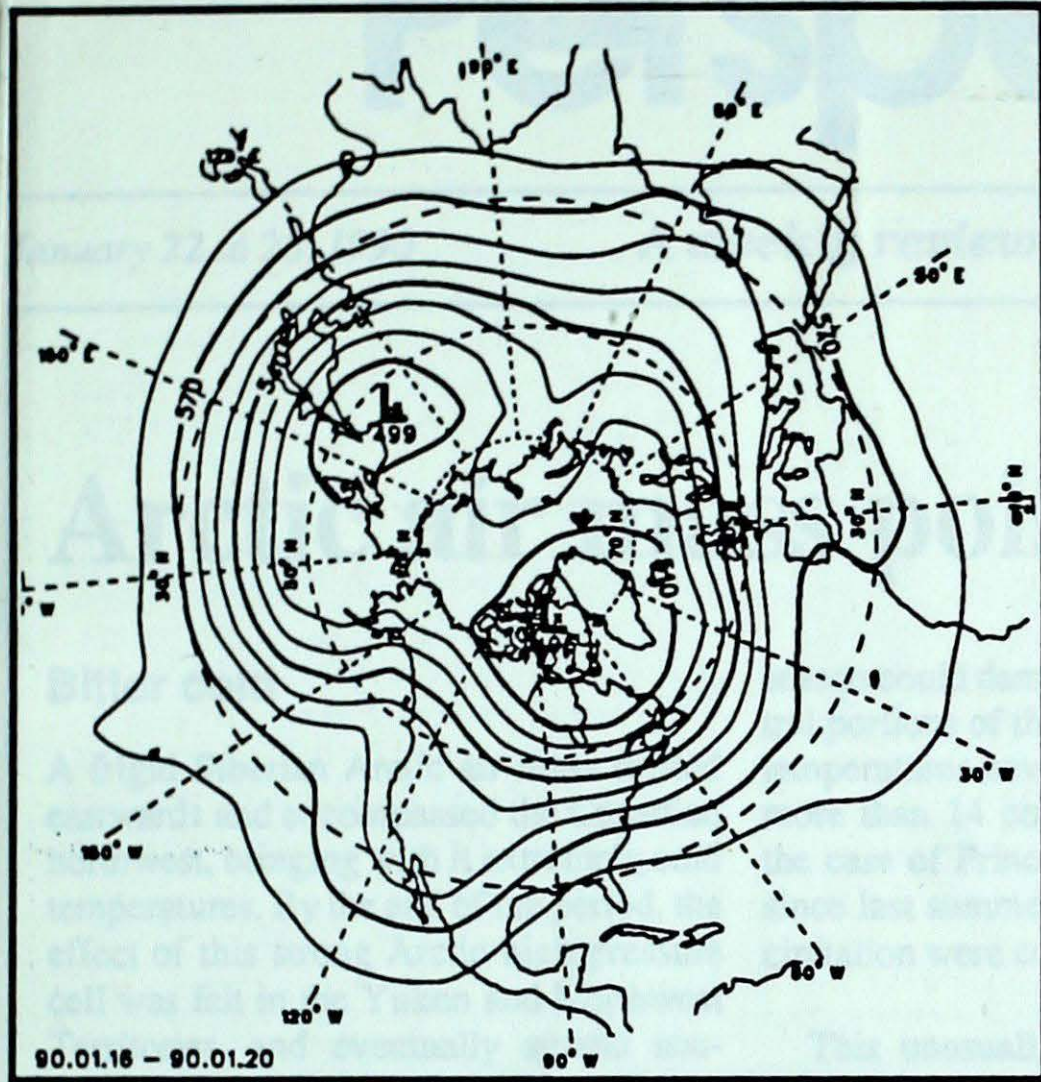
STATION	temperature				precip.		wind max		STATION	temperature				precip.		wind max	
	mean	anom	max	min	ptot	st	dir	vel		mean	anom	max	min	ptot	st	dir	vel
British Columbia									Ontario								
Cape St James	6P	2P	8P	3P	33P***		030	85	Big Trout Lake	-21	3	-7	-37	4	51	320	59
Cranbrook A	-5	2	2	-11	1	1		X	Gore Bay A	-5	5	5	-15	17	61	290	65
Fort Nelson A	-14	10	-4	-21	0	46		X	Kapuskasing A	-14	5	-3	-31	6	81	300	39
Fort St John A	-4	13	4	-15	0	1	240	57	Kenora A	-11	8	-3	-18	5	21		X
Kamloops A	-3	3	3	-8	6	***	280	44	London A	1	8	9	-7	18	1	290	54
Penticton A	-1P	1P	4P	-8P	5P***		160	33	Moosonee	-18	2	-4	-37	8	84	300	41
Port Hardy A	4P	1P	7P	-1P	22P***			X	North Bay A	-7P	6P	6P	-19P	30P	75	060	41
Prince George A	-7	4	1	-18	15	14	190	43	Ottawa Int'l A	-7	5	6	-17	21	5	280	59
Prince Rupert A	*		8P	-6P	9P***		010	56	Petawawa A	-9	6	5	-18	13	30	320	57
Revelstoke A	-4	2	3	-9	11	26	360	37	Pickle Lake	-16	5	-7	-27	6	42	250	32
Smithers A	-7	4	3	-18	29	39		X	Red Lake A	-14	6	-6	-28	8	82	320	33
Vancouver Int'l A	3	0	8	-3	20	***	300	39	Sudbury A	-9	6	3	-20	24	42	300	50
Victoria Int'l A	4	0	9	-3	5	***		X	Thunder Bay A	-11	4	-1	-27	13	30	300	41
Williams Lake A	-8	0	0	-20	5	29	320	32	Timmings A	*	-	-2	-28	8	87	300	46
Yukon Territory									Toronto Int'l A								
Komakuk Beach A	-32	-5	-24	-39	3	34		X	Trenton A	-3	5	9	-13	17	1	290	65
Teslin (aut)	-8P	*	-1P	-19P	0P***			X	Warton A	-2	5	9	-8	25	8	240	56
Watson Lake A	-17	9	-4	-31	0	56		X	Windsor A	3	7	12	-5	27	4	320	54
Whitehorse A	-6	14	1	-21	0	32	180	63	Québec								
Northwest Territories									Bagotville A								
Alert	-32	0	-22	-39	12	34	330	37	Blanc Sablon A	-16P	*	-4P	-28P	17P	62		X
Baker Lake A	-33	0	-17	-41	***	33	330	72	Inukjuak A	-25P	0P	-14P	-33P	3P	19	170	52
Cambridge Bay A	-33	1	-24	-41	1	30	040	46	Kuujuuaq A	-26P	-3P	-15P	-32P	6P	68	270	52
Cape Dyer A	-28	-6	-22	-36	0	109	280	61	Kuujuarapik A	-25	-1	-12	-39	3	26	250	57
Clyde A	-36	-10	-31	-45	0	***		X	Maniwaki	-8	6	7	-19	25	39	300	52
Coppermine A	-30	0	-21	-42	2	55	120	43	Mont Joli A	-12	0	1	-23	12	21	280	74
Coral Harbour A	-28P	1P	-21P	-37P	2P	32		X	Montréal Int'l A	-5	5	8	-16	25	2	030	65
Eureka	-43	-7	-34	-52	0	19		X	Natashquan A	-15P	-3P	-1P	-29P	15P	64	280	74
Fort Smith A	-18	9	16	-31	4	63	150	46	Québec A	-10	3	4	-22	33	***	070	63
Hall Beach A	-28	2	-20	-38	2	34	310	35	Schefferville A	-24	-2	-12	-39	6	59	280	59
Inuvik A	-27	3	-21	-37	11	43		X	Sept-Îles A	-17	-3	-4	-30	14	22	300	70
Iqaluit A	-30	-4	-19	-36	1	14	340	44	Sherbrooke A	-7	7	8	-21	20	11	280	56
Mould Bay A	-33P	1P	-26P	-39P	0P	41		X	Val-d'Or A	-12	5	1	-28	16	43	310	57
Norman Wells A	-22	8	-18	-25	9	8	120	74	New Brunswick								
Resolute A	-33	0	-26	-38	0	22		X	Charlo A	-12	2	6	-23	14	67	290	83
Yellowknife A	-23	5	-15	-35	13	43	110	59	Chatham A	-10	0	8	-25	10	40	300	76
Alberta									Fredericton A								
Calgary Int'l A	-3P	7P	9P	-13P	0P	1	270	67	Moncton A	-7	1	6	-21	10	6	300	72
Cold Lake A	-10	8	3	-20	6	24		X	Saint John A	-6	2	6	-22	15	210	310	82
Edmonton Namao A	-4	10	5	-12	0	1	290	44	Nova Scotia								
Fort McMurray A	-12	9	2	-25	0	34	270	37	Greenwood A	-3	2	9	-13	11	1	290	96
High Level A	-15	5	4	-27	0	42	270	41	Shearwater A	-4	0	6	-14	9	***	280	67
Jasper	-8	5	4	-18	0	26		X	Sydney A	-6	-1	5	-15	10	1	250	56
Lethbridge A	-1	8	8	-14	1	***	270	87	Yarmouth A	-1P	2P	7P	-12P	11P***		290	69
Medicine Hat A	-3	9	8	-11	1	1	230	37	Prince Edward Island								
Peace River A	-8P	11P	4P	-17P	0P	8		X	Charlottetown A	-8	0	5	-20	25	12	280	59
Saskatchewan									Summerside A								
Cree Lake	-18	4	-3	-38	2	42	300	44	-7	0	5	-19	14	31	300	93	
Estevan A	-6	10	3	-14	1	1	310	43	Newfoundland								
La Ronge A	-15	6	-2	-27	1	33		X	Cartwright	-17	-4	-8	-28	28	200	320	141
Regina A	-7	10	2	-17	1	5	280	46	Churchill Falls A	-22	0	-10	-34	4	***	290	67
Saskatoon A	-10	8	2	-20	3	11	040	43	Gander Int'l A	-10	-4	3	-21	5	25	280	122
Swift Current A	-4	9	4	-11	0	1	300	50	Goose A	-19	-3	-7	-26	12	94	270	63
Yorkton A	-10	10	0	-21	3	20	300	44	Port Aux Basques	-6P	-2P	2P	-16P	33P	85	280	120
Manitoba									St John's A								
Brandon A	-10	10	0	-18	1	16	290	50	-6	-3	6	-16	12	***	290	106	
Churchill A	-26	2	-8	-39	9	28	300	78	St Lawrence	-6	-1	4	-15	40	20		X
Lynn Lake A	-24	2	-6	-39	6	41	310	52	Wabush Lake A	-24P	-1P	-8P	-36P	6P	42	280	37
The Pas A	-16	7	-2	-33	4	26	150	46	90/01/15-90/01/21								
Thompson A	-25	-1	-9	-41	4	49	330	46									
Winnipeg Int'l A	-10	10	0	-20	2	8	180	41									

mean = mean weekly temperature, °C
 max = maximum weekly temperature, °C
 min = minimum weekly temperature, °C
 anom = mean temperature anomaly, °C

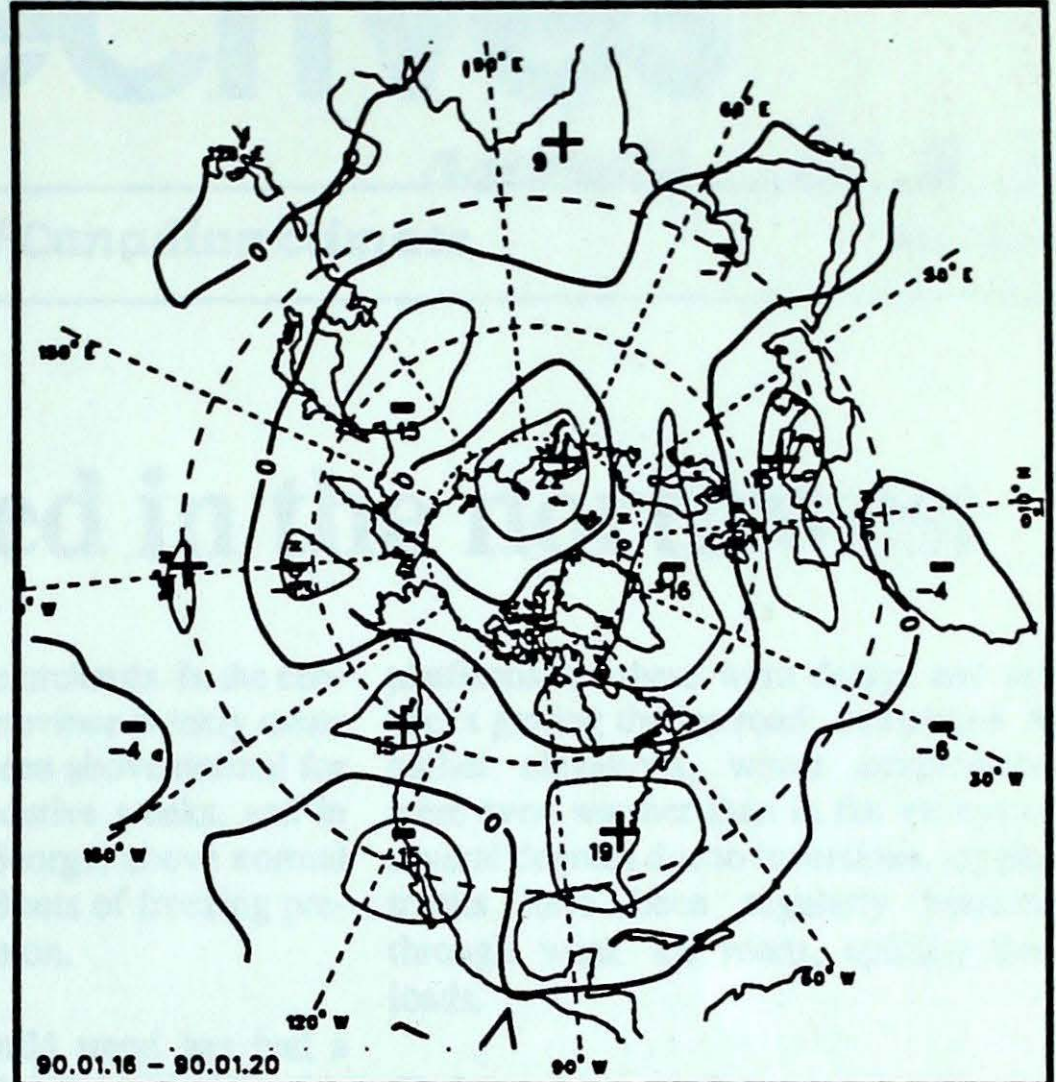
ptot = weekly precipitation total in mm
 st = snow thickness on the ground in cm
 dir = direction of max wind, deg. from north.
 vel = wind speed in km/h

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

ATMOSPHERIC CIRCULATION



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



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

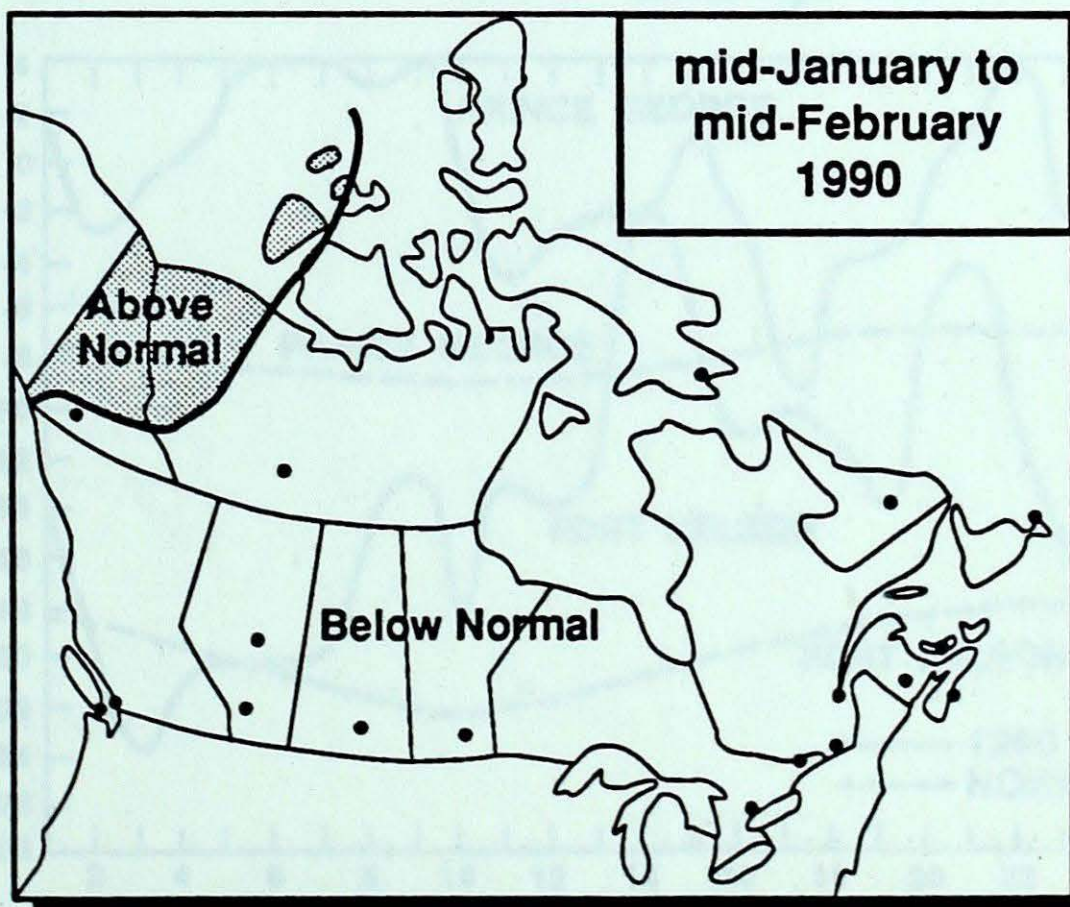


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MONTHLY TEMPERATURE FORECAST

Normal temperatures for
mid-January to mid-February, °C

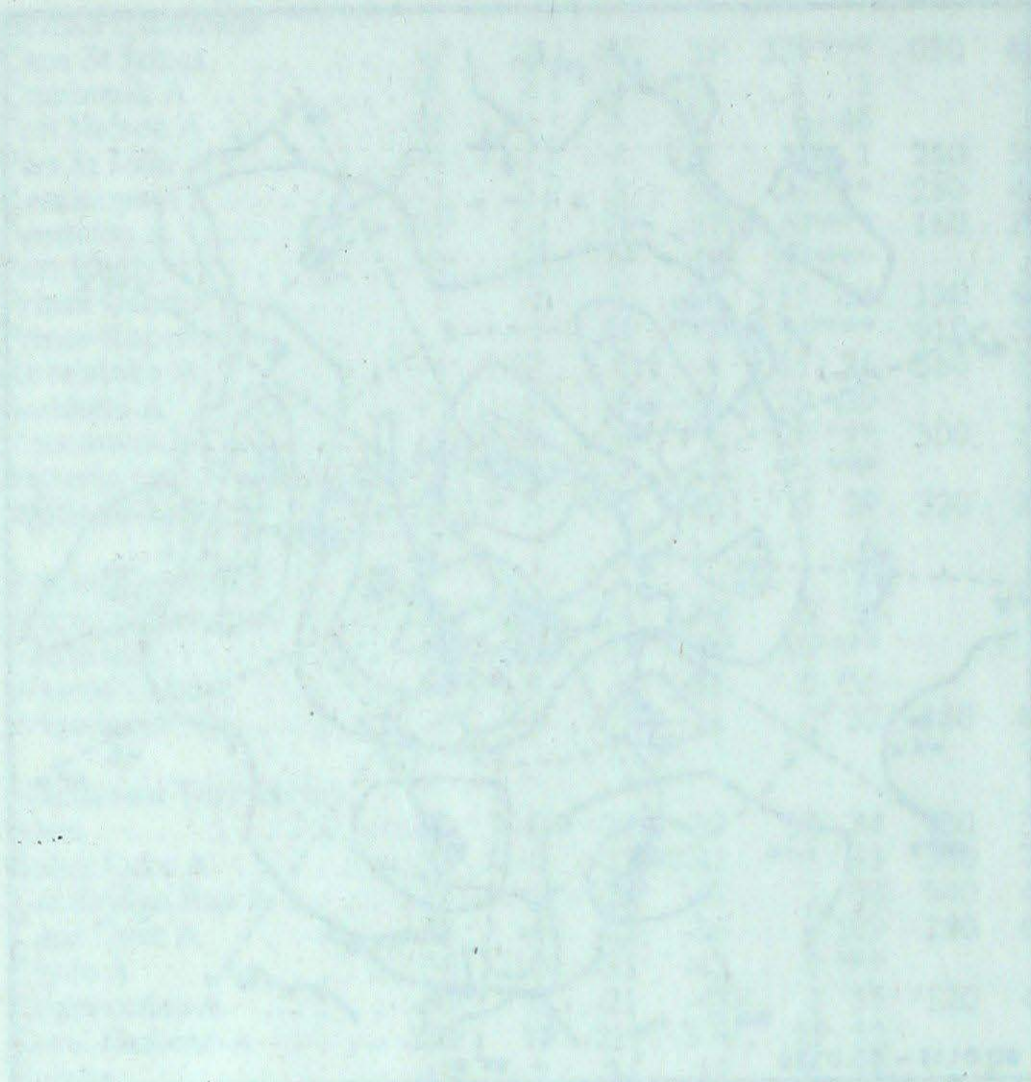
Whitehorse	-17	Toronto	-6
Yellowknife	-27	Ottawa	-10
Iqaluit	-26	Montréal	-10
Vancouver	4	Québec	-11
Victoria	4	Fredericton	-9
Calgary	-10	Halifax	-4
Edmonton	-13	Charlottetown	-7
Regina	-16	Goose Bay	-15
Winnipeg	-17	St. John's	-4



Canada

1005959D

ATMOSPHERIC CIRCULATION



MONTHLY TEMPERATURE FORECAST

