Environment Canada Environnement Canada

Climatic Perspectives

Dec 21 1992 to Jan 3 1993 ***A weekly review of Canadian climate and water*** *Vol. 15 No. 01*

Winter takes hold

Winter definitely made its presence felt during the holiday period. Whether it was in the form of snow, or bone-chilling cold, almost all parts of the country were affected. Snowfalls were plentiful, especially along Canada's supposedly balmy west coast. A prolonged deep freeze, which covered the Prairies, spilled over into British Columbia and gradually made its way eastwards into Ontario and the rest of eastern Canada.

Significant weather extremes affected western Canada during the holiday period, as very cold Arctic air and mild and moist Pacific air masses interacted with each other, producing both snow and bitter cold. So far this season the Greater Vancouver area has endured three major snowstorms, with accumulations totalling between 50 and 90 centimetres. The two most recent events, which occurred after Christmas, left more than 30 cm of snow on the ground. In Vancouver, this season's snowfall to-date, has already surpassed the average annual snowfall of 55 cm - and to think winter has just begun. In British Columbia's southern interior valleys, snowfalls in excess of 30 cm are already straining many municipal snow removal budgets, while snowfalls in the central interior and along the north coast were nearly double that amount. Even normally balmy Victoria did not escape the snow and cold. Just this past week, 24 cm of the white stuff fell on the ground. Further to the north, residents of Port Hardy, located on north Vancouver Island, experienced their first Christmas Day snowfall since 1961.

An Arctic air mass, originating in Siberia, covered Alaska, the Yukon and the Northwest Territories during the week of Christmas, then slowly drifted southeastwards to cover the Prairie provinces during the latter half of the holiday period. Between Christmas and New Years, temperatures in the Yukon plunged to the minus fifties. On December 28 and 29, Ross River and Watson Lake registered a bone-chilling -51.5°C and -52.7°C, respectively. The Peace River district saw minimums drop down to the minus forties, while further to the south, maximum temperatures failed to rise above the minus thirty degree mark. The record cold wave severely restricted all forms of outdoor activity, even closing down ski hills. Machinery breakdowns due to the cold were common. On a positive note, ice bridges and ice roads in the north country are now operational - sooner than expected.

As the Arctic air mass spilled westwards across the Rockies, strong outflow winds developed in the coastal valleys of British Columbia, producing strong gusty winds in excess of 100 km/h. The drifting and blowing snow which resulted, restricted travel and closed a number of highways and mountain passes.

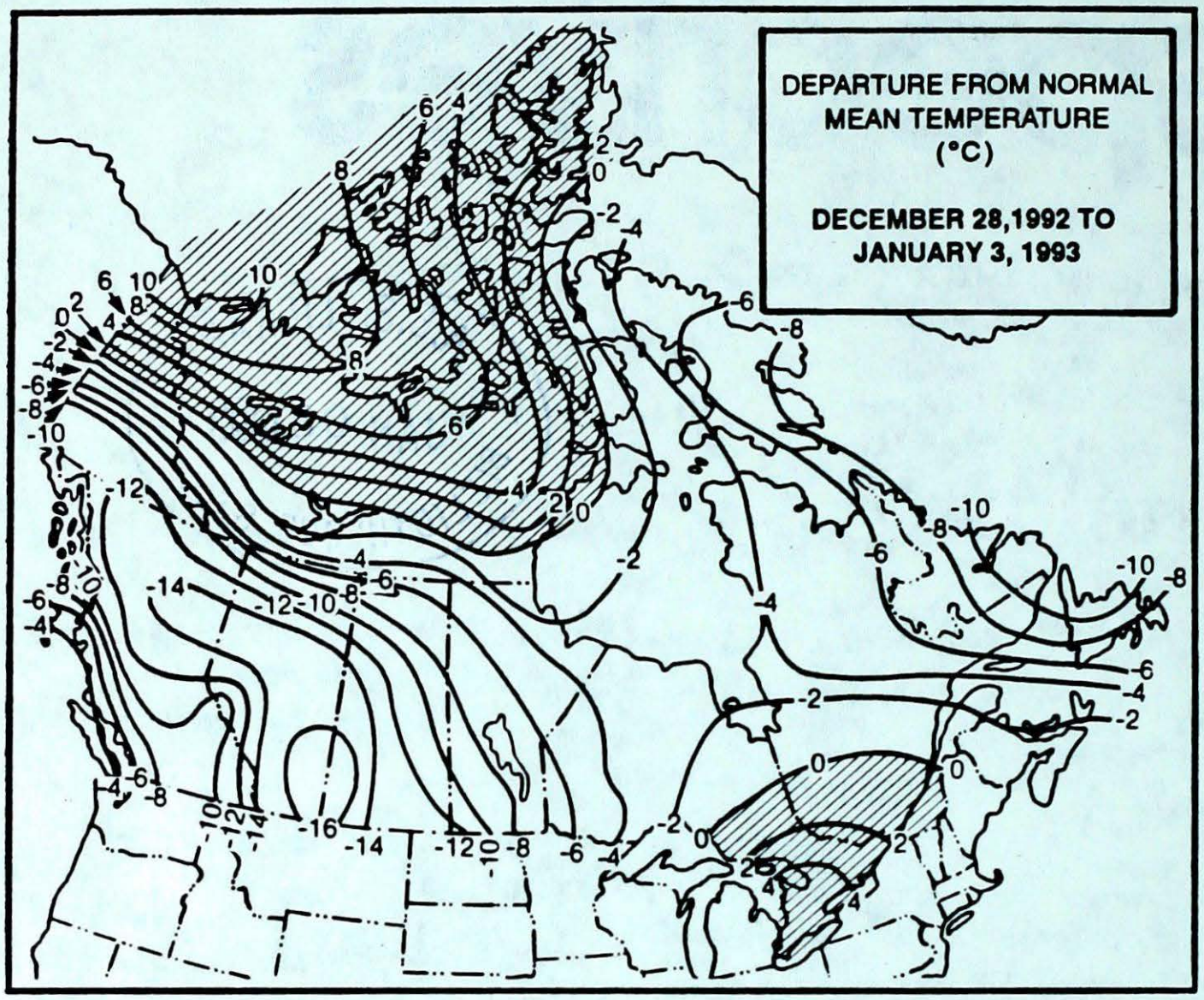
In Ontario, falling temperatures and blowing snow produced near blizzard conditions Christmas and Boxing Day, as a snowstorm moved across northeastern Ontario. Heavy snow squalls developed to the lee of the Great Lakes, resulting in numerous highway closures in south - central Ontario. Snowfalls ranged between 20 and 40 centimetres.

Christmas in Newfoundland was, without a doubt, white. A snowstorm and blizzard on Christmas Day wreaked havoc across the Island, producing heavy snowfalls and winds gusting in excess of 105 km/h. In fact, some parts of the Island received as much as 50 cm of snow during the holiday period. In the Maritimes, a cold front crossing the district Christmas Eve made holiday travel difficult, due to strong winds, blowing snow and rapidly falling temperatures. A weather system crossing the Maritimes on the 31st, left its mark on New Years Day, dumping between 20 and 30 centimetres of snow on parts of New Brunswick, P.E.I. and Cape Breton Island.

In Quebec, much needed snow in the ski areas of the Laurentians and Eastern Townships did not materialize, although significant amounts fell elsewhere.

A look ahead...

For the week of January 11, below-normal temperatures are expected across the Atlantic region, northern Quebec and the eastern Arctic. Elsewhere, near-normal temperatures are likely. Unsettled conditions will govern areas east of Manitoba.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-12.5	-21.2
Iqaluit A	-18.7	-26.8
Yellowknife A	-21.4	-29.5
Vancouver Int'l A	4.9	-0.6
Victoria Int'l A	5.6	-0.2
Calgary Int'l A	-3.1	-14.8
Edmonton Int'l A	-8.6	-19.4
Regina A	-10.2	-21.1
Saskatoon A	-11.7	-21.9
Winnipeg Int'l A	-11.9	-21.3
Ottawa Int'l A	-5.5	-14.0
Toronto (Pearson Int'l A)	-1.0	-8.9
Montréal Int'l A	-5.0	-13.5
Québec A	-6.6	-15.2
Fredericton A	-2.9	-13.0
Saint John A	-1.7	-11.3
Halifax (Shearwater)	0.9	-6.7
Charlottetown A	-1.9	-9.4
Goose A	-10.1	-19.1
St John's A	0.6	-5.4

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	McInnes Island	6	Fort St John A	-44	Comox A	41
Yukon Territory	Komakuk Beach A	-2	Watson Lake A	-53	Beaver Creek	9
Northwest Territories	Inuvik A	-1	Coral Harbour A	-45	Shepherd Bay A	11
Alberta	Edson A	0	Grande Prairie A	-46	Red Deer A	7
			Peace River A	-46		
Saskatchewan	Eastend Cypress (aut)	-11	North Battleford A	-44	Swift Current A	12
Manitoba	Gretna (aut)	-8	Lynn Lake A	-41	The Pas A	6
Ontario	Windsor A	13	Lansdowne House	-36	London A	61
Quebec	Sherbrooke A	1	La Grande IV A	-41	Gaspé A	36
New Brunswick	Saint John A	4	St-Léonard A	-27	Moncton A	28
Nova Scotia	Sable Island	7	Truro	-20	Sydney A	41
Prince Edward Island	East Point (aut)	2	Charlottetown A	-17	Charlottetown A	36
Newfoundland	St Lawrence	3	Wabush Lake A	-40	Stephenville A	20

Across The Country...

Highest Mean Temperature	Estevan Point (aut) (B.C.)	2
Lowest Mean Temperature	Watson Lake A (Y.T.)	-38

92/12/28-93/01/03

CLIMATIC PERSPECTIVES
VOLUME 14

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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.

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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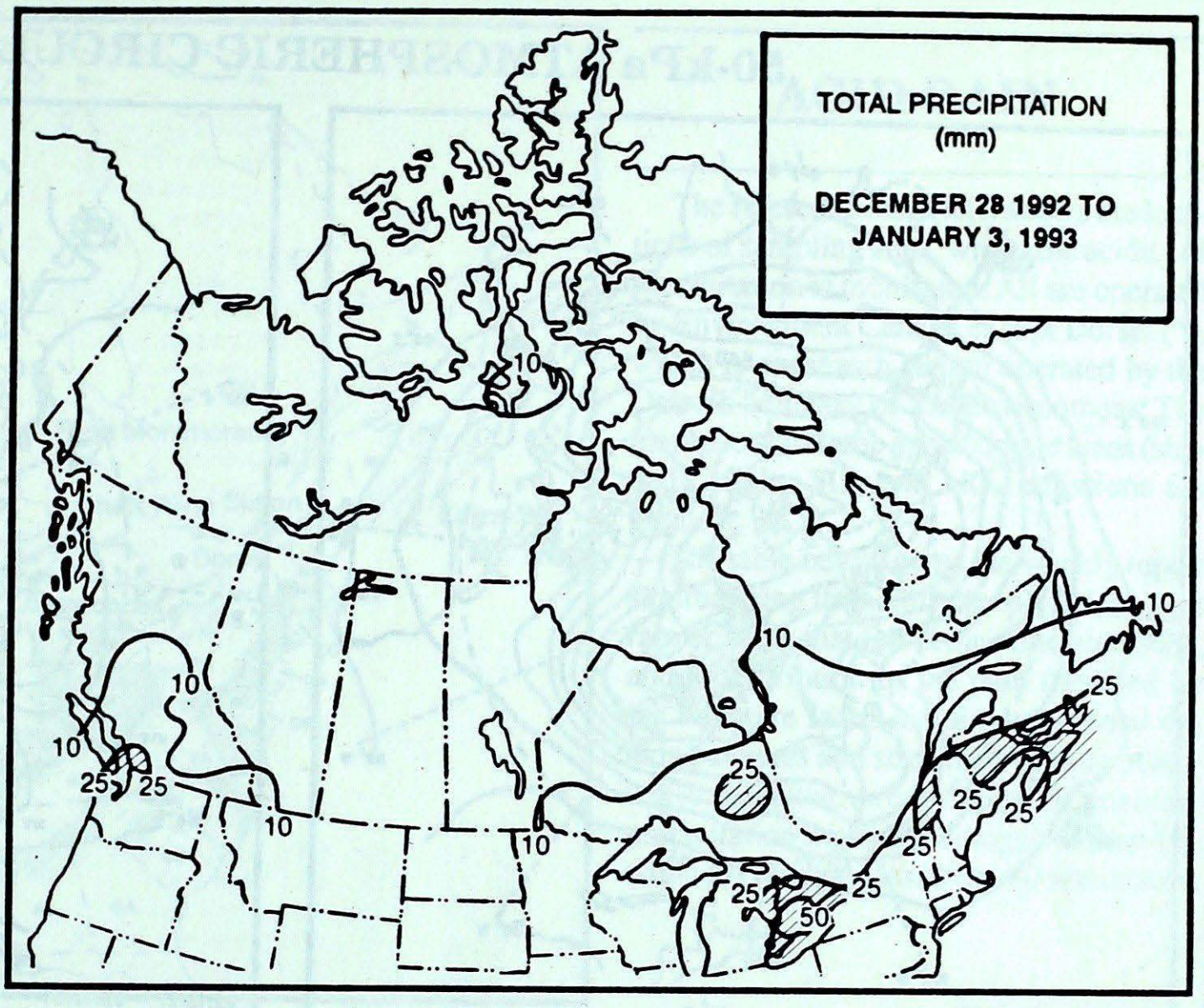
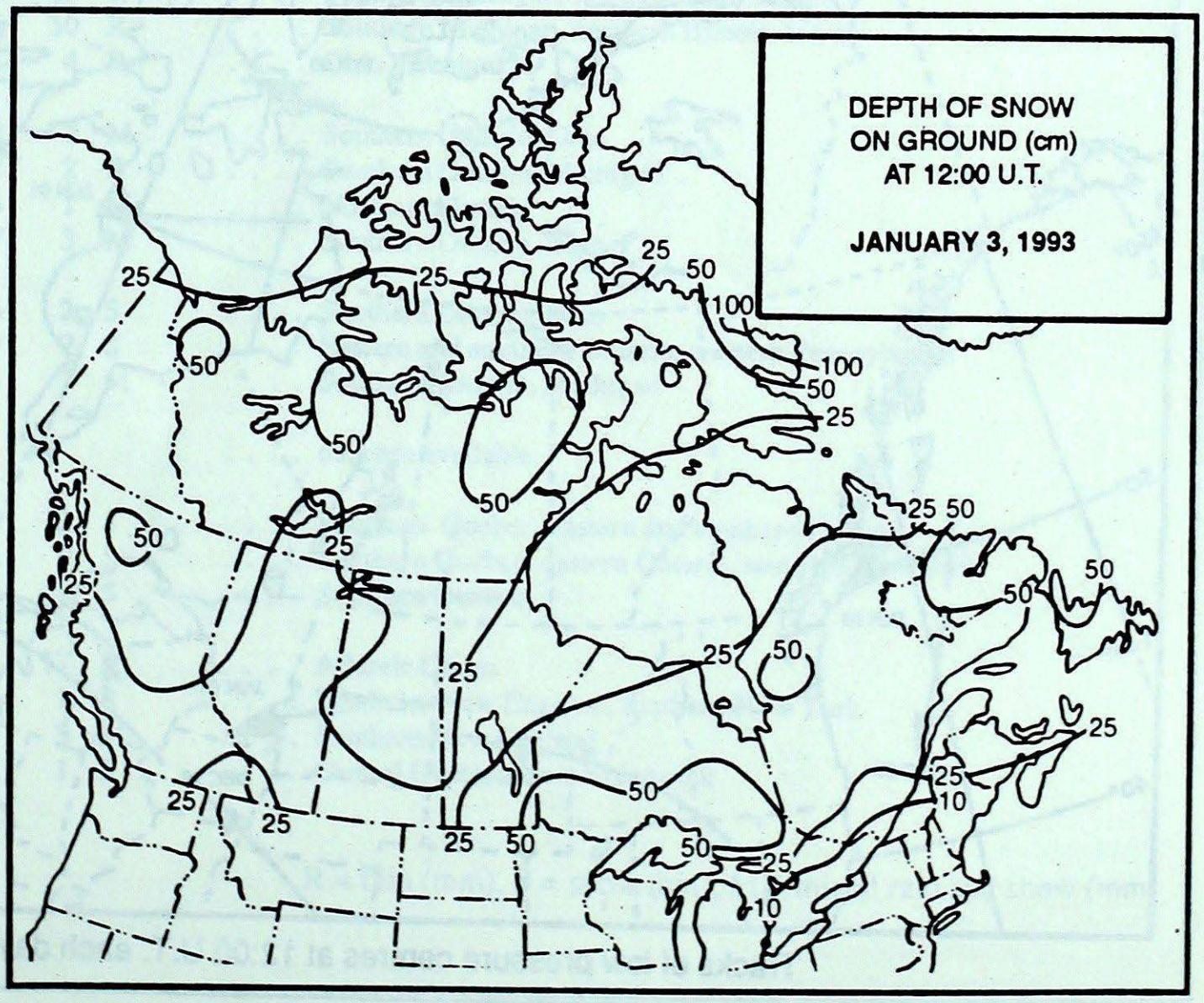
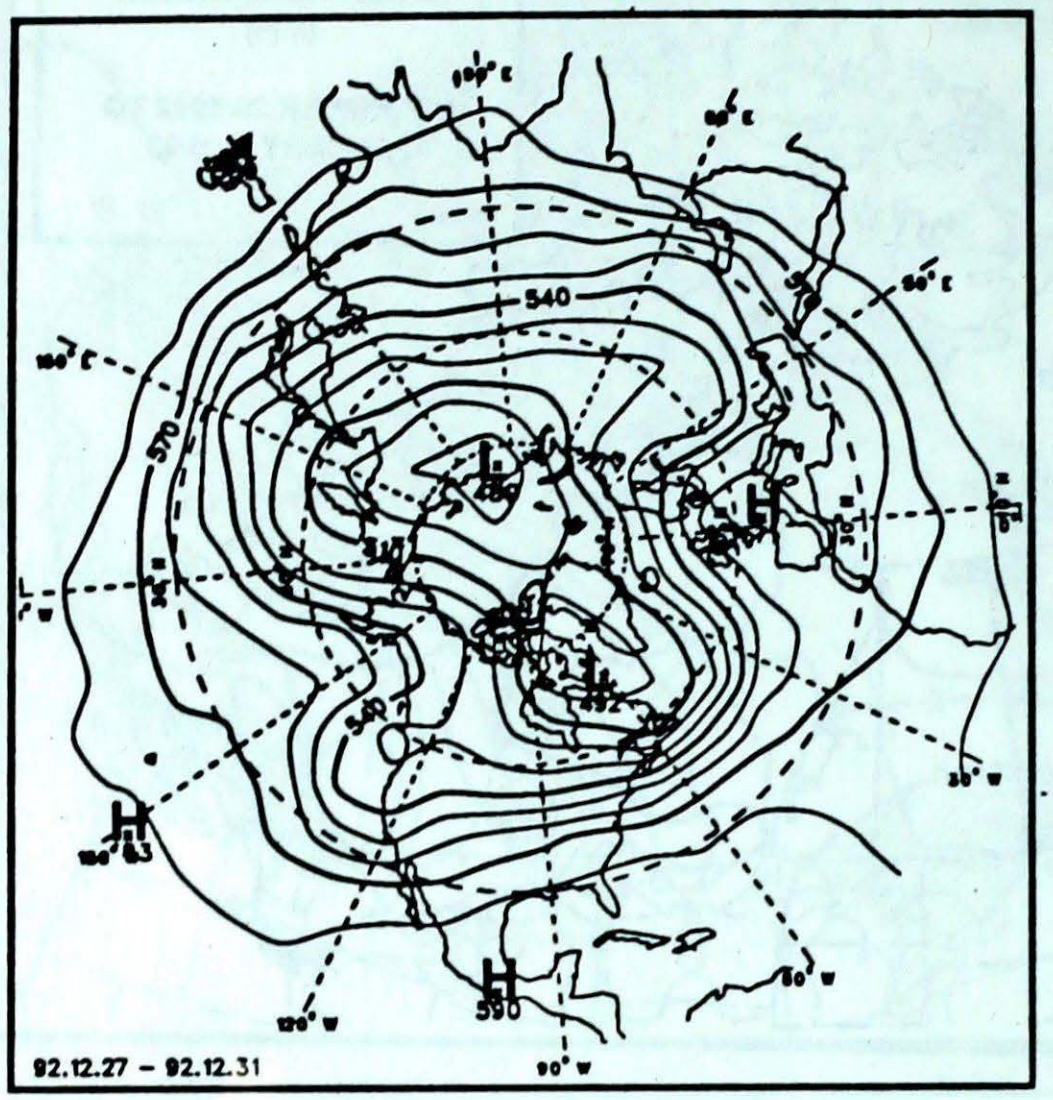
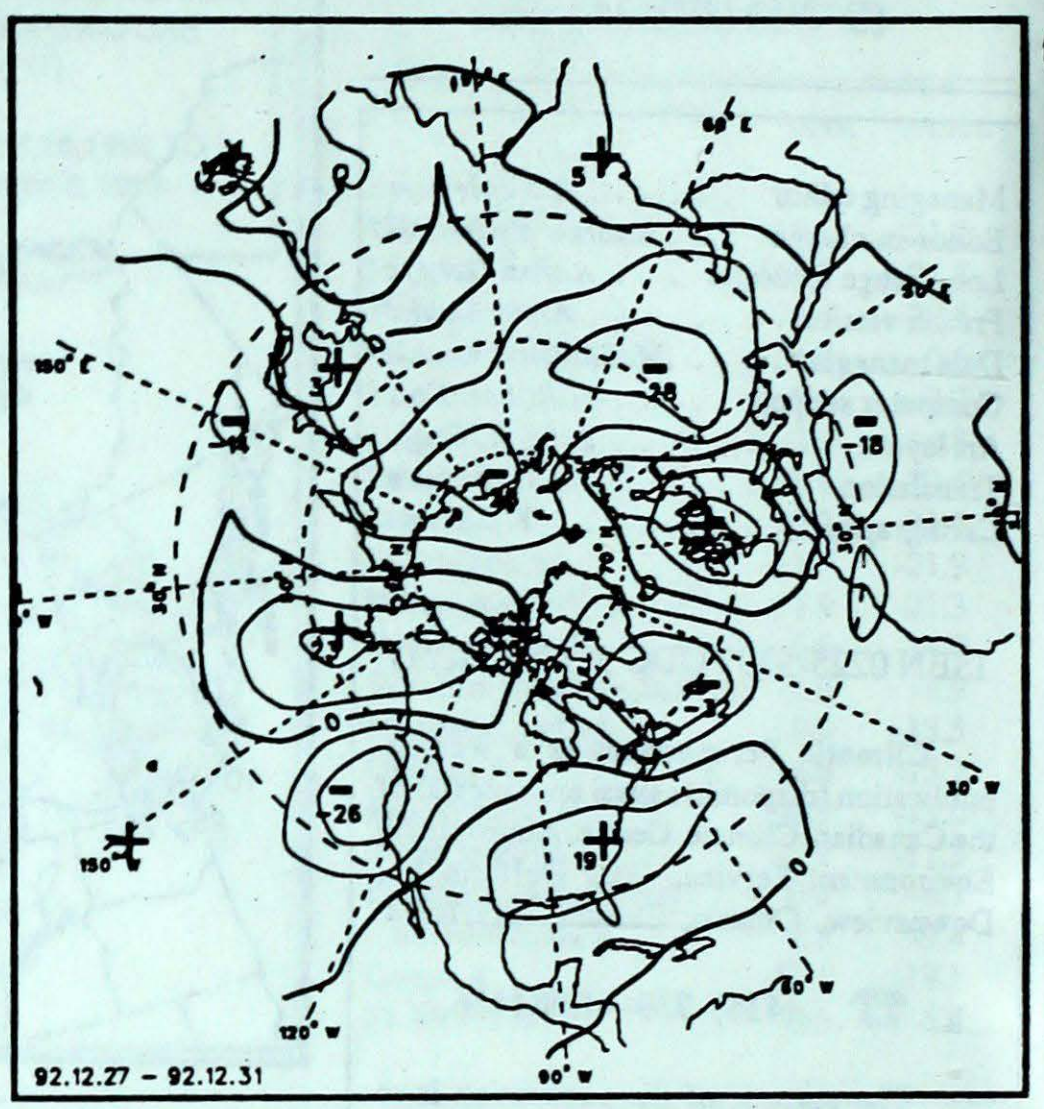




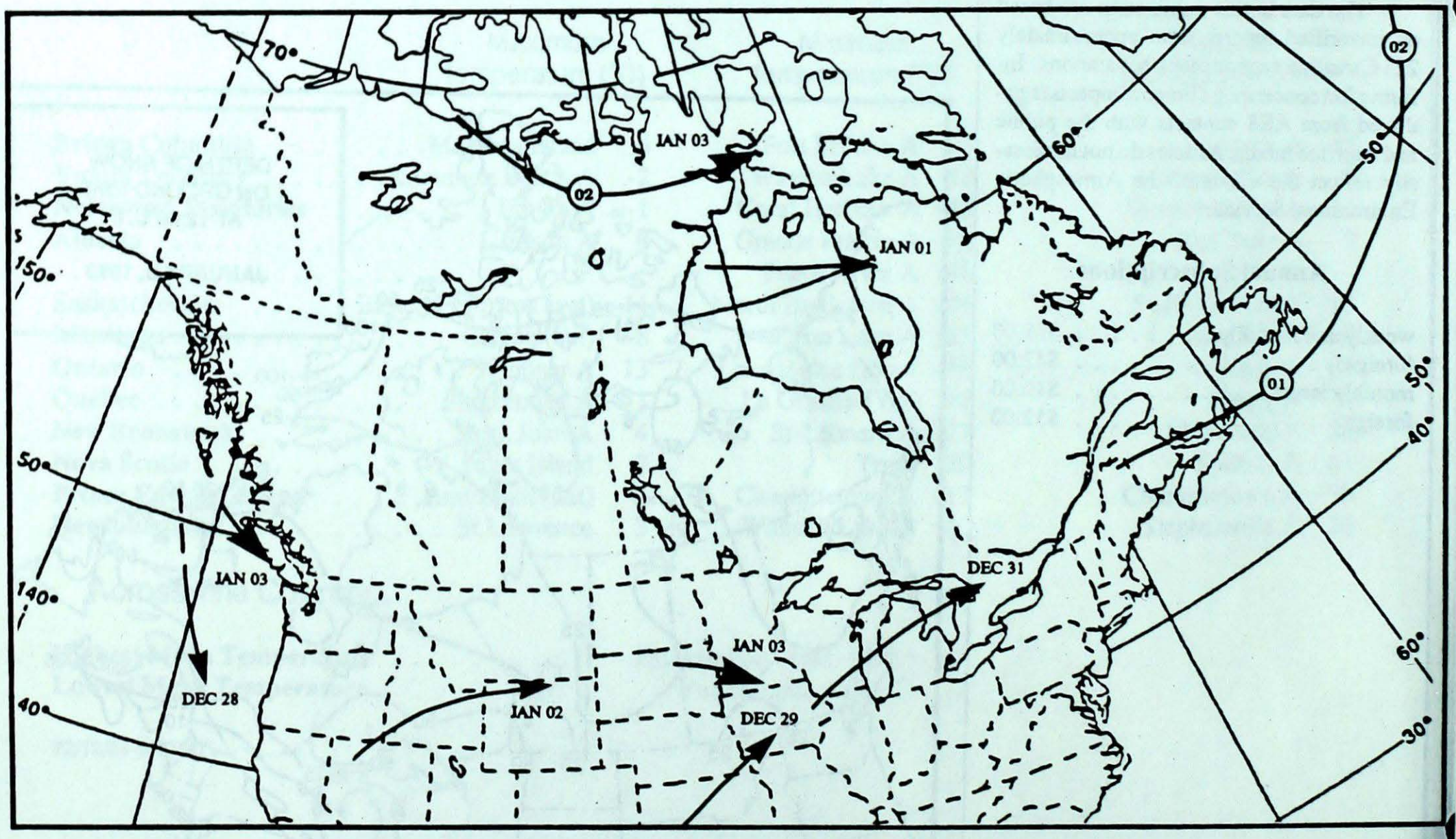
50-kPa ATMOSPHERIC CIRCULATION



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

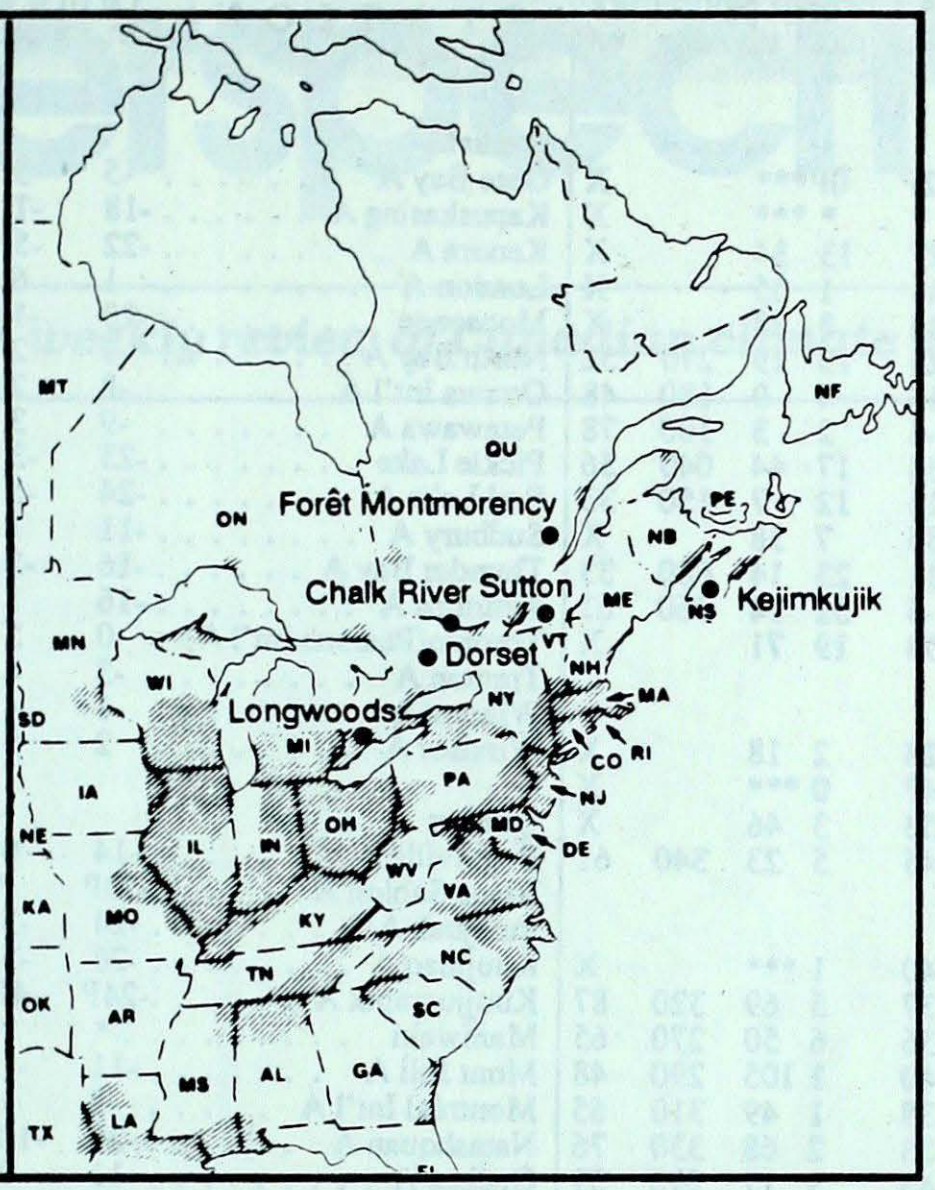


Mean geopotential height anomaly
50-kPa level (10 decametre intervals)



Tracks of low pressure centres at 12:00 U.T. each day during the period.

ALABAMA	—	AL
ARKANSAS	—	AR
CONNECTICUT	—	CO
DELAWARE	—	DE
FLORIDA	—	FL
GEORGIA	—	GA
ILLINOIS	—	IL
INDIANA	—	IN
IOWA	—	IA
KANSAS	—	KA
KENTUCKY	—	KY
LOUISIANA	—	LA
MAINE	—	ME
MANITOBA	—	MT
MARYLAND	—	MD
MASSACHUSETTS	—	MA
MICHIGAN	—	MI
MINNESOTA	—	MN
MISSISSIPPI	—	MS
MISSOURI	—	MO
NEBRASKA	—	NE
NEW BRUNSWICK	—	NB
NEWFOUNDLAND	—	NF
NEW HAMPSHIRE	—	NH
NEW JERSEY	—	NJ
NEW YORK	—	NY
NORTH CAROLINA	—	NC
NORTH DAKOTA	—	ND
NOVA SCOTIA	—	NS
OHIO	—	OH
OKLAHOMA	—	OK
ONTARIO	—	ON
PENNSYLVANIA	—	PA
PRINCE EDWARD ISLAND	—	PE
QUÉBEC	—	QU
RHODE ISLAND	—	RI
SOUTH CAROLINA	—	SC
SOUTH DAKOTA	—	SD
TENNESSEE	—	TN
TEXAS	—	TX
VERMONT	—	VT
VIRGINIA	—	VA
WEST VIRGINIA	—	WV
WISCONSIN	—	WI



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 SO_2 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.

AIR PATH TO SITE

December 27, 1992 to January 2, 1993

SITE	day	pH	amount		AIR PATH TO SITE
Longwoods	29	4.2	13	R	Southern Michigan, Indiana, Illinois
	30	4.6	30	R	Southern Michigan, northern Illinois, Iowa
	02	4.1	4	R	Ohio , Kentucky
Dorset *	29	4.2	7	M	Southern Ontario, Ohio
	30	4.2	2	R	Southern Ontario, Michigan
	31	4.4	1	M	Northern Ontario
	02	4.7	3	M	Southern Ontario, Ohio
Chalk River	27	4.6	2	S	Southern Ontario, Ohio
	29	4.9	7	S	Eastern and southern Ontario, western Pennsylvania
	30	4.6	7	M	Southern Ontario, Michigan
Sutton					data not available
Montmorency	27	4.4	2	S	Southern Quebec, eastern and southern Ontario
	29	4.8	9	S	Southern Quebec, eastern Ontario, northern New York
	31	4.7	8	S	Southern Quebec
Kejimkujik	29	4.8	17	R	Atlantic Ocean
	30	4.2	1	S	Southern New England, southern New York
	31	4.5	3	M	Southern New England
	02	4.5	1	S	Central Quebec, New Brunswick

R = rain (mm), S = snow (cm), M = mixed rain and snow (mm)

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
British Columbia								
Blue River A	-21P	-9P	-13P	-42P	0P	***		X
Cape St James	*	*	*	*	*	***		X
Cranbrook A	-20	-8	-14	-27	13	34		X
Fort Nelson A	-31	-10	-13	-44	1	35		X
Fort St John A	-31	-17	-11	-44	3	28		X
Kamloops A	-17	-11	-10	-25	15	19	270	52
Penticton A	-12	-9	-7	-14	4	9	180	48
Port Hardy A	-1	-3	3	-4	2	3	100	78
Prince George A	-24	-13	-8	-34	17	44	040	56
Prince Rupert A	-7	-6	2	-13	12	7	150	33
Smithers A	-25	-15	-11	-35	7	38		X
Vancouver Int'l A	-4	-7	2	-11	23	14	080	33
Victoria Int'l A	-1	-4	5	-5	32	14	060	61
Williams Lake A	-23	-13	-9	-33	19	71		X
Yukon Territory								
Komakuk Beach A	-13	10	-2	-28	2	18		X
Teslin (aut)	-32	*	-12	-47	0	***		X
Watson Lake A	-38	-14	-15	-53	3	46		X
Whitehorse A	-27	-10	-10	-45	5	23	340	61
Northwest Territories								
Alert	-30	1	-15	-40	1	***		X
Baker Lake A	-26	5	-13	-37	5	69	320	87
Cambridge Bay A	-26	7	-15	-36	6	50	270	65
Cape Dyer A	-31	-10	-21	-40	1	105	290	48
Clyde A	-30	-5	-20	-38	1	49	310	65
Coppermine A	-18	8	-7	-33	2	68	330	76
Coral Harbour A	-28	-1	-17	-45	3	17	290	59
Eureka	-33	3	-21	-43	2	13		X
Fort Smith A	-26	-3	-11	-39	1	28	320	39
Hall Beach A	-30	-1	-18	-41	1	44	110	41
Inuvik A	-14	14	-1	-30	2	52	300	48
Iqaluit A	-32	-9	-16	-40	5	20	330	56
Mould Bay A	-27	6	-14	-38	1	22		X
Norman Wells A	-21	5	-5	-39	4	26	300	76
Resolute A	-30	1	-17	-41	4	16	340	56
Yellowknife A	-24	1	-10	-39	1	19	330	65
Alberta								
Calgary Int'l A	-24	-15	-8	-35	5	9	350	41
Cold Lake A	-31	-15	-11	-44	5	29		X
Edmonton Namao A	-26	-14	-10	-37	2	20		X
Fort McMurray A	-29	-10	-10	-42	2	22		X
High Level A	-30	-11	-12	-43	1	11	330	39
Jasper	*	*	-8	*	*	16		X
Lethbridge A	-25	-17	-4	-36	6	12	250	39
Medicine Hat A	-27	-17	-11	-36	6	10		X
Peace River A	-32	-16	-10	-46	0	22	340	32
Saskatchewan								
Cree Lake	-29	-10	-11	-42	1	23	340	44
Estevan A	-26	-12	-16	-36	8	13	100	44
La Ronge A	-28	-9	-12	-40	4	36		X
Regina A	-28	-12	-15	-39	3	***	130	48
Saskatoon A	-31	-14	-16	-43	9	26		X
Swift Current A	-28	-16	-14	-40	12	20	270	59
Yorkton A	-28	-11	-14	-40	4	32		X
Manitoba								
Brandon A	-27	-10	-14	-38	4	29	290	41
Churchill A	-26	-1	-13	-36	4	16	310	54
Lynn Lake A	-28	-7	-12	-41	4	30		X
The Pas A	-27	-7	-12	-39	6	22		X
Thompson A	-29	-6	-14	-41	2	22		X
Winnipeg Int'l A	-24	-7	-8	-34	4	38	010	44

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Gore Bay A	-5	3	4	-20	20	18	180	56
Kapuskasing A	-18	-1	0	-28	26	70	180	33
Kenora A	-22	-5	-7	-32	15	56	170	35
London A	1	6	11	-10	61	4	290	57
Moosonee	-20	-1	-1	-34	4	38	270	35
North Bay A	-9	2	4	-25	19	18	210	37
Ottawa Int'l A	-8	2	3	-17	19	9	290	37
Petawawa A	-9	3	1	-25	12	13	300	39
Pickle Lake	-23	-3	-7	-34	5	30	250	35
Red Lake A	-24	-5	-8	-32	10	65		X
Sudbury A	-11	1	2	-26	26	56	030	44
Thunder Bay A	-16	-2	-1	-26	18	53	200	32
Timmins A	-16	1	0	-28	27	73	310	37
Toronto(Pearson Int'l A)	0	5	8	-9	25	4	310	52
Trenton A	-3	4	5	-13	24	8	280	70
Wiarton A	-1	4	8	-14	22	7	220	46
Windsor A	2	5	13	-8	44	3	310	39
Québec								
Bagotville A	-14	0	-4	-27	23	27	270	39
Blanc Sablon A	-23P	*	-12P	-31P	3P	25	290	48
Inukjuak A	-24	-3	-10	-30	3	16		X
Kuujjuaq A	-26	-5	-9	-35	5	25	240	57
Kuujjuarapik A	-24P	-4P	-5P	-36P	11P	16	130	63
Maniwaki	*	*	1	*	*	24		X
Mont Joli A	-11	-1	-2	-20	13	21	320	52
Montréal Int'l A	-8	1	0	-17	14	5	280	43
Natashquan A	-20	-10	-5	-30	6	25	210	44
Québec A	-11	0	-3	-24	20	23	070	57
Schefferville A	-28	-7	-12	-39	4	44	230	57
Sept-Îles A	-18	-6	-11	-28	11	22	320	41
Sherbrooke A	-7	4	1	-22	26	6	270	50
Val-d'Or A	-15	1	-1	-25	22	34	160	43
New Brunswick								
Fredericton A	-8	0	1	-20	26	26	300	56
Miscou Island (aut)	-8	-2	-2	-15	12	***		
Moncton A	-9	-2	2	-22	28	27	290	43
Saint John A	-7	0	4	-21	20	17	310	69
Nova Scotia								
Greenwood A	-5	-1	4	-18	21	9	290	63
Shearwater A	-5	-2	3	-16	30	3	290	57
Sydney A	-6	-3	3	-15	41	28	320	54
Yarmouth A	-2	0	6	-13	26	5	340	65
Prince Edward Island								
Charlottetown A	-7	-2	1	-17	36	42	310	56
East Point (auto)	-5P	*	2P	-15P	15P	***		
Newfoundland								
Cartwright	-22	-11	-15	-30	0	***	210	65
Churchill Falls A	-27	-10	-12	-37	2	60	270	41
Gander Int'l A	-14	-9	0	-21	8	41	280	85
Goose A	-23	-8	-13	-30	1	13	280	44
St John's A	-10	-8	2	-16	18	30	290	69
St Lawrence	-9	-8	3	-20	19	26		X
Wabush Lake A	-27	-7	-11	-40	6	41	270	46

92/12/28-93/01/03

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.