Environment Canada Environnement Canada

Climatic Perspectives

January 8 to 14, 1990 **A weekly review of Canadian climate** *Vol.12 No.2*

Another brown winter on the Prairies

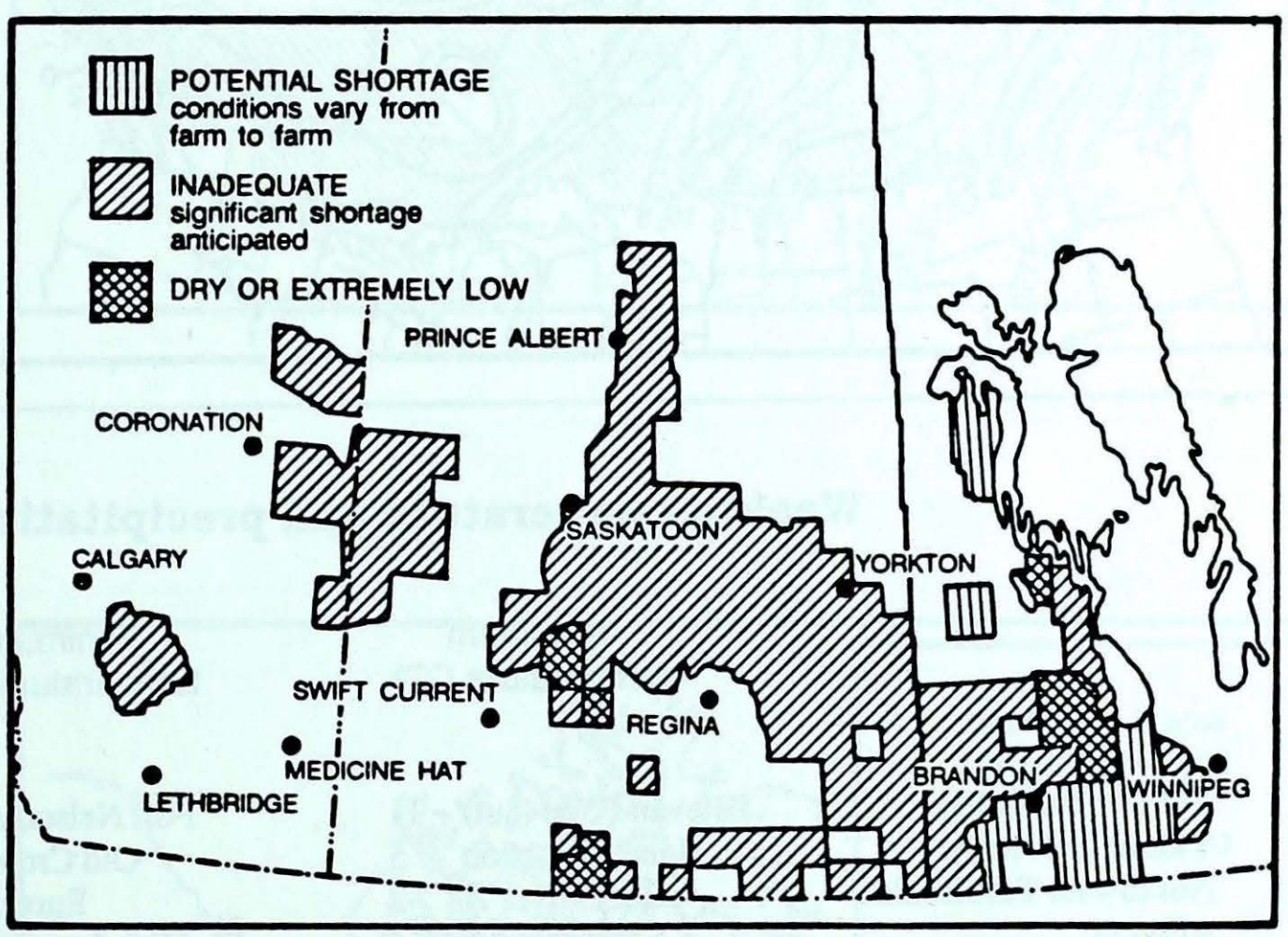
In southern Alberta, the winter of 1989-90 appears to be a replay of the three winters of 1976-77, 1983-84, and 1987-88. There is no snow on the ground south of Calgary and as a result, soil moisture has been depleted by drying winds. In southern Alberta, during the winter, moisture arrives by "Alberta Clippers" which are weather systems that form in Montana to the lee of the Rocky Mountains and move in to Alberta.

This year, in the traditionally-arid areas of southern Alberta, Saskatchewan, and extreme southwestern Manitoba there has been a preponderance of dry chinook winds. They are a temporary reprieve to the rigours of winter, but with their warm, drying winds during the winter they tend to nullify any benefits of precipitation which was received during the previous fall. The fall rains of 1989 had improved the relatively-dry soil moisture conditions across the Prairies and it had been hoped that it would have improved the prospects for the 1990 spring recharge which depends largely on winter snowfall accumulations.

In southern Alberta, soil has been drifting and it has the potential to abrasively cut the short fall growth of winter wheat and thereby damaging or destroying it. With the lack of snowcover, which acts as an insulator, a return to extreme cold conditions could have the effect of killing or damaging the alfalfa, winter rye and winter wheat crops.

In the southern Prairies, there is some shortage of water supplies from shallow aquifers. In southern Manitoba and southern Saskatchewan, surface water projects are low, and in southern Saskatchewan water is low in irrigation projects.

W. Nemanishen, PFRA (Prairie Farm Rehabilitation Administration) Calgary
T. O'Brien, PFRA, Regina



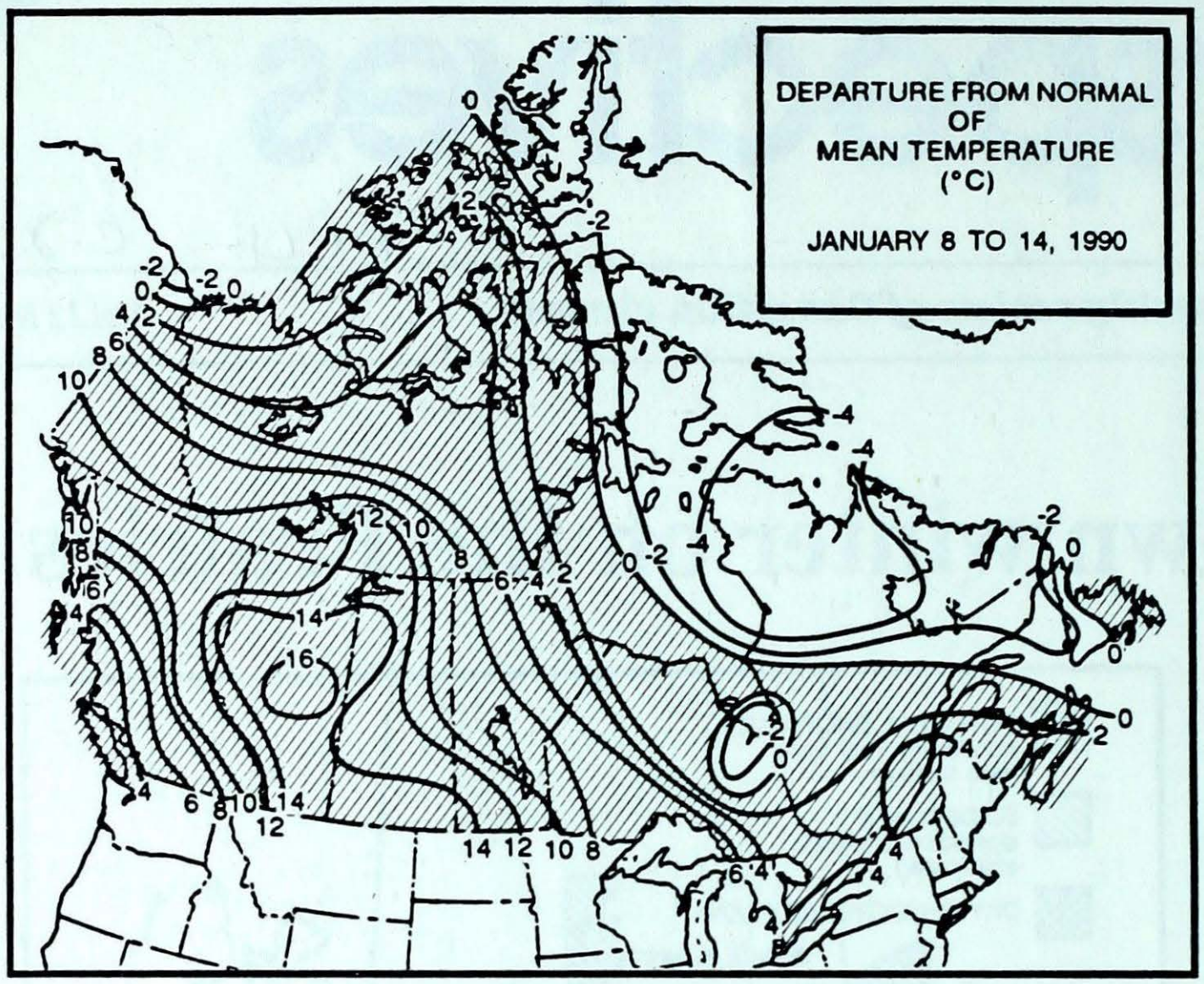
On-farm water supplies over the winter of 1989/90. Present situation is relatively unchanged since data were compiled by PFRA, October 31, 1989.

Below-normal temperatures for most of the country...

For the week of January 22nd, below-normal temperatures are anticipated for British Columbia, Alberta, Saskatchewan, the Yukon and the Northwest Territories. The Arctic islands can expect the greatest departures below normal.

Above-normal temperatures are likely for Ontario, the southern half of Quebec and the Maritimes. Southern Ontario will most likely experience the greatest departures above normal.

Elsewhere near-normal temperatures are likely.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-20.5	-28.6
Iqaluit A	-21.4	-29.6
Yellowknife A	-26.0	-34.3
Vancouver Int'l A	5.3	0.2
Victoria Int'l A	6.1	0.7
Calgary Int'l A	-8.3	-19.2
Edmonton Int'l A	-14.4	-24.6
Regina A	-13.3	-23.6
Saskatoon A	-15.2	-25.2
Winnipeg Int'l A	-14.3	-24.0
Ottawa Int'l A	-7.0	-16.2
Toronto Int'l A	-3.1	-11.5
Montréal Int'l A	-6.4	-15.3
Québec A	-8.0	-17.5
Fredericton A	-4.7	-15.3
Saint John A	-3.3	-13.8
Halifax (Shearwater)	-0.7	-9.0
Charlottetown A	-3.6	-11.9
Goose A	-12.8	-22.0
St John's A	-0.7	-7.5

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Estevan Point (aut)	11	Fort Nelson A	-24	Hope A	65
Yukon Territory	Haines Junction	5	Old Crow	-45	Watson Lake A	3
Northwest Territories	Hay River A	-2	Eureka	-43	Hay River A	10
Alberta	Lethbridge A	11	High Level A	-30	Jasper	6
Saskatchewan	Moose Jaw A	7	Uranium City A	-31	Cree Lake	5
Manitoba	Portage La Prairie A	8	Churchill A	-34	The Pas A	9
Ontario	Windsor A	6	Moosonee	-35	Red Lake A	34
Québec	Sherbrooke A	4	Schefferville A	-42	Natashquan A	19
New Brunswick	Saint John A	5	St-Léonard A	-24	Saint John A	36
Nova Scotia	Sable Island	8	Amherst (aut)	-16	Sable Island	45
Prince Edward Island	Charlottetown A	2	Charlottetown A	-18	Summerside A	31
Newfoundland	St John's A	4	Wabush Lake A	-37	St Anthony	34

Across The Country...

Highest Mean Temperature	Estevan Point (aut)(BC)	7
Lowest Mean Temperature	Eureka(NWT)	-37

90/01/08-90/01/14

CLIMATIC PERSPECTIVES
VOLUME 11

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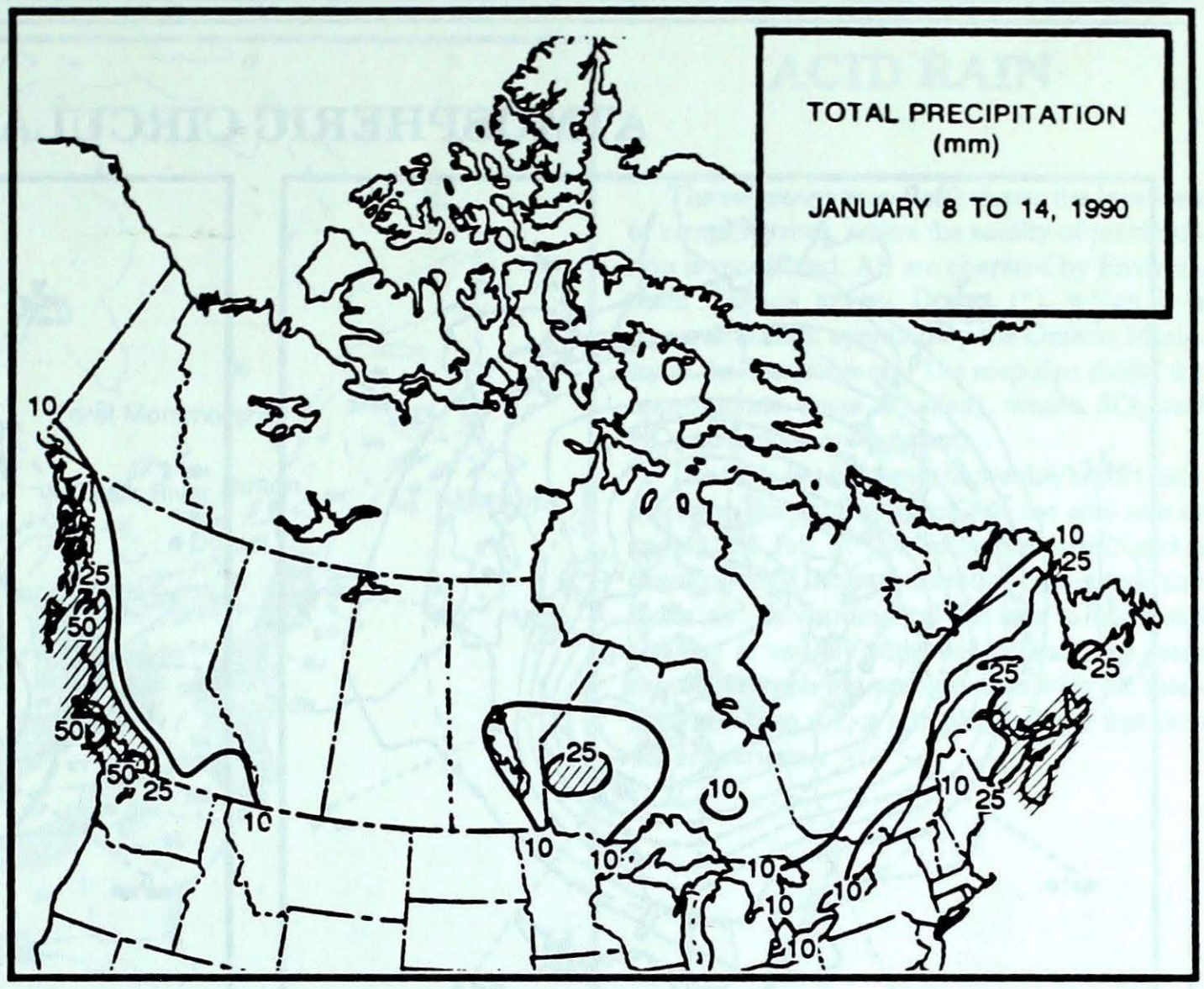
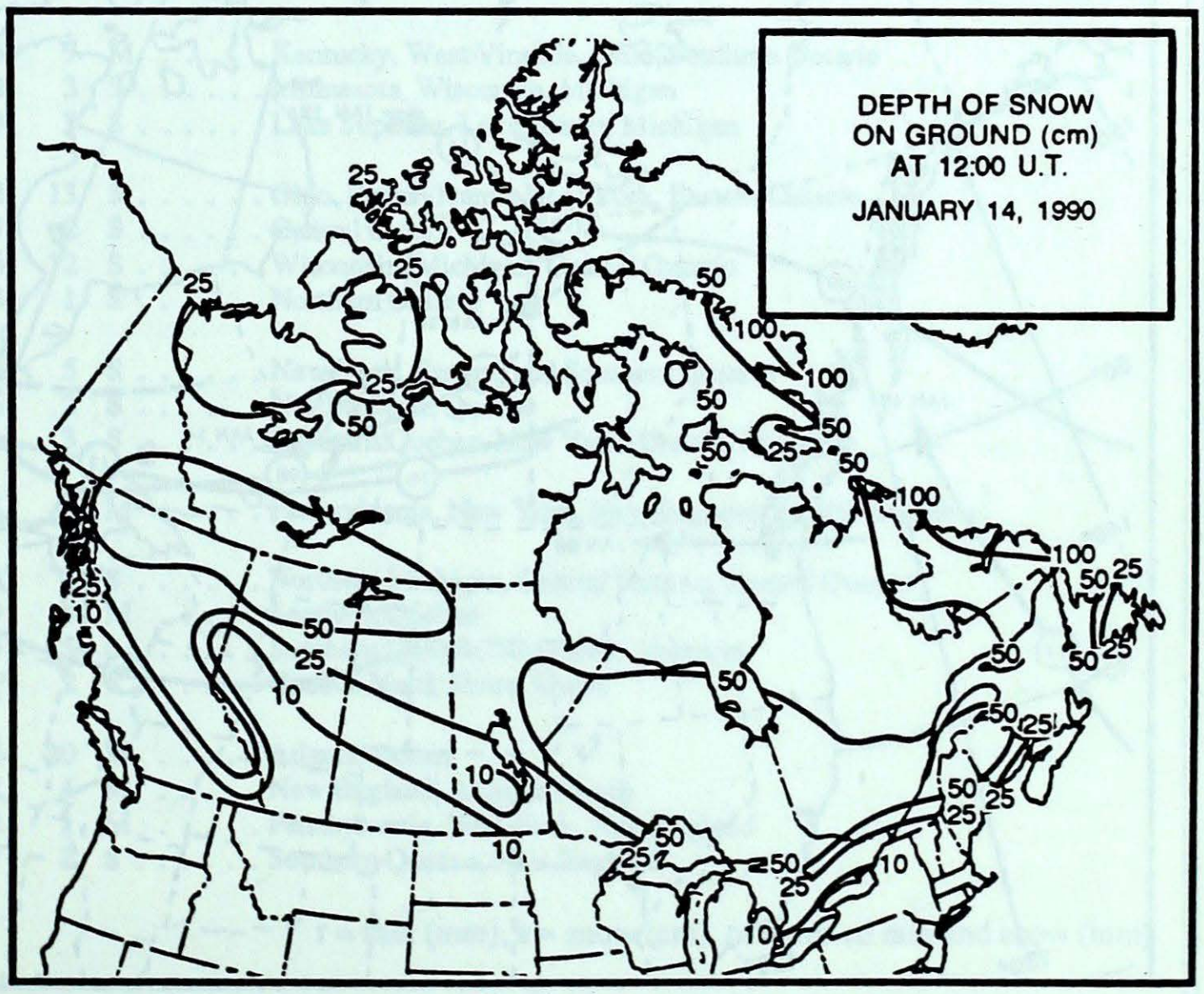
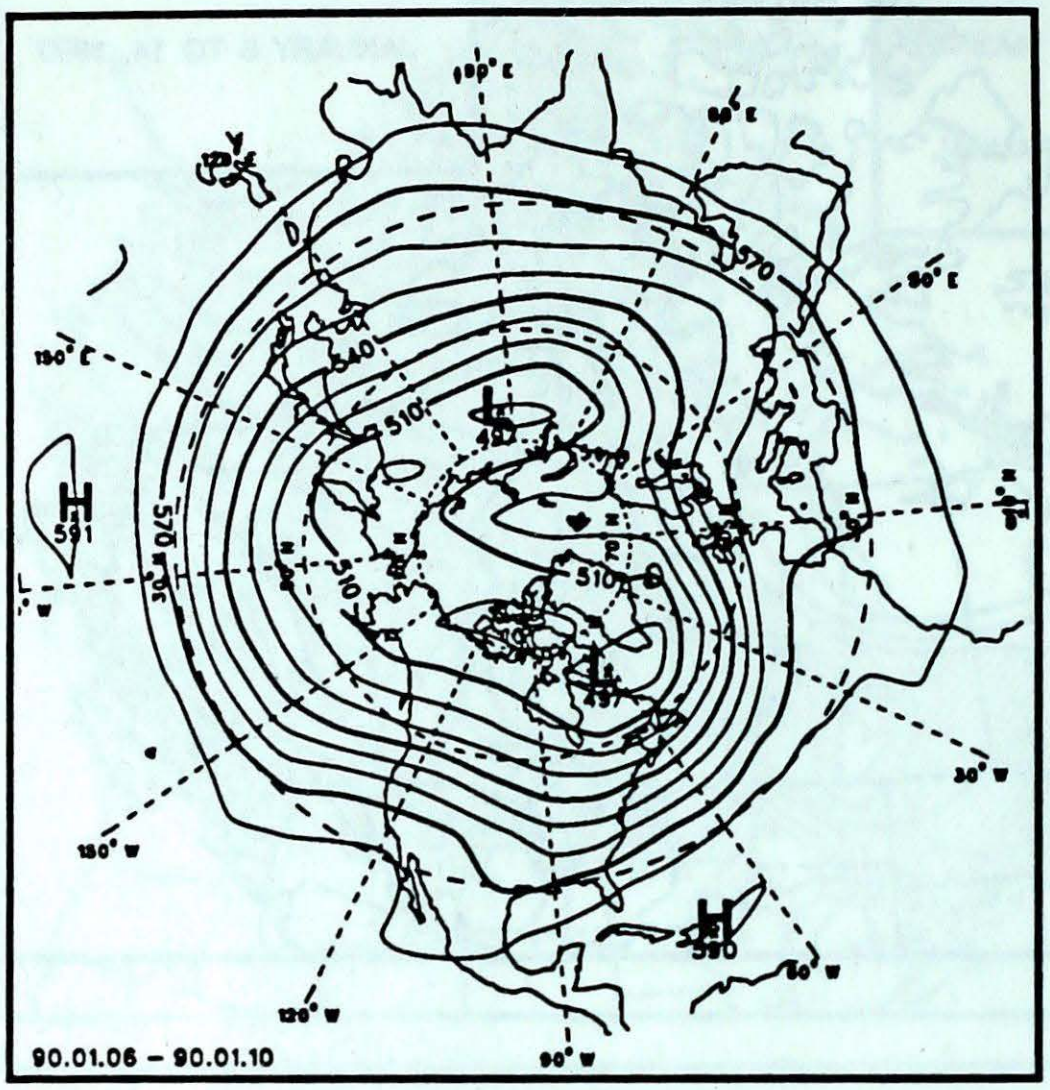
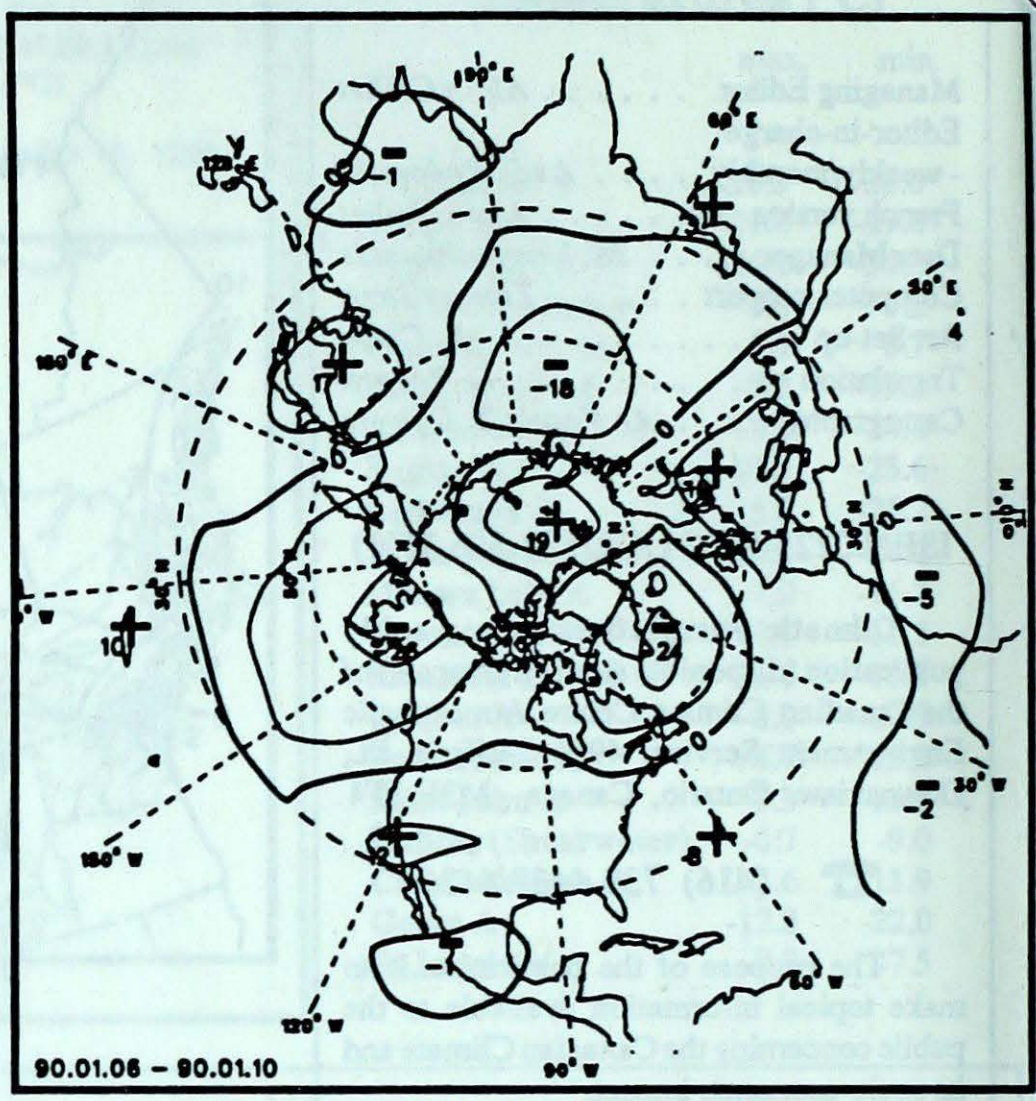




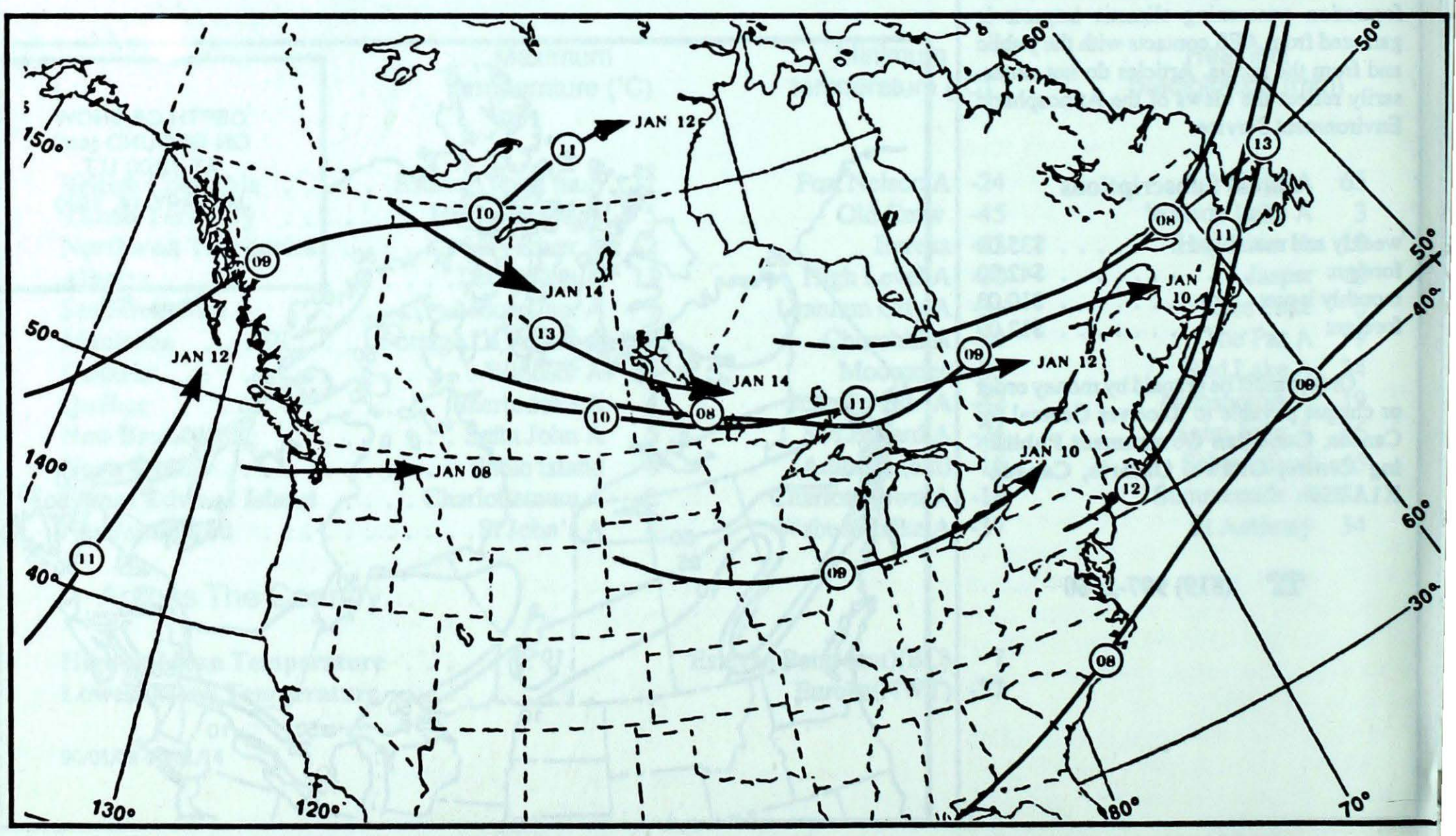
ATMOSPHERIC CIRCULATION



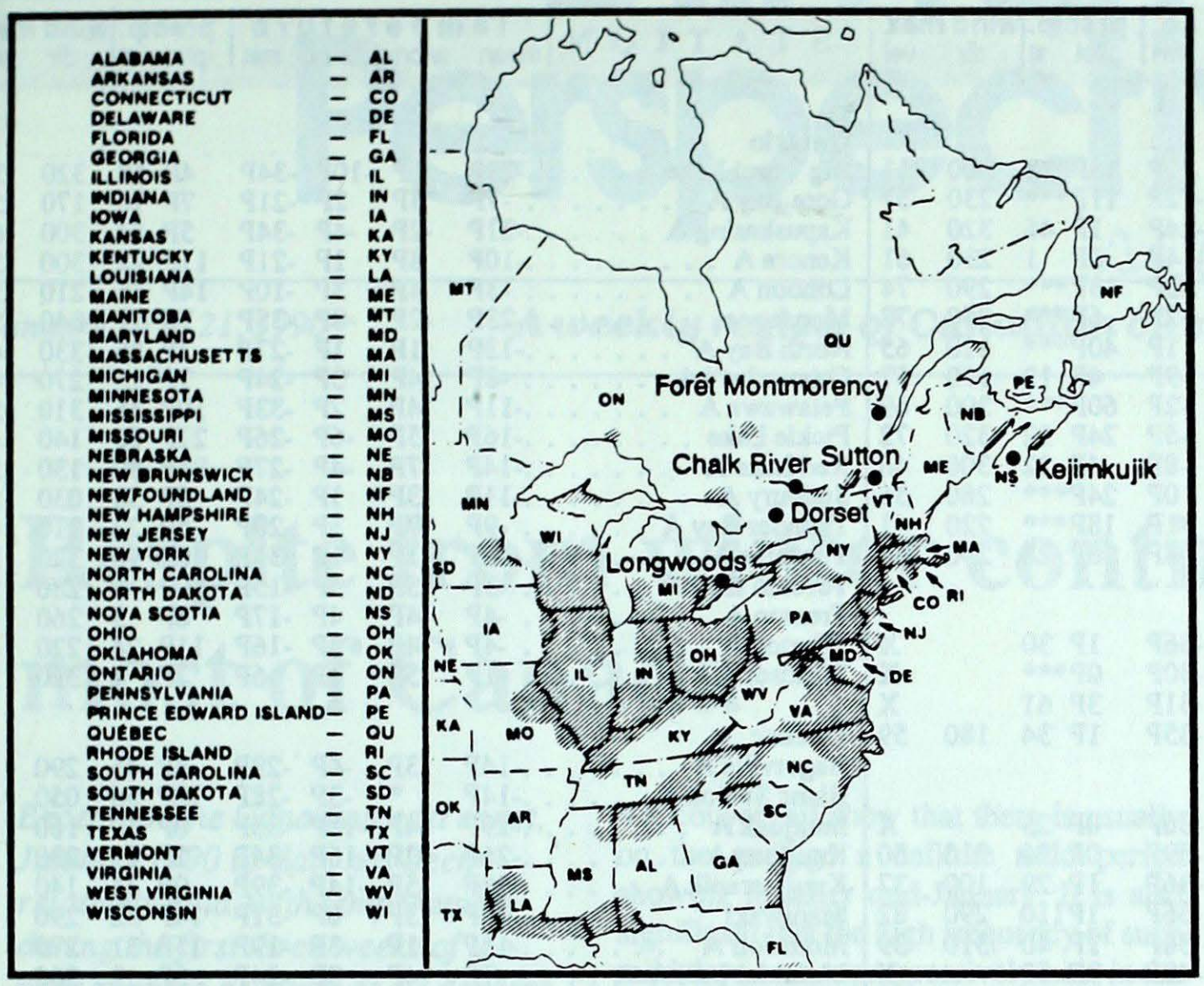
Mean geopotential height
50-kPa level (10-decametre intervals)



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 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.

Site	day	pH	amount		air path to site
					From January 7 to 13, 1990
Longwoods	9	3.8	7	M	Kentucky, West Virginia, Ohio, Southern Ontario
	11	6.2	3	S	Minnesota, Wisconsin, Michigan
	12	7.3	3	S	Lake Superior, Lake Huron, Michigan
Dorset *	9	4.2	13	S	Ohio, Pennsylvania, New York, Eastern Ontario
	10	4.5	2	S	Central Ontario
	11	4.6	12	S	Wisconsin, Michigan, Central Ontario
	12	4.4	1	S	Northern Ontario
Chalk River	9	3.9	5	S	New York, Eastern and Southern Ontario
	10	4.6	2	S	Northwestern Quebec
	11	4.1	3	S	Southern Quebec, New York, Eastern Ontario
Sutton	10	3.6	1	M	Pennsylvania, New York, New England, Southern Quebec
Montmorency	7	4.3	6	S	Northern Michigan, Central Ontario, Central Quebec
	9	3.9	4	M	Southern Quebec
	11	3.3	5	S	Southern Quebec, New York, Vermont
	12	3.1	2	S	Quebec North Shore, Gaspe
Kejimkujik	10	4.8	20	M	Atlantic Ocean
	11	4.2	4	M	New England, Atlantic Ocean
	12	4.2	1	M	Pennsylvania, New York, New England
	13	4.7	2	S	Southern Quebec, New England

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

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STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
British Columbia								
Cape St James	6P	2P	10P	1P	16P***		300	111
Cranbrook A	-2P	11P	6P	-12P	11P***		230	57
Fort Nelson A	-17P	9P	-2P	-24P	1P	46	320	41
Fort St John A	-4P	17P	4P	-14P	0P	1	230	61
Kamloops A	1P	7P	7P	-5P	3P***		290	74
Penticton A	3P	5P	10P	-2P	6P***		250	78
Port Hardy A	5P	3P	8P	1P	40P***		110	65
Prince George A	-3P	11P	4P	-9P	4P	12	190	57
Prince Rupert A	4P	5P	8P	-2P	60P***		300	69
Revelstoke A	-1P	10P	3P	-5P	24P	22	320	72
Smithers A	-2P	10P	5P	-8P	4P	22	300	46
Vancouver Int'l A	6P	3P	10P	0P	24P***		280	56
Victoria Int'l A	5P	2P	10P	-1P	18P***		220	41
Williams Lake A	-2P	10P	4P	-8P	6P	28	290	48
Yukon Territory								
Komakuk Beach A	-30P	-6P	-26P	-36P	1P	30		X
Teslin (aut)	-15P	*	-4P	-30P	0P***			X
Watson Lake A	-22P	8P	-14P	-31P	3P	61		X
Whitehorse A	-14P	11P	-1P	-35P	1P	34	180	59
Northwest Territories								
Alert	-31P	2P	-25P	-36P	0P	25		X
Baker Lake A	-31P	2P	-20P	-39P	0P	26	310	50
Cambridge Bay A	-30P	4P	-20P	-36P	1P	29	100	37
Cape Dyer A	-25P	-2P	-13P	-36P	1P	110	290	82
Clyde A	-29P	-3P	-23P	-38P	1P	40	310	39
Coppermine A	-26P	2P	-15P	-40P	3P	50		X
Coral Harbour A	-34P	-3P	-26P	-38P	0P	30		X
Eureka	-37P	-1P	-27P	-43P	1P	19	100	32
Fort Smith A	-17P	11P	-5P	-26P	0P	64	310	50
Hall Beach A	-36P	-5P	-33P	-38P	0P	34		X
Inuvik A	-29P	3P	-20P	-40P	5P	34		X
Iqaluit A	-30P	-4P	-20P	-35P	0P	15	340	56
Mould Bay A	-33P	1P	-25P	-39P	0P	40		X
Norman Wells A	-28P	2P	-20P	-37P	4P	9	300	33
Resolute A	-29P	3P	-26P	-33P	0P	29		X
Yellowknife A	-19P	11P	-12P	-30P	5P	35	300	57
Alberta								
Calgary Int'l A	1P	15P	11P	-11P	0P***		340	67
Cold Lake A	-9P	13P	-1P	-18P	3P	19	290	85
Edmonton Namao A	-3P	15P	4P	-13P	3P	3	280	67
Fort McMurray A	-11P	13P	1P	-23P	0P	35	280	52
High Level A	-17P	12P	-7P	-30P	2P	50	310	33
Jasper	-3P	11P	2P	-16P	6P	27		X
Lethbridge A	3P	15P	11P	-8P	0P***		270	9?
Medicine Hat A	1P	15P	9P	-9P	0P***		230	74
Peace River A	-8P	15P	0P	-17P	0P	9		X
Saskatchewan								
Cree Lake	-14P	15P	-5P	-29P	5P	38	300	41
Estevan A	-3P	14P	7P	-15P	0P	1	300	102
La Ronge A	-15P	10P	-1P	-25P	4P	31	300	46
Regina A	-5P	14P	5P	-17P	1P	4	320	100
Saskatoon A	-8P	13P	0P	-17P	3P	7	300	91
Swift Current A	-2P	14P	6P	-13P	4P	1	320	83
Yorkton A	-9P	11P	4P	-23P	2P	16	320	82
Manitoba								
Brandon A	-8P	12P	4P	-21P	3P	12	290	91
Churchill A	-23P	5P	-11P	-34P	5P	30	190	44
Lynn Lake A	-19P	9P	-11P	-31P	0P	41		X
The Pas A	-17P	6P	-8P	-27P	9P	22	070	32
Thompson A	-23P	5P	-9P	-33P	0P	50		X
Winnipeg Int'l A	-9P	10P	5P	-21P	1P	8	310	95

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	-23P	1P	-10P	-34P	4P	58	320	37
Gore Bay A	-7P	3P	2P	-21P	7P	76	170	52
Kapuskasing A	-21P	-2P	-4P	-34P	5P	84	300	61
Kenora A	-10P	8P	1P	-21P	11P	22	300	52
London A	-3P	4P	3P	-10P	14P	15	210	56
Moosonee	-23P	-2P	-8P	-35P	7P	77	340	50
North Bay A	-13P	1P	1P	-27P	7P	86	330	44
Ottawa Int'l A	-8P	4P	3P	-24P	7P	15	270	46
Petawawa A	-11P	4P	2P	-33P	10P	36	310	52
Pickle Lake	-16P	5P	-6P	-26P	21P	68	140	41
Red Lake A	-14P	7P	-4P	-27P	34P	80	130	52
Sudbury A	-11P	3P	1P	-24P	5P	58	030	56
Thunder Bay A	-9P	7P	3P	-20P	5P	22	310	44
Timmins A	-18P	1P	-1P	-34P	10P	90	320	50
Toronto Int'l A	-3P	5P	5P	-13P	10P	1	280	57
Trenton A	-4P	4P	4P	-17P	6P	5	260	48
Wiarton A	-4P	4P	3P	-16P	11P	24	220	43
Windsor A	-1P	5P	6P	-6P	7P	1	320	59
Quebec								
Bagotville A	-14P	3P	-4P	-29P	8P	46	290	44
Blanc Sablon A	-14P	*	-3P	-28P	12P	56	050	85
Inukjuak A	-29P	-4P	-18P	-35P	0P	19	160	54
Kuujjuaq A	-26P	-2P	-16P	-34P	2P	81	230	37
Kuujjuarapik A	-28P	-5P	-14P	-39P	0P	34	140	52
Maniwaki	-12P	3P	0P	-31P	14P	52	290	32
Mont Joli A	-11P	1P	-3P	-19P	15P	31	270	50
Montréal Int'l A	-7P	4P	3P	-24P	3P	9	260	48
Natashquan A	-15P	-2P	-6P	-30P	19P	75	020	43
Québec A	-9P	4P	-1P	-22P	12P	70	070	43
Schefferville A	-28P	-4P	-16P	-42P	3P	61		X
Sept-Îles A	-14P	1P	-7P	-25P	14P	27	070	50
Sherbrooke A	-6P	7P	4P	-24P	5P	27	250	39
Val-d'Or A	-17P	1P	0P	-36P	6P	43	330	41
New Brunswick								
Charlo A	-12P	2P	-4P	-21P	12P	71	090	43
Chatham A	-9P	2P	1P	-22P	28P	61	060	48
Fredericton A	-7P	3P	4P	-21P	22P	39	300	44
Moncton A	-7P	2P	4P	-20P	19P	25	350	74
Saint John A	-5P	3P	5P	-18P	36P	23	340	54
Nova Scotia								
Greenwood A	-3P	3P	4P	-15P	10P	3	320	48
Shearwater A	-1P	4P	6P	-13P	27P	1	130	48
Sydney A	-6P	-1P	4P	-13P	32P	7	240	44
Yarmouth A	-1P	3P	6P	-12P	24P	*	310	59
Prince Edward Island								
Charlottetown A	-7P	1P	2P	-18P	30P	19	270	41
Summerside A	-6P	2P	2P	-18P	31P	35	010	63
Newfoundland								
Cartwright	-17P	-4P	-4P	-28P	7P	179	350	59
Churchill Falls A	-24P	-1P	-11P	-36P	2P	67		
Gander Int'l A	-7P	-1P	4P	-17P	16P	39	270	115
Goose A	-20P	-3P	-9P	-30P	5P	85	240	35
Port Aux Basques	-5P	-1P	1P	-12P	23P	84	090	89
St John's A	-4P	0P	4P	-12P	18P	5	290	85
St Lawrence	-5P	0P	4P	-16P	9P	5		X
Wabush Lake A	-25P	-2P	-14P	-37P	8P	38		X

90/01/08-90/01/14

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.