Climatic Perspectives

MONTHLY SUPPLEMENT INCLUDED

December 3 to 9, 1990 **A weekly review of Canadian climate and water** *Vol.12 No.49*

Winter storms batter Atlantic Canada

Two major storms hit Atlantic Canada during the early and latter parts of the week, resulting in combined rainfalls of between 100 and 175 millimetres. The first storm also left a trail of heavy snow across Ontario and Quebec, while the second system developed and moved up the eastern seaboard, producing copious amounts of rain.

In Newfoundland the heaviest precipitation occurred on December 8 and 9, with totals for the week reaching as high as 162.0 mm. The heavy rain on top of recent snowfalls, resulted in major flooding between Corner Brook and Port aux Basques. The Port au Port Peninsula, west of Stephenville, was completely cut off because of flooding on 9th, stranding 4000 residents. Numerous bridges and roads were washed out, including parts of the Trans-Canada Highway. Many homes were flooded in Stephenville. Two-day rainfall amounts reported on December 8 and 9 were: Stephenville, 91.4 mm; Port aux Basques, 91.4 mm; and Burgeo, 92.5 mm.

In the Maritimes, both storms produced strong winds, snow and rain. On the 5th, northern sections of New Brunswick received between 20 and 30 centimetres of snow. Winds along the Cape Breton Island and P.E.I. coastlines were reported gusting to 122 km/h. The second storm was remarkable due to the amount of rain it produced, in some cases more than 100 mm. Sydney, N.S. had a weekly total of 173.2 mm.

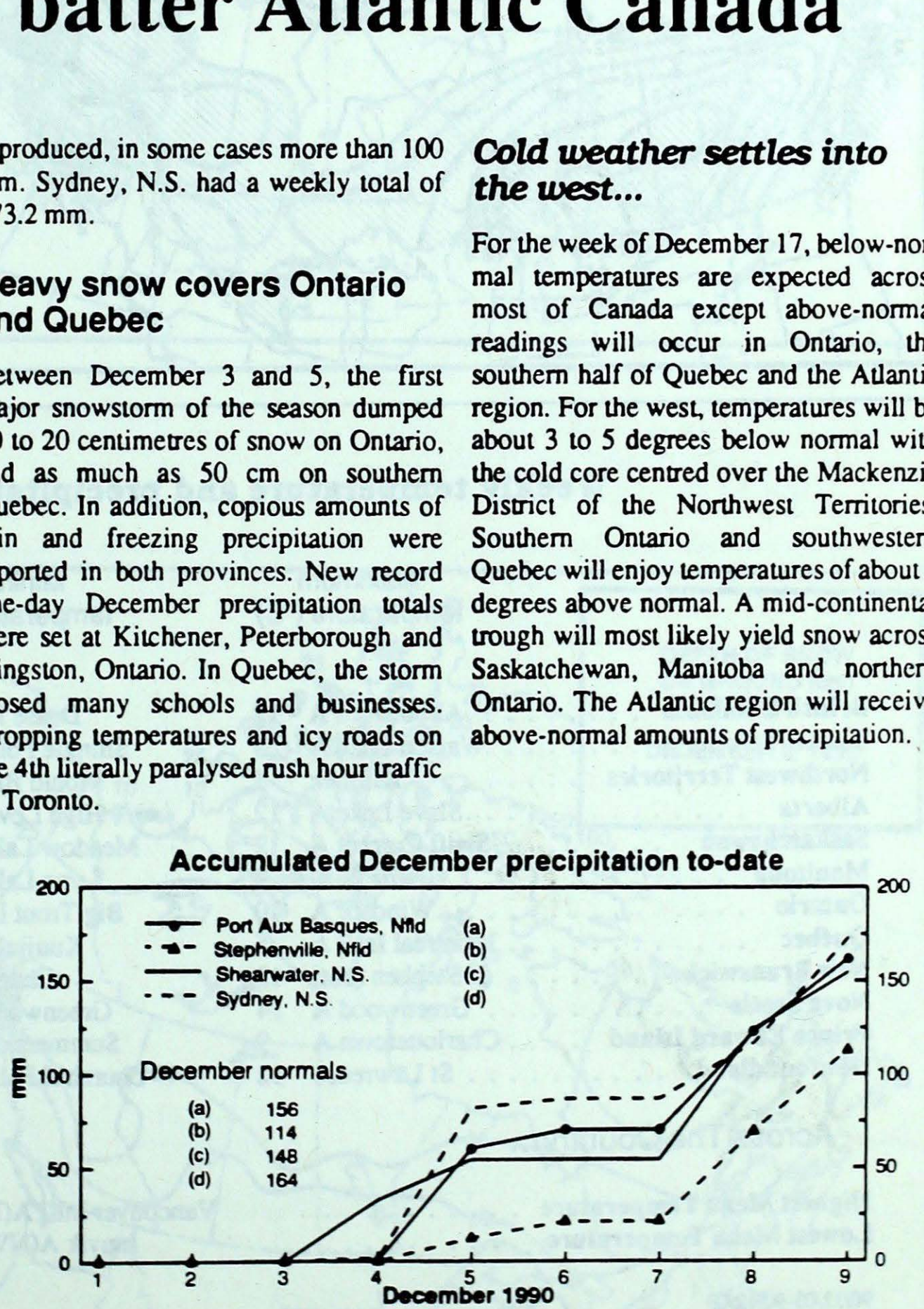
Heavy snow covers Ontario and Quebec

Between December 3 and 5, the first major snowstorm of the season dumped 10 to 20 centimetres of snow on Ontario, and as much as 50 cm on southern Quebec. In addition, copious amounts of rain and freezing precipitation were reported in both provinces. New record one-day December precipitation totals were set at Kitchener, Peterborough and Kingston, Ontario. In Quebec, the storm closed many schools and businesses. Dropping temperatures and icy roads on the 4th literally paralysed rush hour traffic in Toronto.

Cold weather settles into the west...

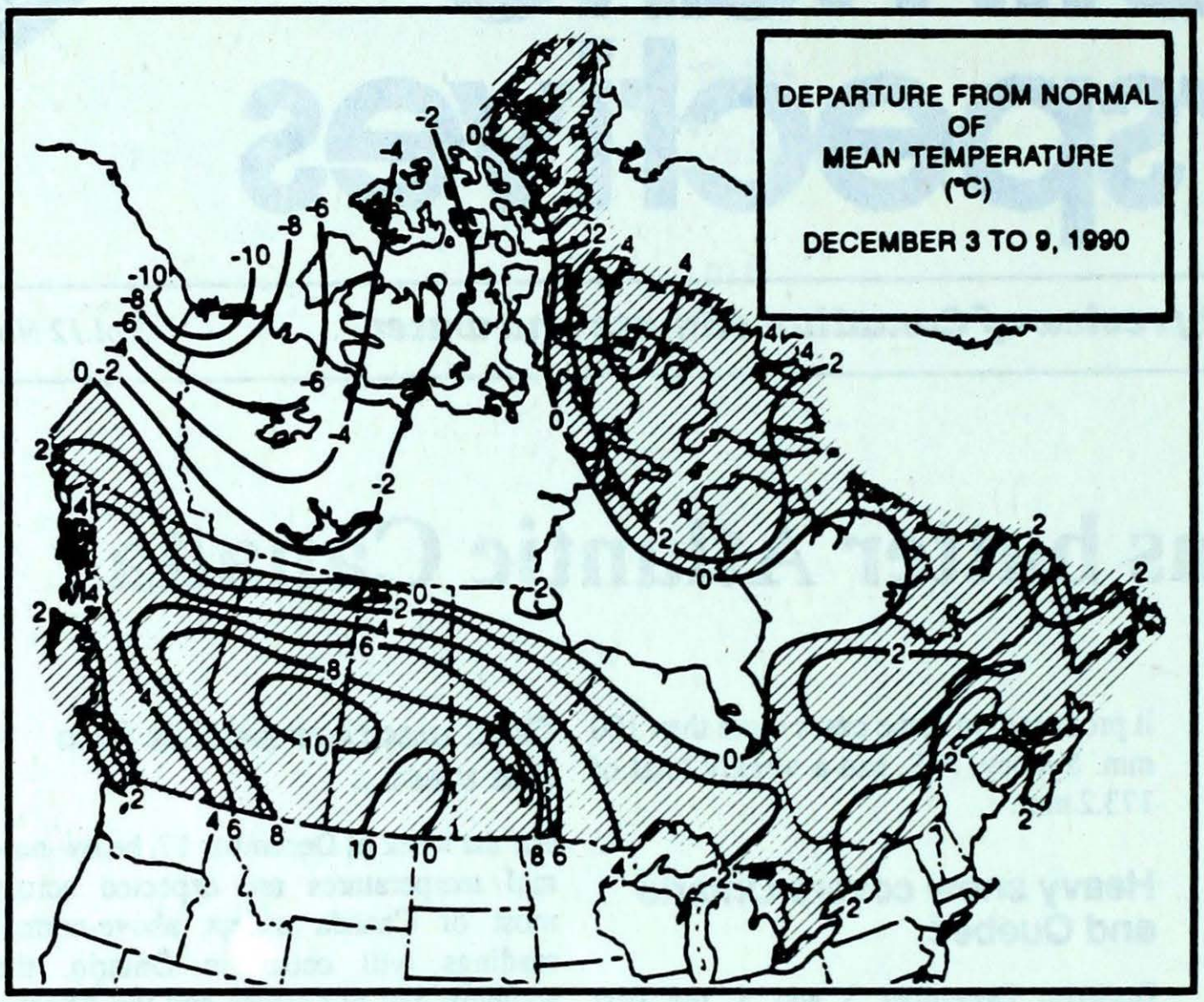
For the week of December 17, below-normal temperatures are expected across most of Canada except above-normal readings will occur in Ontario, the southern half of Quebec and the Atlantic region. For the west, temperatures will be about 3 to 5 degrees below normal with the cold core centred over the Mackenzie District of the Northwest Territories. Southern Ontario and southwestern Quebec will enjoy temperatures of about 5 degrees above normal. A mid-continental trough will most likely yield snow across Saskatchewan, Manitoba and northern Ontario. The Atlantic region will receive above-normal amounts of precipitation.

Accumulated December precipitation to-date



In the first nine days of December precipitation has exceeded the monthly normal at several east coast locations.

Canada



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-13.5	-21.1
Iqaluit A	-16.3	-24.5
Yellowknife A	-19.3	-26.9
Vancouver Int'l A	6.6	1.2
Victoria Int'l A	7.1	1.1
Calgary Int'l A	-2.2	-14.4
Edmonton Int'l A	-7.0	-17.8
Regina A	-6.8	-16.9
Saskatoon A	-8.4	-17.8
Winnipeg Int'l A	-7.8	-16.0
Ottawa Int'l A	-0.9	-8.2
Toronto (Pearson Int'l A)	2.5	-4.9
Montréal Int'l A	-0.3	-7.6
Québec A	-2.3	-9.5
Fredericton A	0.6	-8.8
Saint John A	1.7	-6.9
Halifax (Shearwater)	4.3	-3.0
Charlottetown A	1.9	-5.0
Goose A	-6.1	-14.6
St John's A	2.6	-3.1

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Abbotsford A	12	Dease Lake	-35	Terrace A	262
Yukon Territory	Watson Lake A	3	Shingle Point A	-42	Watson Lake A	9
Northwest Territories	Killinek	1	Mould Bay A	-45	Cape Dyer A	70
Alberta	Slave Lake A	12	High Level A	-40	High Level A	15
Saskatchewan	Swift Current A	12	Meadow Lake A	-33	Cree Lake	4
Manitoba	Gretna (aut)	9	Lynn Lake A	-41	Gillam A	22
Ontario	Windsor A	10	Big Trout Lake	-32	Trenton A	47
Québec	Montréal Int'l A	5	Kuujjuaq A	-33	Natashquan A	86
New Brunswick	St Stephen (aut)	12	Charlo A	-14	Saint John A	94
Nova Scotia	Greenwood A	14	Greenwood A	-6	Sydney A	173
Prince Edward Island	Charlottetown A	9	Summerside A	-6	Charlottetown A	104
Newfoundland	St Lawrence	12	Churchill Falls A	-29	Port Aux Basques	162

Across The Country...

Highest Mean Temperature	Vancouver Int'l A(BC)	6
Lowest Mean Temperature	Inuvik A(NWT)	-37

90/12/03-90/12/09

CLIMATIC PERSPECTIVES
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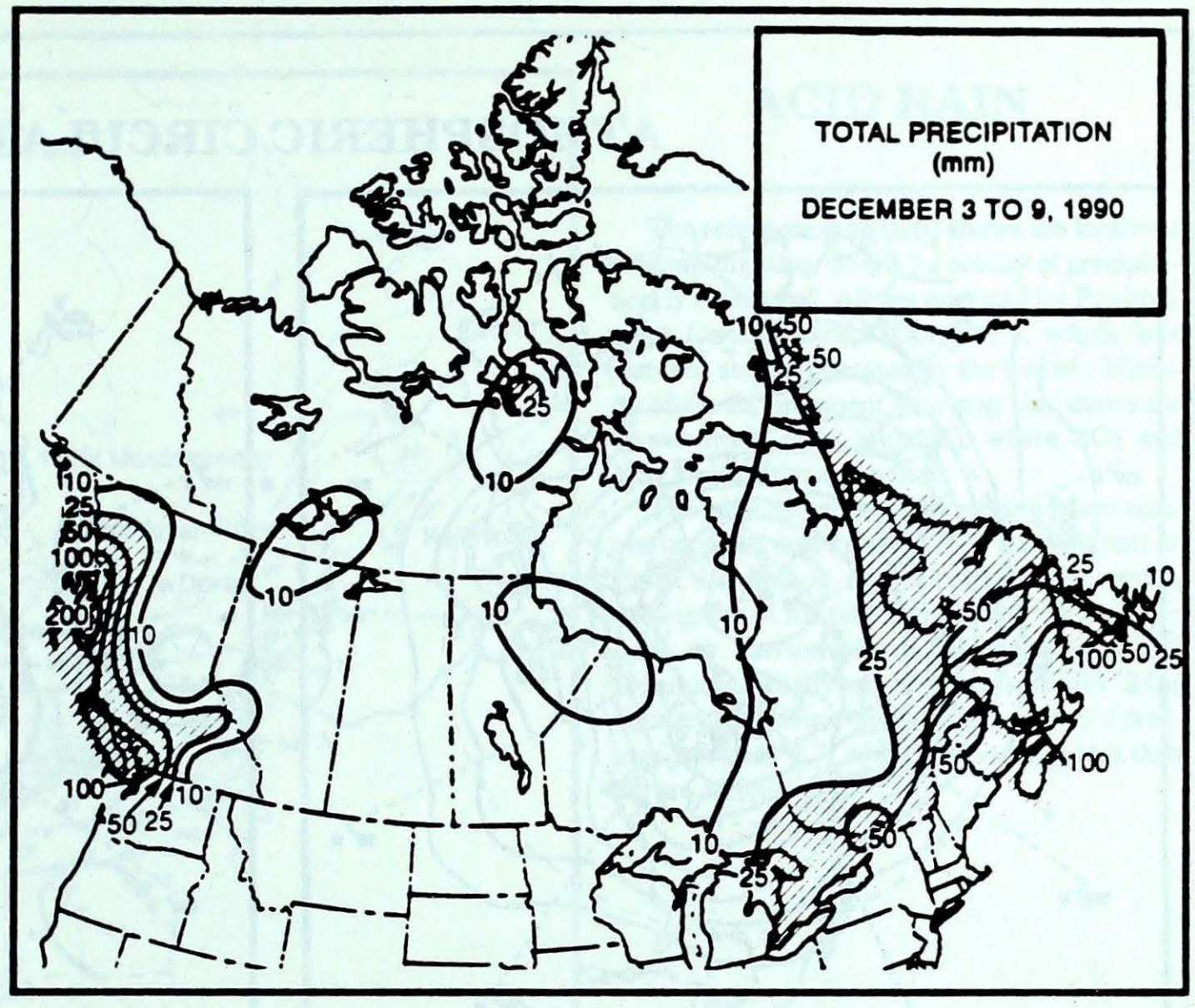
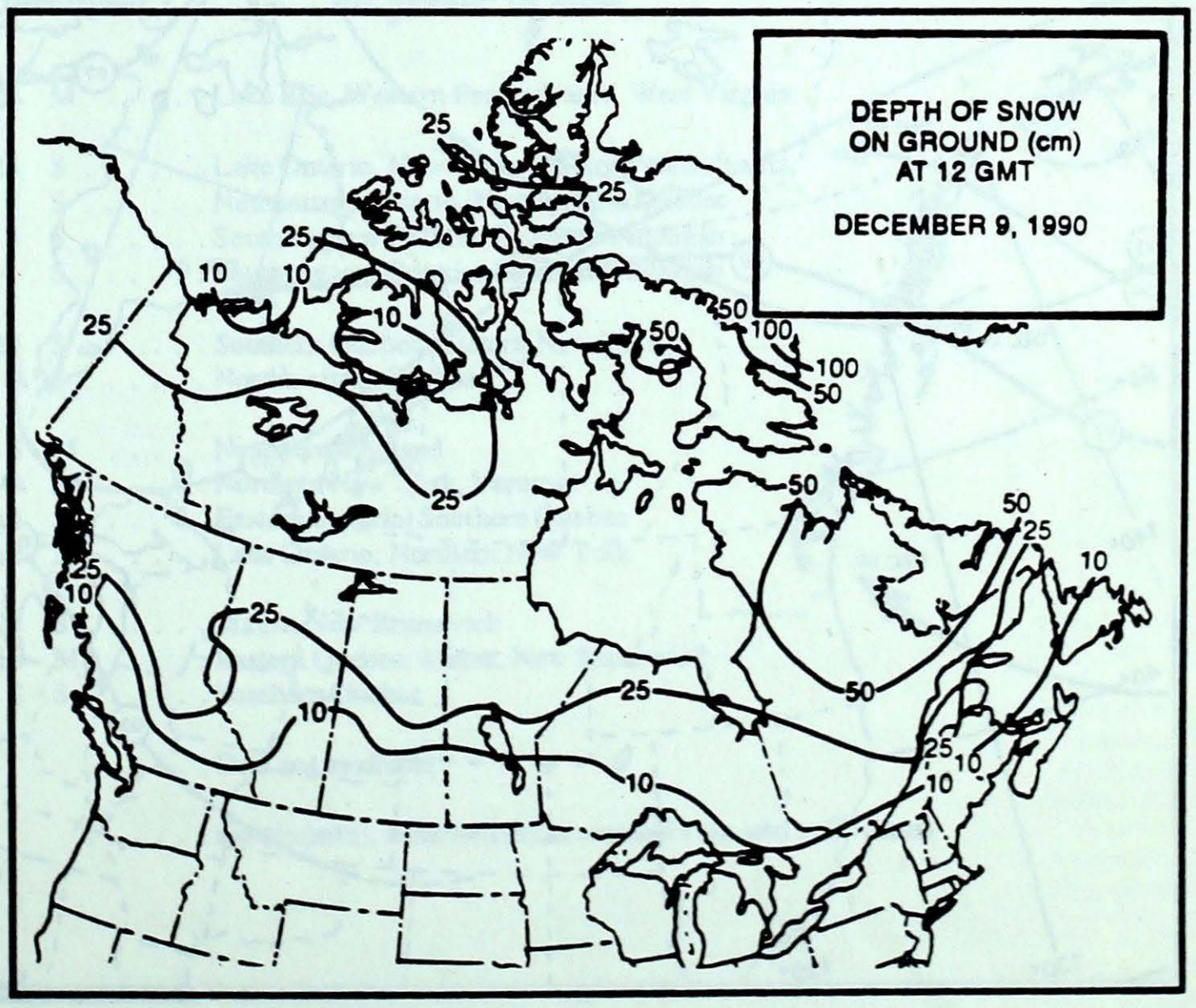
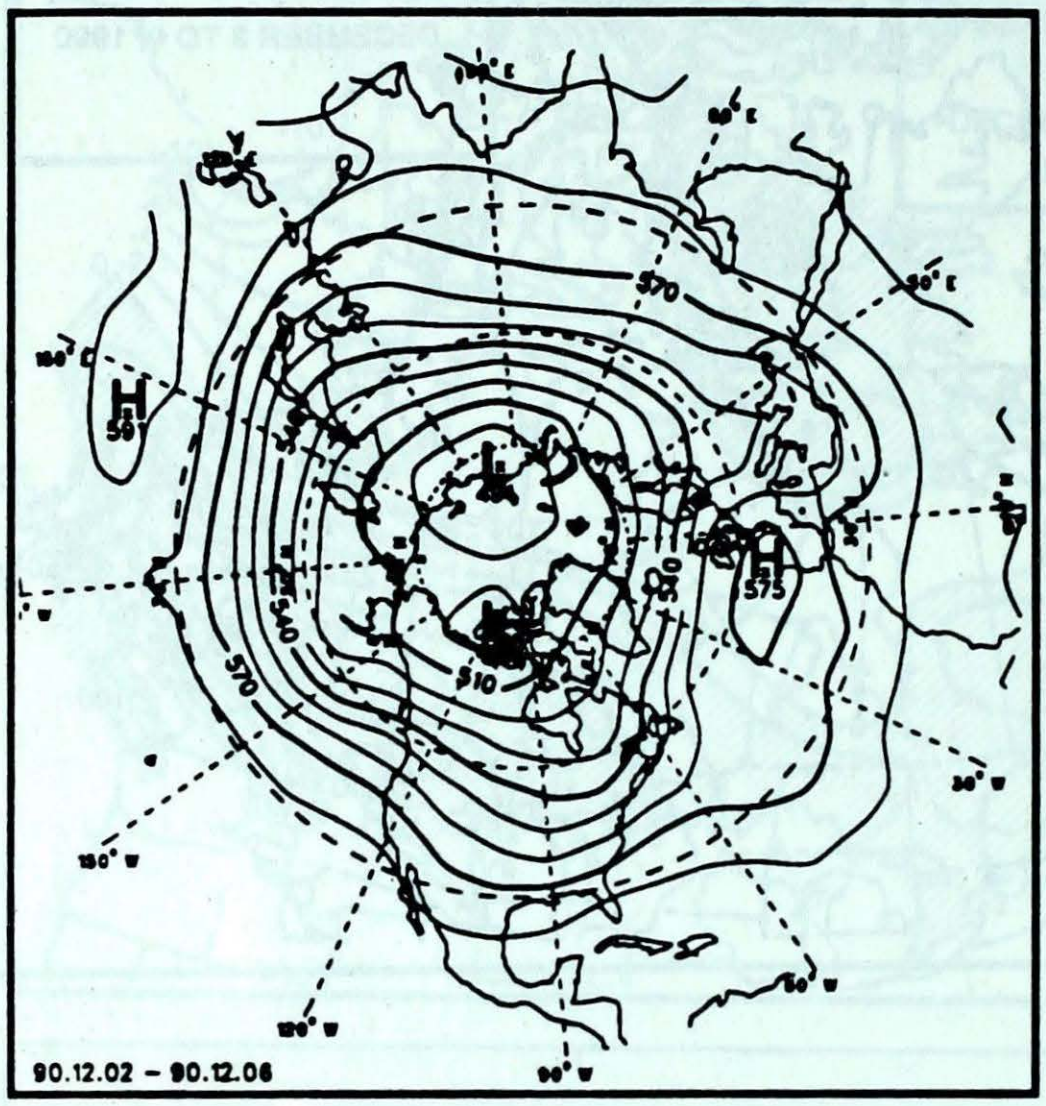
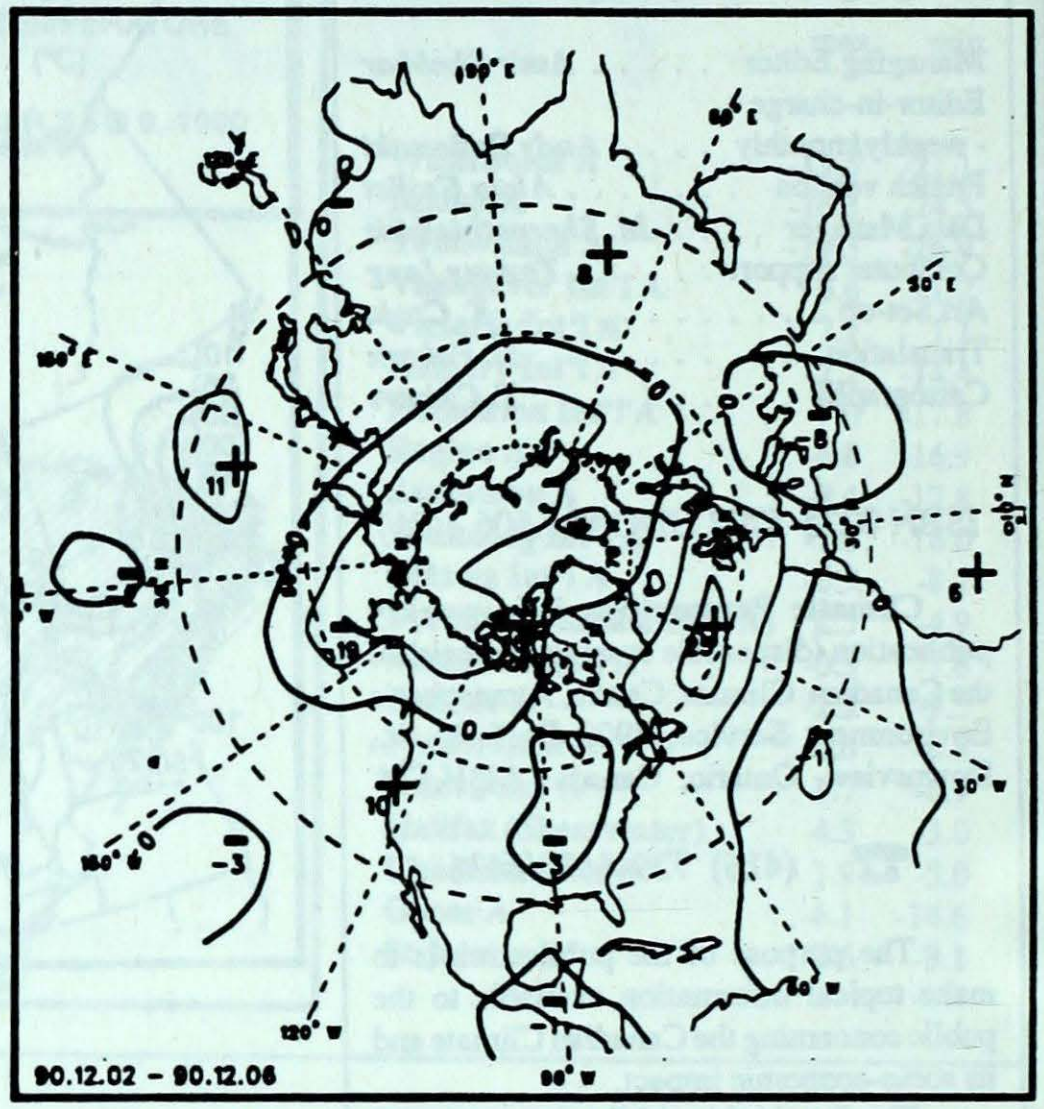




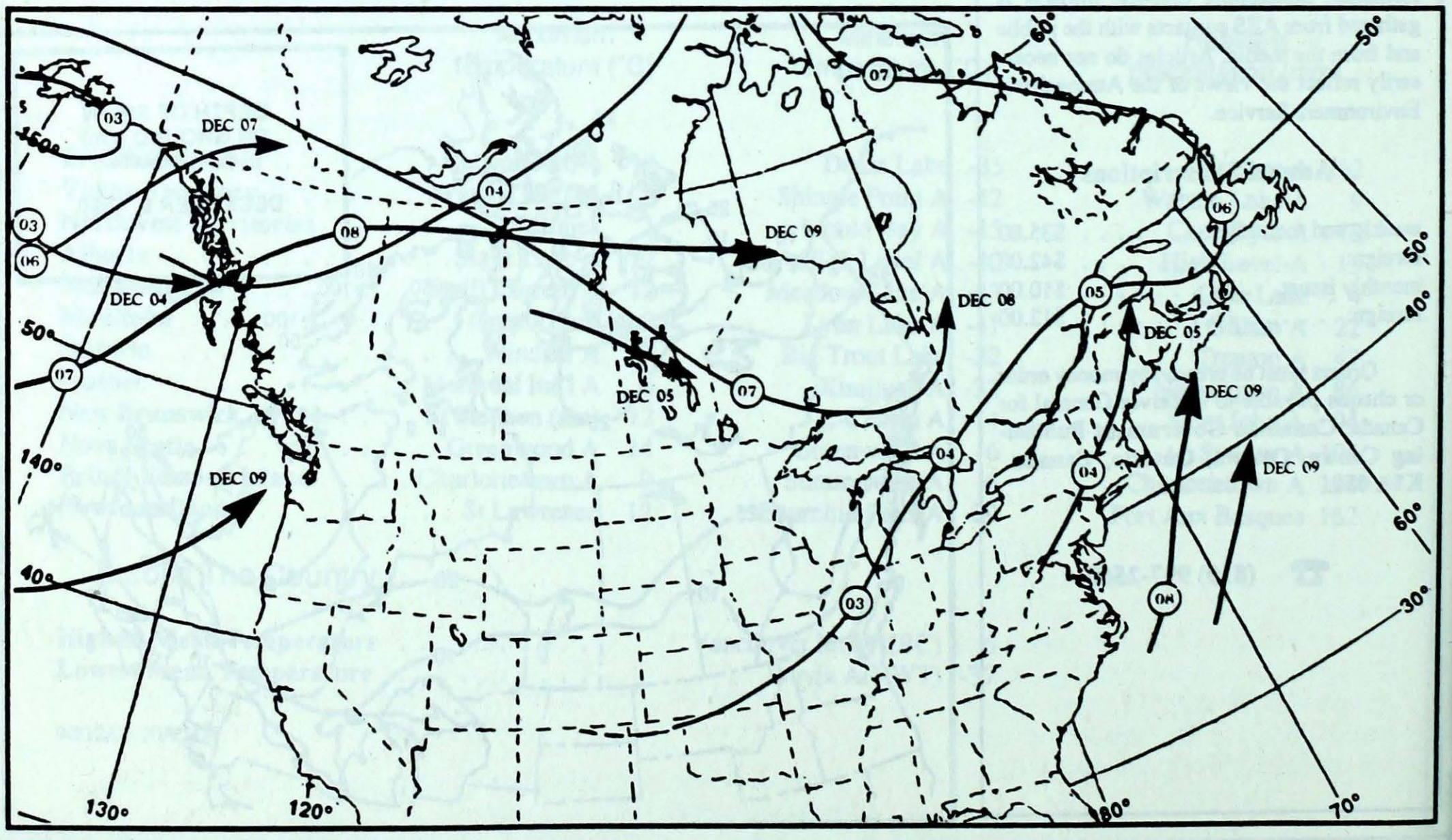
ATMOSPHERIC CIRCULATION



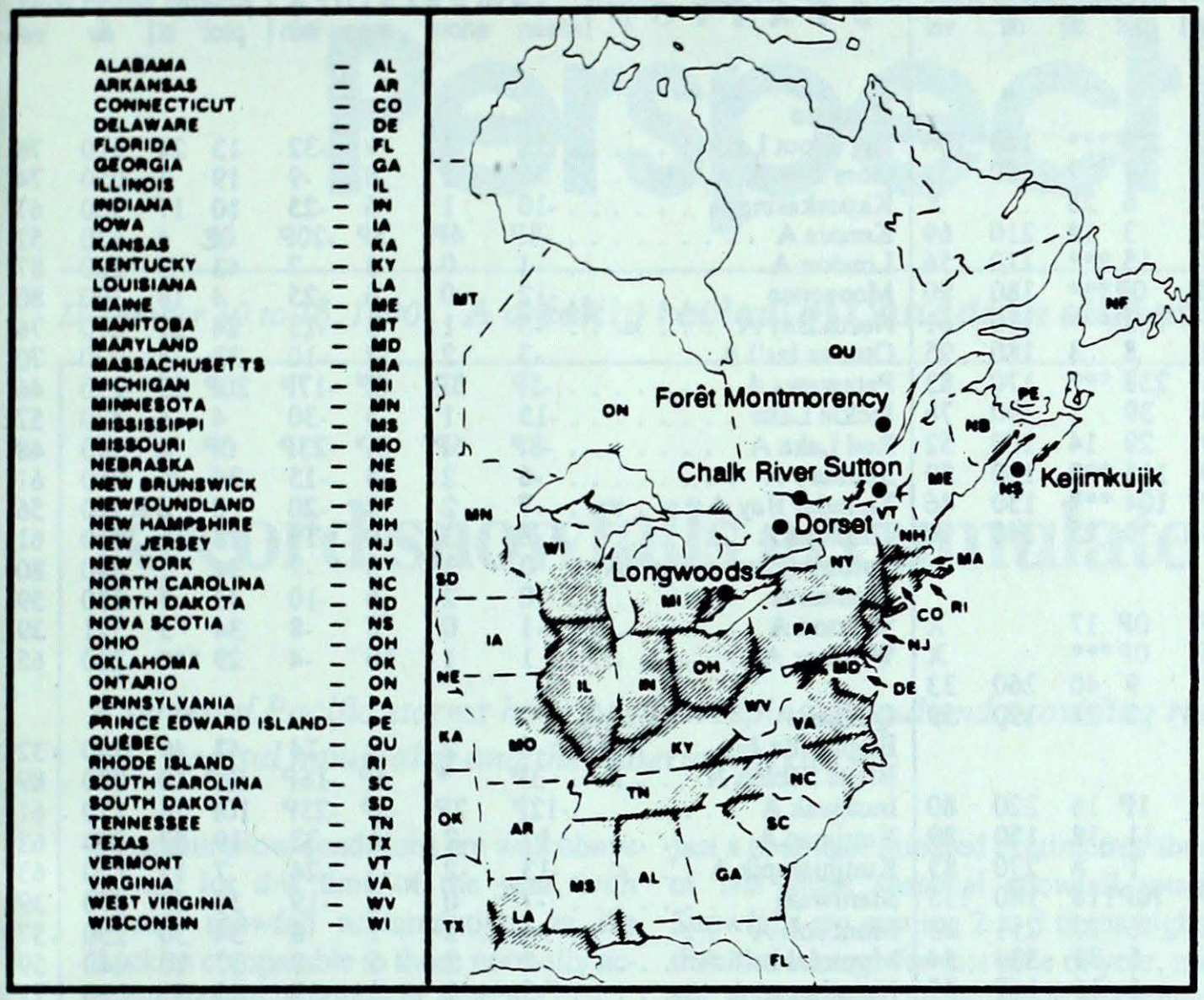
Mean geopotential height
50-kPa level (10-decametre intervals)



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.

December 2 to 8, 1990

Site	day	pH	amount		air path to site
Longwoods	3	4.5	23	M	Lake Erie, Western Pennsylvania, West Virgnia
Dorset*	3	4.6	23	S	Lake Ontario, New York, Eastern Pennsylvania
	4	4.1	3	S	Notheastern Ontario, Northeastern Quebec
	7	4.3	3	S	Southwestern Ontario, Southern Michigan
	8	4.3	1	S	Southwestern Ontario, Southern Michigan
Chalk River	3	4.5	28	S	Southern Quebec, Eastern New York
	4	4.1	1	S	Northwestern Quebec
Sutton	3	4.9	8	M	New New England
	4	4.5	4	M	Northern New York, Vermont
	5	5.3	3	S	Eastern Ontario, Southern Quebec
	6	4.0	2	S	Lake Ontario, Northern New York
Montmorency	3	5.2	28	S	Maine, New Brunswick
	4	4.4	18	M	Eastern Quebec, Maine, New Brunswick
	6	4.2	2	S	Southern Quebec
Kejimkujik					Data not available

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								
Cape St James	6P	1P	10P	4P	23P	***	180	106
Cranbrook A	-1	6	4	-9	7	7	180	41
Fort Nelson A	-21	-1	-3	-34	6	28		X
Fort St John A	-5	9	7	-30	3	18	210	69
Kamloops A	3	5	12	-4	15	***	110	56
Penticton A	3P	3P	6P	0P	0P	***	180	80
Port Hardy A	5	2	12	-1	102	***	110	61
Prince George A	0	7	6	-12	8	3	180	95
Prince Rupert A	5	4	9	1	238	***	170	83
Revelstoke A	2	6	5	-4	39	1	190	76
Smithers A	1	7	7	-9	29	14	260	52
Vancouver Int'l A	6	2	9	0	115	***	130	59
Victoria Int'l A	6	2	9	0	104	***	130	46
Williams Lake A	-1	7	4	-8	0	25	140	74
Yukon Territory								
Komakuk Beach A	-35P	-11P	-31P	-40P	0P	17		X
Teslin (aut)	*	*	1P	***P	0P	***		X
Watson Lake A	-20	3	3	-39	9	40	260	33
Whitehorse A	-16	2	-1	-30	8	22	190	59
Northwest Territories								
Alert	-28P	1P	-13P	-40P	1P	16	220	80
Baker Lake A	-29	-2	-10	-37	11	18	150	89
Cambridge Bay A	-30	-1	-20	-36	1	8	270	83
Cape Dyer A	-14P	7P	-1P	-32P	70P	118	140	135
Clyde A	-20	4	-4	-35	6	27	211	83
Coppermine A	-32	-5	-24	-38	5	31	330	54
Coral Harbour A	-21	4	-9	-35	6	16	160	85
Eureka	-30P	4P	-12P	-45P	2P	8	120	67
Fort Smith A	-21	0	-4	-34	13	50	300	56
Hall Beach A	-23	4	-10	-36	5	29	170	111
Inuvik A	-37	-10	-29	-44	2	***		X
Iqaluit A	-19	2	0	-35	22	30	120	78
Mould Bay A	-35	-5	-28	-45	1	28		X
Norman Wells A	-31	-4	-25	-39	1	14	280	48
Resolute A	-30	-1	-14	-39	6	33	090	120
Yellowknife A	-27	-4	-17	-38	24	46	290	50
Alberta								
Calgary Int'l A	1	10	12	-16	4	1	250	74
Cold Lake A	-6	7	9	-30	0	10	240	44
Edmonton Namao A	-1	11	8	-21	0	13	230	46
Fort McMurray A	-11	6	8	-33	0	10	260	50
High Level A	-18	5	5	-40	15	45	340	56
Jasper	0	9	7	-11	11	22		X
Lethbridge A	2	8	10	-22	0	1	240	109
Medicine Hat A	1	9	9	-23	1	2	230	102
Peace River A	-6	9	6	-33	2	12	270	70
Saskatchewan								
Cree Lake	-16	8	3	-30	4	47	320	65
Estevan A	-5	5	6	-22	0	4	280	56
La Ronge A	-11	8	5	-25	2	32	300	74
Regina A	-3	9	9	-18	0	***	310	65
Saskatoon A	-5	8	6	-27	2	3	350	43
Swift Current A	-1	9	12	-23	2	***	230	67
Yorkton A	-5	8	6	-20	1	1	200	69
Manitoba								
Brandon A	-8	5	4	-28	2	3	290	80
Churchill A	-23	-3	-9	-33	18	31	160	82
Lynn Lake A	-19	4	-2	-41	5	40	330	54
The Pas A	-10	6	4	-25	2	10	280	74
Thompson A	-18	3	-1	-40	7	***	350	57
Winnipeg Int'l A	-5	7	5	-15	1	1	170	72

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	-18	-1	1	-32	13	24	310	76
Gore Bay A	-2	1	8	-9	19	3	050	74
Kapuskasing A	-10	1	6	-25	10	17	300	67
Kenora A	-8P	4P	5P	-20P	0P	4	170	52
London A	-1	0	8	-7	43	5	080	87
Moosonee	-12	0	6	-25	4	14	300	80
North Bay A	-5	1	3	-13	24	21	070	76
Ottawa Int'l A	-3	2	4	-10	33	4	070	70
Petawawa A	-5P	3P	6P	-17P	20P	13	110	46
Pickle Lake	-15	1	3	-30	4	4	320	57
Red Lake A	-8P	6P	3P	-23P	0P	4	140	48
Sudbury A	-6	2	4	-15	30	25	050	61
Thunder Bay A	-7	2	8	-20	0	8	320	56
Timmins A	-8	3	10	-19	18	15	320	61
Toronto(Pearson Int'l A)	0	1	8	-7	34	2	090	80
Trenton A	0	2	6	-10	47	5	230	59
Wiarton A	-1	0	8	-8	34	5	321	39
Windsor A	1	1	10	-4	29	***	220	65
Québec								
Bagotville A	-6	2	2	-14	43	49	250	32
Blanc Sablon A	-3P	*	4P	-16P	42P	10	090	89
Inukjuak A	-12P	2P	-6P	-23P	10P	16	110	61
Kuujjuaq A	-17	-2	-1	-33	19	57	070	63
Kuujjuarapik A	-13	-2	-3	-24	7	15	120	63
Maniwaki	-7	0	2	-19	38	21	270	39
Mont Joli A	-4	2	1	-8	34	30	250	57
Montréal Int'l A	-2	2	5	-9	37	10	240	59
Natashquan A	-5	2	2	-15	86	31	090	72
Québec A	-5	1	1	-15	38	23	080	65
Schefferville A	-16	-1	-5	-29	31	84	100	57
Sept-Îles A	-6	2	2	-16	45	48	080	98
Sherbrooke A	-4	3	4	-13	23	6	140	70
Val-d'Or A	-8	1	2	-17	26	21	290	48
New Brunswick								
Charlo A	-5	2	3	-14	49	31	070	80
Chatham A	-3	2	8	-9	40	4	150	61
Fredericton A	-1	3	11	-9	60	1	130	63
Moncton A	-1	2	11	-7	53	10	150	100
Saint John A	-1	2	11	-8	94	3	150	69
Nova Scotia								
Greenwood A	2	2	14	-6	74	***	160	95
Shearwater A	3	2	10	-6	155	***	130	78
Sydney A	2	2	11	-6	173	***	190	82
Yarmouth A	3	1	12	-3	66	***	350	56
Prince Edward Island								
Charlottetown A	0	2	9	-5	104	***	140	93
Summerside A	-1	1	8	-6	94	10	140	96
Newfoundland								
Cartwright	-6	1	4	-16	32	51	120	74
Churchill Falls A	-13	3	-2	-29	43	124	080	63
Gander Int'l A	-1	2	11	-8	18	1	180	74
Goose A	-11	0	2	-23	41	57	280	57
Port Aux Basques	1	1	8	-7	162	***	120	93
St John's A	0	1	9	-5	5	***	200	83
St Lawrence	2	2	12	-9	49	***		X
Wabush Lake A	-14	1	-5	-24	27	46	160	57

90/12/03-90/12/09

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.