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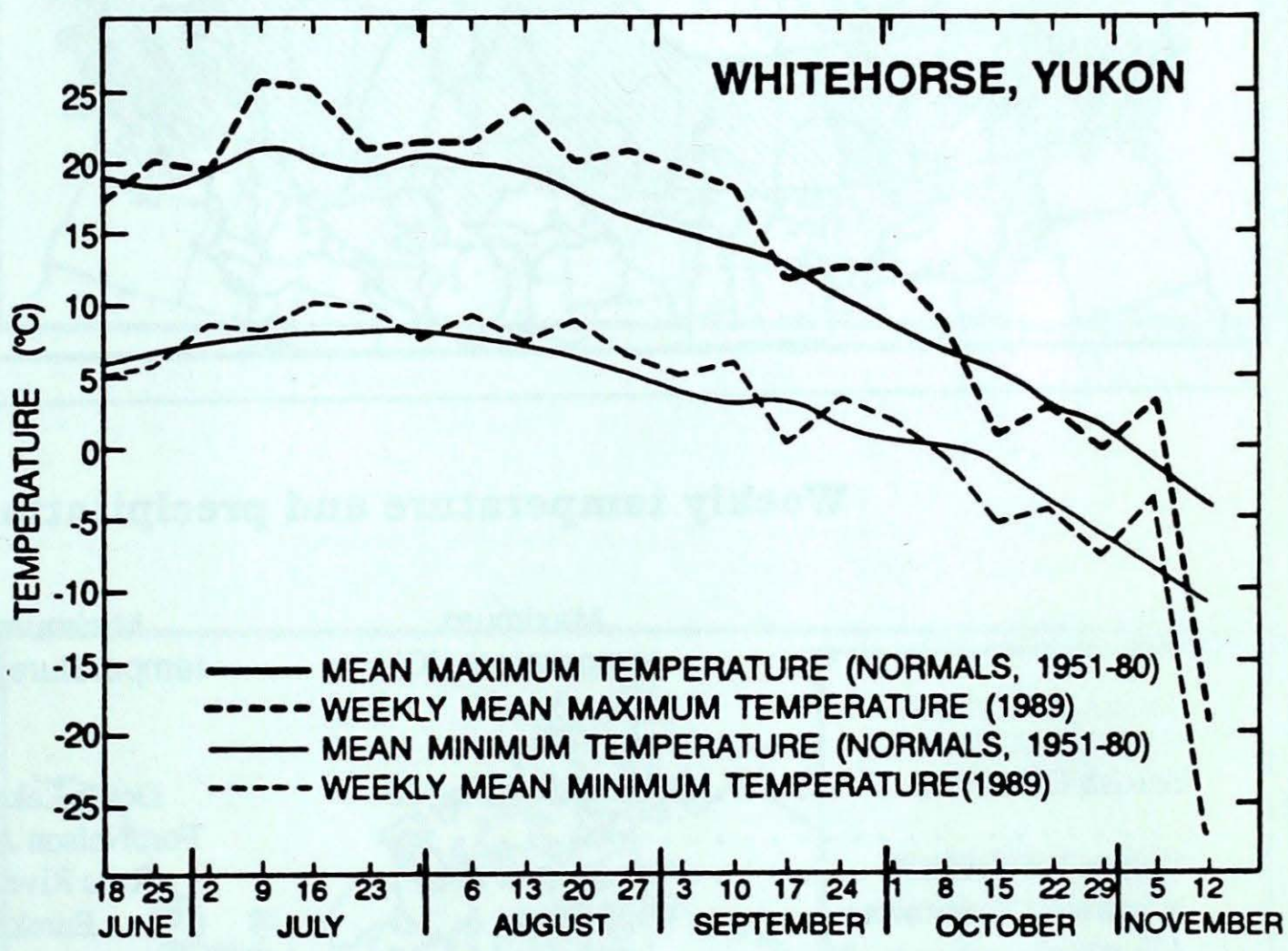
Climatic Perspectives

November 6 to 12, 1989 | ***A weekly review of Canadian climate*** | *Vol. 11 No 46*

Early deep freeze in Yukon

The season's first major cold spell developed over eastern Alaska and the Yukon, plunging temperatures to record-low values. Blizzard warnings and windchill advisories were issued over the weekend for northern British Columbia coastal passes and the southern Yukon. A cold arctic vortex, combined with extended night-time cooling, caused the weekly mean temperature at Whitehorse to plunge 16.3 degrees below normal. The record-cold temperatures began on the 10th and were still continuing into next week. Whitehorse recorded -38.9°C on the 12th, surpassing the old record of - 30.6°C set in 1969. Ross River recorded -50.5°C on the 12th, which eclipsed the old record of -49.0°C, set on November 26, 1985. The coldest November temperature ever recorded in the Yukon was -54.0°C, at Braeburn, on November 28, 1985.

D. Watt, R. Croy, Yukon Weather Centre, Whitehorse

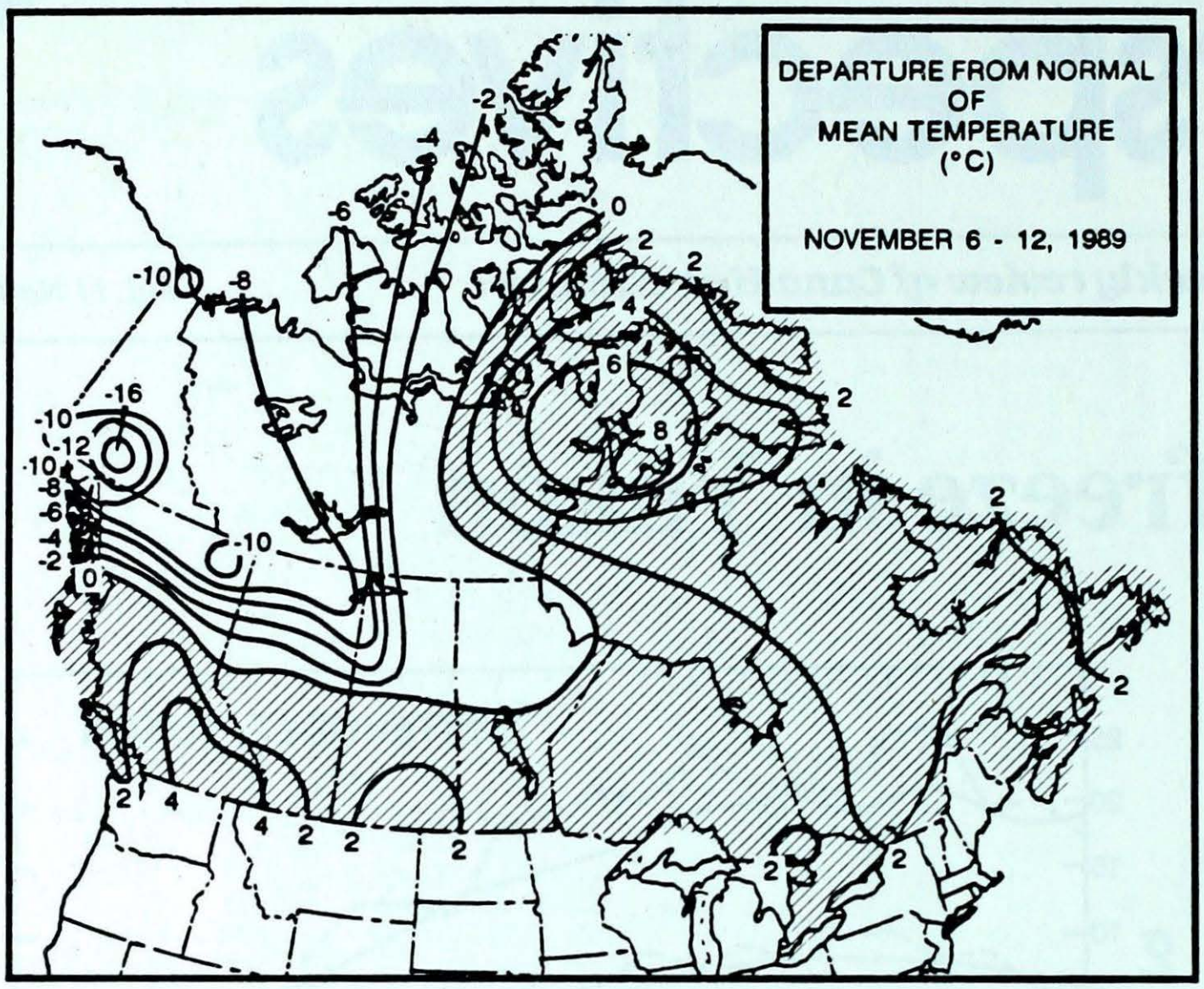


Heavy rains in British Columbia

A weather system stalled over northern Vancouver Island on the 8th and 9th, dropping 132.4 mm of rain at Port Hardy which was its 3rd highest 2-day rainfall for November. Gary Myers (Port Hardy Weather Office) reported that the rains caused several mudslides in the Port Alice area, washed out roads, and forced some evacuations due to flooding. On the 12th, there was more rain with higher elevations reporting 10 to 20 cm of snow, forcing logging operations to shut down for a few days. The same systems also affected the lower Fraser Valley from the 8th to the 11th. According to Earl Coatta (AES, Vancouver) Abbotsford received 116.2 mm, a 4-day total which can be expected only once every 20 years. Hope received 263.8 mm in the same 4-day period, which is an occurrence to be expected on average, once every 25 years. Hope had the distinction of being the wettest reporting station in the country, totalling 314.7 mm for the week. The rains forced the closure of the Trans-Canada Highway and also caused damage which has been estimated at 6 million dollars.

Cold Temperatures expected in the West...

For the week of November 20th, average temperatures are expected to be below normal across British Columbia, the Yukon, Alberta, Saskatchewan, the Mackenzie District of the Northwest Territories and northern Québec. Above-normal temperatures are expected for southwestern Ontario. Elsewhere, near-normal temperatures are likely.



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	-3.7	-10.1
Iqaluit A	-8.3	-15.6
Yellowknife A	-7.2	-14.8
Vancouver Int'l A	10.1	4.2
Victoria Int'l A	10.4	3.8
Calgary Int'l A	5.1	-6.8
Edmonton Int'l A	1.8	-8.8
Regina A	2.8	-8.0
Saskatoon A	1.4	-7.6
Winnipeg Int'l A	2.2	-6.2
Ottawa Int'l A	6.1	-1.0
Toronto Int'l A	8.1	0.1
Montréal Int'l A	6.8	0.2
Québec A	4.7	-2.0
Fredericton A	7.2	-1.8
Saint John A	7.2	-0.4
Halifax (Shearwater)	8.7	2.1
Charlottetown A	7.1	0.4
Goose A	1.1	-6.0
St John's A	7.0	1.1

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Kelowna A	20	Dease Lake	-32	Hope A	315
			Fort Nelson A	-32		
Yukon Territory	Watson Lake A	-1	Ross River	-51	Whitehorse A	10
Northwest Territories	Cape Dorset A	-1	Eureka	-38	Hay River A	16
Alberta	Lethbridge A	17	Fort Chipewyan A	-33	Fort Chipewyan A	30
Saskatchewan	Moose Jaw A	16	Uranium City A	-33	Collins Bay	24
Manitoba	Gretna (aut)	9	Thompson A	-25	Lynn Lake A	14
Ontario	Port Weller (aut)	15	Big Trout Lake	-14	Trenton A	39
Québec	Montréal Int'l A	14	Border (aut)	-19	Sept-Îles A	77
New Brunswick	St Stephen (aut)	17	St-Léonard A	-6	Saint John A	84
Nova Scotia	Greenwood A	20	Greenwood A	-6	Yarmouth A	59
Prince Edward Island	Charlottetown A	17	Summerside A	-1	Summerside A	29
	Summerside A	17				
Newfoundland	Daniel's Harbour	18	Churchill Falls A	-15	Cape Race (aut)	84

Across The Country...

Highest Mean Temperature	Sable Island(NS)	10
Lowest Mean Temperature	Eureka(NWT)	-32

89/11/06-89/11/12

CLIMATIC PERSPECTIVES
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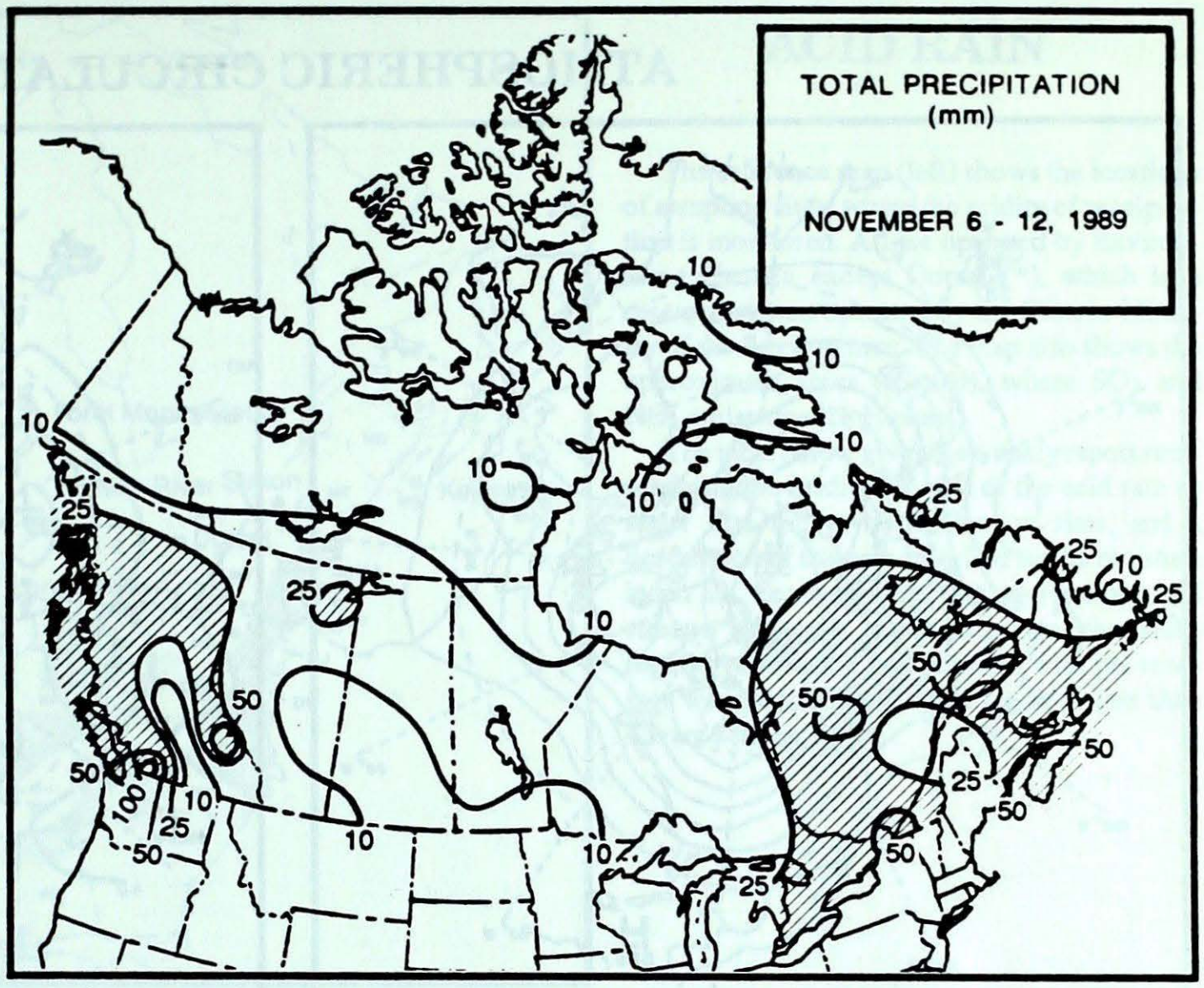
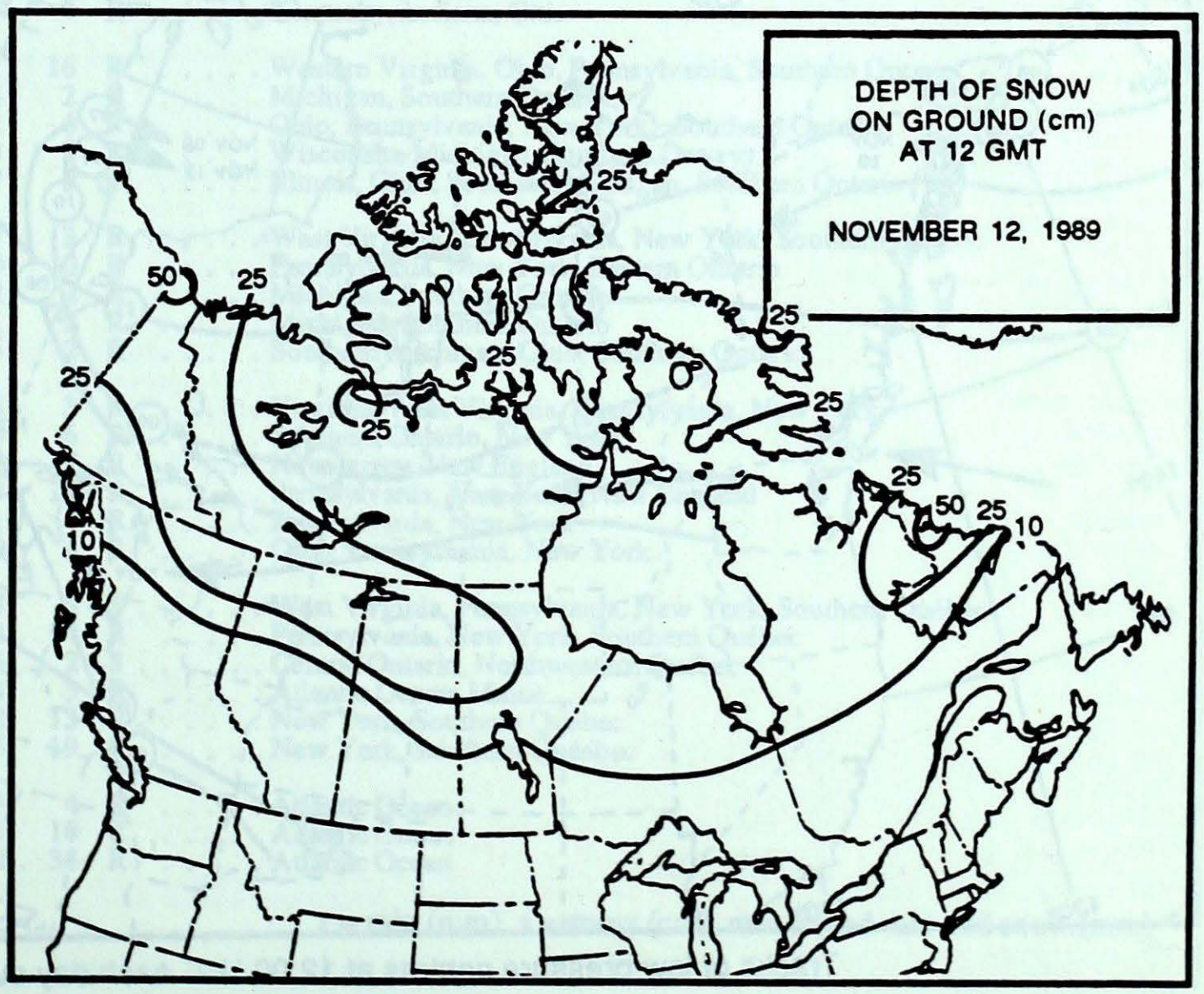
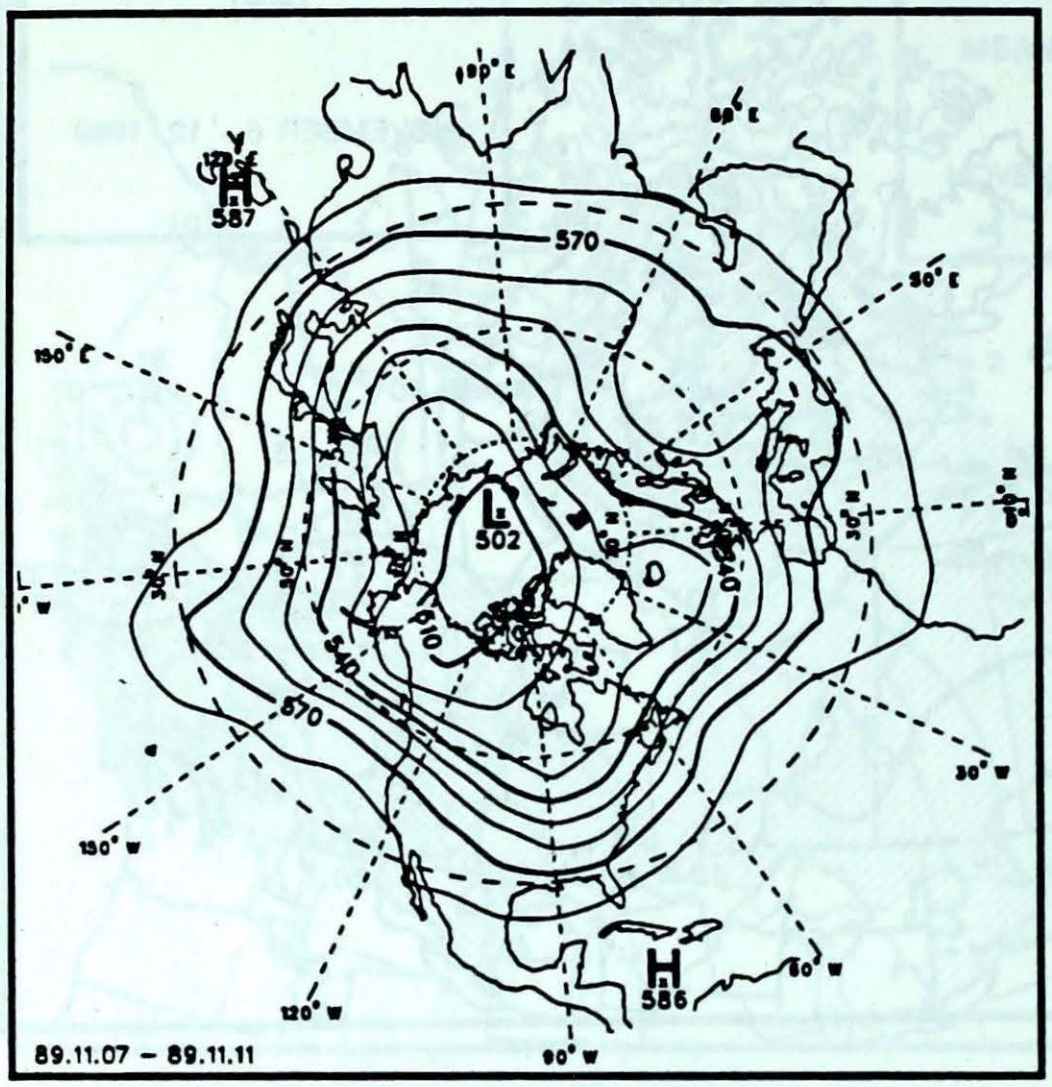
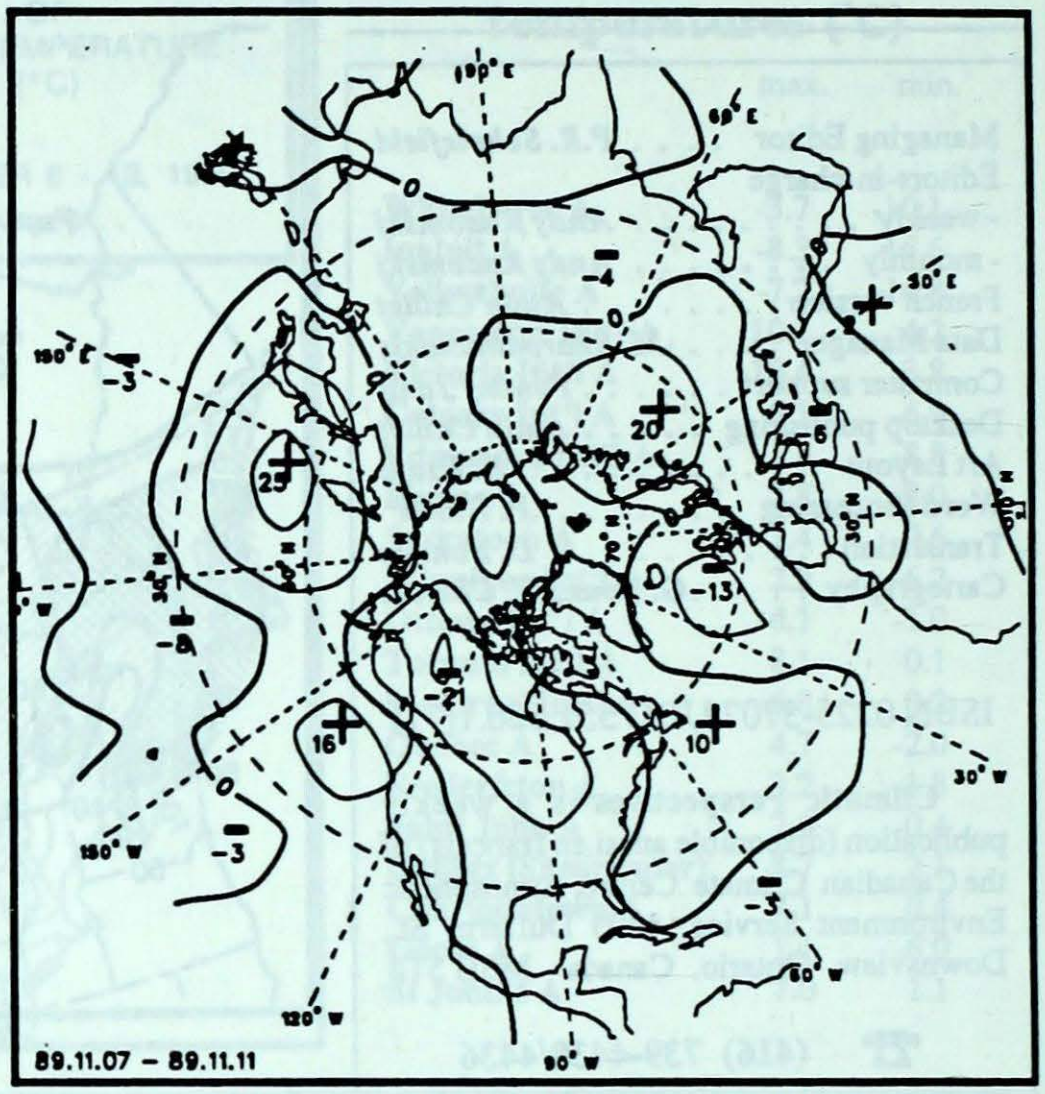




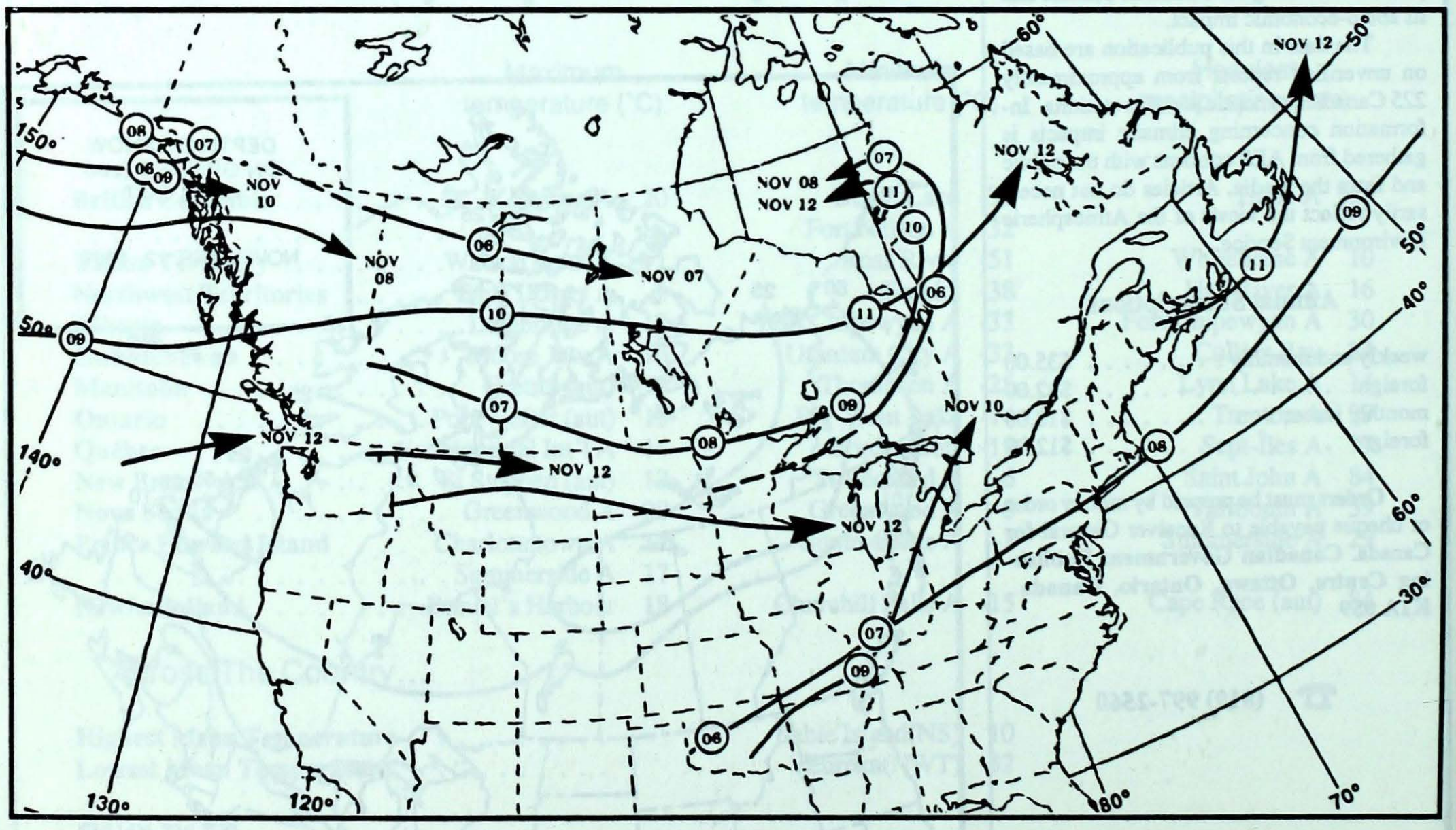
ATMOSPHERIC CIRCULATION



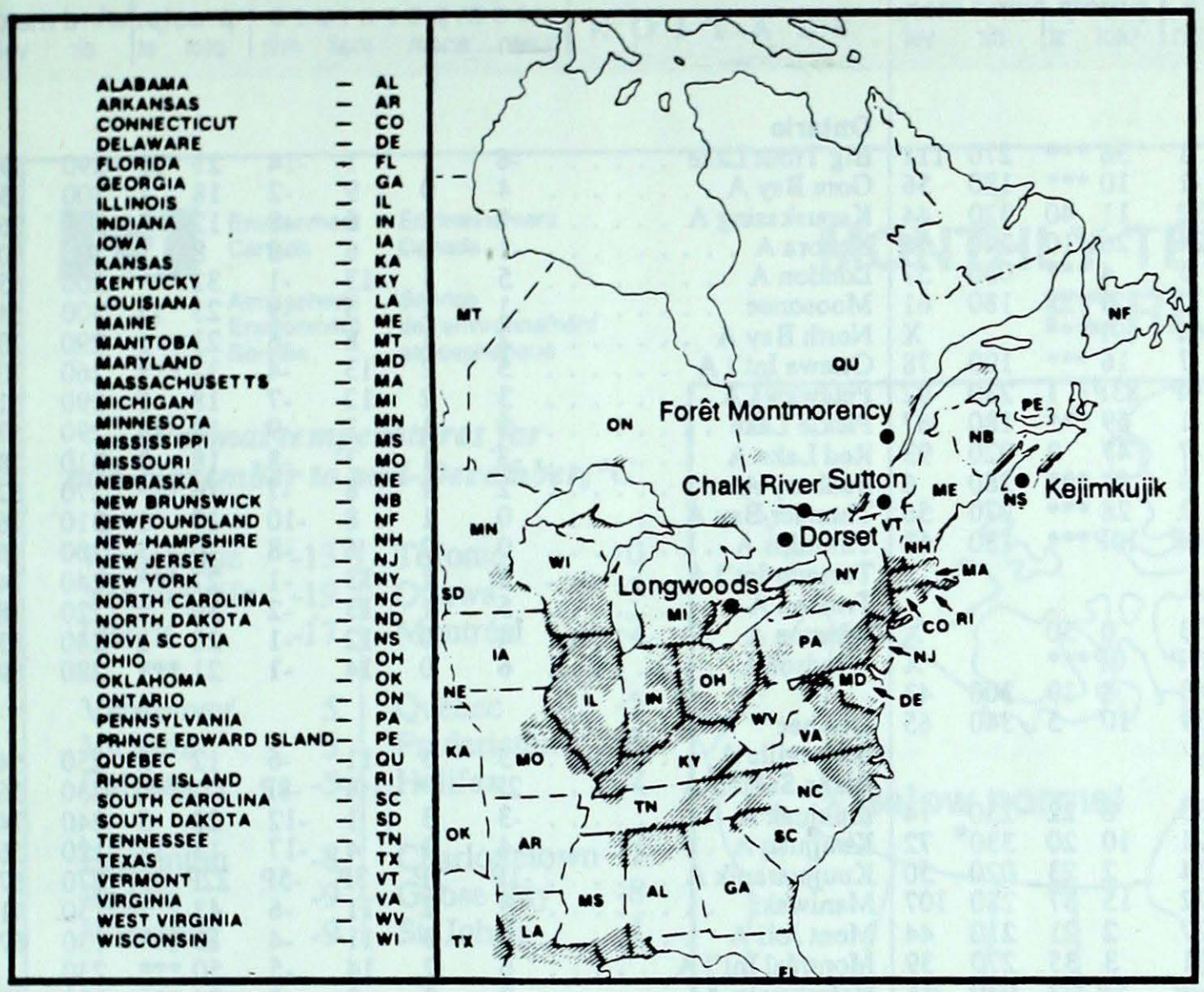
Mean geopotential height
50-kPa level (10-decametre intervals)



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.

Site	day	pH	amount		air path to site
					November 5 to November 11, 1989
Longwoods	5	3.8	12	R	. . . . . Tennesse, Kentucky, Indiana, Ohio
	6	4.3	2	R	. . . . . Northern Illinois, Northern Indiana, Southern Ontario, Southern Michigan
	7	3.7	18	R	. . . . . Indiana, Ohio, Southern Ontario
	8	3.7	4	R	. . . . . Kentucky, Indiana, Ohio
Dorset *	5	4.1	16	R	. . . . . Western Virginia, Ohio, Pennsylvania, Southern Ontario
	7	4.4	2	R	. . . . . Michigan, Southern Ontario
	8	4.2	6	R	. . . . . Ohio, Pennsylvania, New York, Southern Ontario
	9	4.3	8	R	. . . . . Wisconsin, Michigan, Southern Ontario
	10	4.7	5	M	. . . . . Illinois, Ohio, Southern Michigan, Southern Ontario
Chalk River	5	3.7	3	R	. . . . . West Virginia, Pennsylvania, New York, Southern Ontario
	8	4.0	10	R	. . . . . Pennsylvania, New York, Eastern Ontario
	9	4.2	2	R	. . . . . Michigan, Southern Ontario
	10	4.1	2	R	. . . . . Michigan, Southern Ontario
	11	4.5	2	R	. . . . . Southern Michigan, Ohio, Southern Ontario
Sutton	5	3.8	3	R	. . . . . Virginia, West Virginia, Pennsylvania, New York
	7	3.8	6	R	. . . . . Southern Ontario, New York
	8	4.2	7	R	. . . . . New Jersey, New England
	9	4.4	10	R	. . . . . Pennsylvania, New York, New England
	10	4.1	4	R	. . . . . Pennsylvania, New York
	11	4.0	4	R	. . . . . Ohio, Pennsylvania, New York
Montmorency	5	4.4	3	S	. . . . . West Virginia, Pennsylvania, New York, Southern Québec
	6	4.3	14	R	. . . . . Pennsylvania, New York, Southern Québec
	7	4.6	2	S	. . . . . Central Ontario, Northwestern Québec
	8	4.4	3	R	. . . . . Atlantic Ocean, Maine
	9	4.8	13	R	. . . . . New York, Southern Québec
	11	4.5	19	R	. . . . . New York, Southern Quéebec
Kejimkujik	6	4.3	4	R	. . . . . Atlantic Ocean
	8	4.3	10	R	. . . . . Atlantic Ocean
	9	5.2	38	R	. . . . . Atlantic Ocean

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	8	1	18	1	36	***	270	111
Cranbrook A	5	5	13	-1	10	***	180	56
Fort Nelson A	-20	-10	-9	-32	11	40	320	44
Fort St John A	-11	-8	4	-24	26	10	240	56
Kamloops A	7	3	19	-3	4	***	030	57
Penticton A	10P	5P	19P	1P	2P	***	180	61
Port Hardy A	6P	0P	15P	-2P	69P	***		X
Prince George A	1	2	12	-7	16	***	190	78
Prince Rupert A	5P	1P	11P	0P	83P	1	230	82
Revelstoke A	4	2	8	-1	69	***	180	67
Smithers A	1	1	10	-7	47	2	020	93
Vancouver Int'l A	9	2	15	4	64	***	280	6
Victoria Int'l A	10	2	16	2	28	***	270	56
Williams Lake A	0P	1P	12P	-10P	10P	***	130	63
Yukon Territory								
Komakuk Beach A	-26	-10	-16	-33	0	50		X
Teslin (aut)	-24P	*	-5P	-37P	0P	***		X
Watson Lake A	-19	-8	-1	-43	8	19	300	43
Whitehorse A	-23	-16	-5	-39	10	5	340	65
Northwest Territories								
Alert	-27	-1	-19	-35	0	22	230	74
Baker Lake A	-12	6	-4	-21	10	20	330	72
Cambridge Bay A	-22	0	-13	-34	2	23	020	50
Cape Dyer A	-14	1	-7	-22	15	37	280	107
Clyde A	-15	1	-4	-27	2	21	210	44
Coppermine A	-24	-11	-16	-31	3	35	270	39
Coral Harbour A	-8P	8P	-2P	-14P	5P	22	030	46
Eureka	-32	-2	-25	-38	0	11		X
Fort Smith A	-15	-6	-3	-31	14	***	280	56
Hall Beach A	-13	7	-5	-25	1	36	080	57
Inuvik A	-28	-10	-20	-36	6	24		X
Iqaluit A	-8	4	-2	-24	2	11	080	98
Mould Bay A	-30P	-5P	-23P	-36P	1P	18		X
Norman Wells A	-26	-10	-19	-33	3	7	320	57
Resolute A	-24	-1	-16	-33	1	25	120	78
Yellowknife A	-18P	-7P	-6P	-26P	9P	18	290	37
Alberta								
Calgary Int'l A	0	1	14	-8	10	7	251	100
Cold Lake A	-4	0	6	-14	2	1	290	82
Edmonton Namao A	-2	1	8	-12	9	1	330	85
Fort McMurray A	-12	-7	1	-29	24	22	270	63
High Level A	-18P	-9P	-2P	-30P	17P	31	330	37
Jasper	0	2	10	-9	21	1		X
Lethbridge A	3	2	17	-11	11	4	280	115
Medicine Hat A	2	2	16	-7	11	5	250	80
Peace River A	*		5	*	*	4		X
Saskatchewan								
Cree Lake	-10	-3	1	-32	18	40	280	43
Estevan A	1	2	14	-5	3	1	330	67
La Ronge A	-7	-1	2	-28	23	43	300	74
Regina A	0	2	11	-8	5	1	320	70
Saskatoon A	-3	0	8	-19	4	1	290	69
Swift Current A	0	2	14	-10	10	3	300	78
Yorkton A	-3	0	6	-11	10	1	300	83
Manitoba								
Brandon A	-2	2	8	-9	10	***	300	80
Churchill A	-10	0	-2	-19	4	19	300	70
Lynn Lake A	-10P	-1P	-6P	-16P	14P	39	100	43
The Pas A	-5	-1	0	-16	12	20	290	74
Thompson A	-11P	-2P	-4P	-25P	12P	25	070	37
Winnipeg Int'l A	-1	1	7	-8	4	***	300	67

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	-6	1	1	-14	21	18	290	59
Gore Bay A	4	0	9	-2	18	1	300	93
Kapuskasing A	-1	2	6	-8	12	8	320	56
Kenora A	-1	1	6	-8	8	1	300	80
London A	5	1	13	-1	32	***	200	65
Moosonee	-1	1	5	-9	23	15	300	54
North Bay A	2	1	8	-6	23	1	290	70
Ottawa Int'l A	5	2	13	-4	32	***	260	70
Petawawa A	3	2	12	-7	18	1	290	61
Pickle Lake	-3	1	3	-9	19	14	290	57
Red Lake A	-3	1	3	-8	18	9	310	78
Sudbury A	2	1	8	-7	16	***	270	67
Thunder Bay A	0	1	8	-10	10	1	310	76
Timmins A	0	2	6	-8	10	3	300	46
Toronto Int'l A	5	1	13	-1	27	***	240	74
Trenton A	5	1	13	-2	39	1	220	78
Wiarton A	4	0	12	-1	28	1	240	83
Windsor A	6	0	14	-1	21	***	280	69
Québec								
Bagotville A	3	3	11	-6	12	3	250	54
Blanc Sablon A	2P	*	10P	-8P	17P	***	230	56
Inukjuak A	-3	3	1	-12	22	5	240	74
Kuujjuaq A	-4	3	4	-17	13	11	120	56
Kuujjuarapik A	-1P	2P	3P	-5P	22P	13	270	67
Maniwaki	3	2	11	-6	43	1	150	41
Mont Joli A	4	3	11	-4	18	***	130	67
Montréal Int'l A	6	2	14	-5	50	***	230	
Natashquan A	2	2	8	-5	74	***	130	67
Québec A	4	3	10	-5	49	***	220	54
Schefferville A	-5	3	3	-13	28	42	140	57
Sept-Îles A	1	2	6	-6	77	***	090	78
Sherbrooke A	4	2	12	-6	26	1	180	56
Val-d'Or A	0	2	6	-10	29	6	290	65
New Brunswick								
Charlo A	3	2	10	-5	26	***	290	65
Chatham A	5	3	16	-4	30	***	300	61
Fredericton A	6	4	17	-5	36	***	290	61
Moncton A	6P	3P	17P	-4P	12P	***	300	67
Saint John A	7	4	17	-2	84	***	210	65
Nova Scotia								
Greenwood A	8	3	20	-6	35	***	250	67
Shearwater A	9	4	16	-2	54	***	270	61
Sydney A	7	3	17	-5	49	***	220	44
Yarmouth A	9	3	16	-3	59	***	290	69
Prince Edward Island								
Charlottetown A	9P	5P	17P	5P	22P	***	130	56
Summerside A	7	3	17	-1	29	***	150	67
Newfoundland								
Cartwright	0	1	6	-7	13	1	180	50
Churchill Falls A	-4P	1P	3P	-15P	26P	24	300	6
Gander Int'l A	4	1	16	-5	10	***	200	59
Goose A	-1P	2P	6P	-13P	5P	6	260	43
Port Aux Basques	5	1	11	-1	44	***	090	91
St John's A	5	1	17	-4	23	***	160	70
St Lawrence	6	2	13	0	48	***		X
Wabush Lake A	-4	2	3	-14	22	13	230	52

89/11/06-89/11/12

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.

Environment Canada / Environnement Canada

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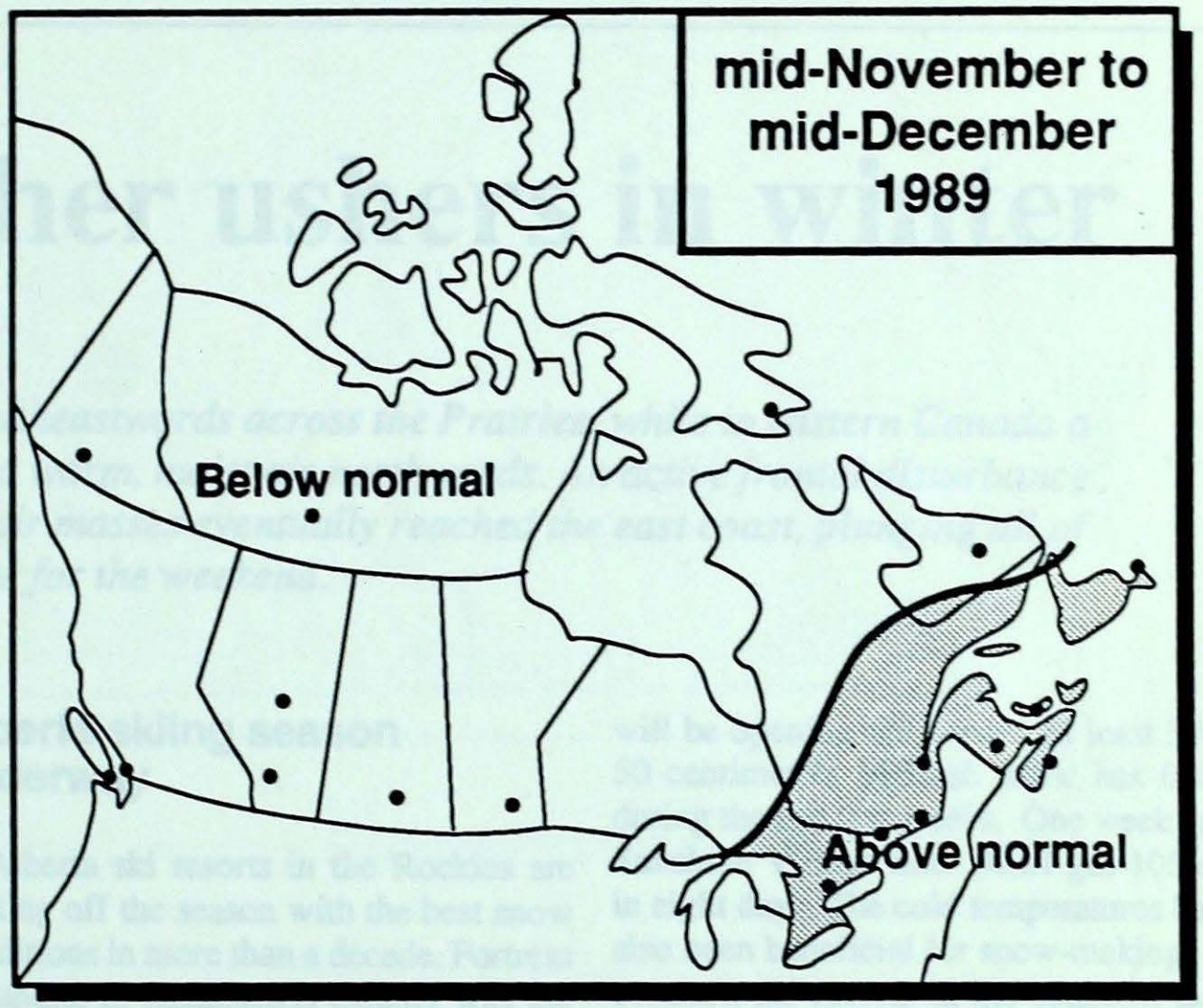
MONTHLY TEMPERATURE FORECAST

Normal temperatures for mid-November to mid-December, °C

Whitehorse	-13	Toronto	0
Yellowknife	-19	Ottawa	-3
Iqaluit	-17	Montréal	-2
Vancouver	5	Québec	-5
Victoria	5	Fredericton	-3
Calgary	-5	Halifax	2
Edmonton	-8	Charlottetown	-1
Regina	-9	Goose Bay	-8
Winnipeg	-9	St. John's	1



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