Environment Canada Environnement Canada

Climatic Perspectives

MONTHLY SUPPLEMENT INCLUDED

August 14 to 20, 1989 **A weekly review of Canadian climate** *Vol. 11 No 34*

Tornadoes in the Prairies and New Brunswick

Tornadoes have been a common occurrence on the Prairies this summer, with 51 sightings, of which 17 were in Alberta, 28 in Saskatchewan, and 6 in Manitoba. The average annual sightings, respectively, are, 6, 14, and 8.

An influx of cold air over Alberta on the 16th produced severe thunderstorm conditions. Six tornadoes were reported between Morinville, Mayerthorpe, and Edson. On the 17th, 2 tornadoes touched down east and west of Edmonton, with some damage to homes and outbuildings. Much of the damage was caused by accompanying hail. Also, on the 17th, in Fleming, Saskatchewan, a tornado knocked a church off its foundation, and golf-ball-sized hail caused severe crop damage.

Carlisle, New Brunswick was struck by a tornado on the 14th. Tornadoes are rare in the Maritimes, with on average, only one being reported every 2 years. Most of the damage was to a farm, where a barn was destroyed, with a damage estimate of $20,000.

As we approach the end of the summer, the chance of tornadoes forming is becoming far less likely.

Cool air displaces heat in the north-west

Record-breaking hot weather continued in the south-western part of the Northwest Territories. Temperatures were as high as 33.0°C at Hay River on the 14th, and 32.4°C at Fort Smith on the 15th. However, on the 16th, a cold front moved south from the Beaufort Sea, and simultaneously, an upper ridge, which had maintained a record hot spell over the western Arctic for 3 weeks, collapsed. A north-westerly flow aloft developed, allowing temperatures over the western half of the Territories to fall to 3 to 4°C below normal for the rest of the week.

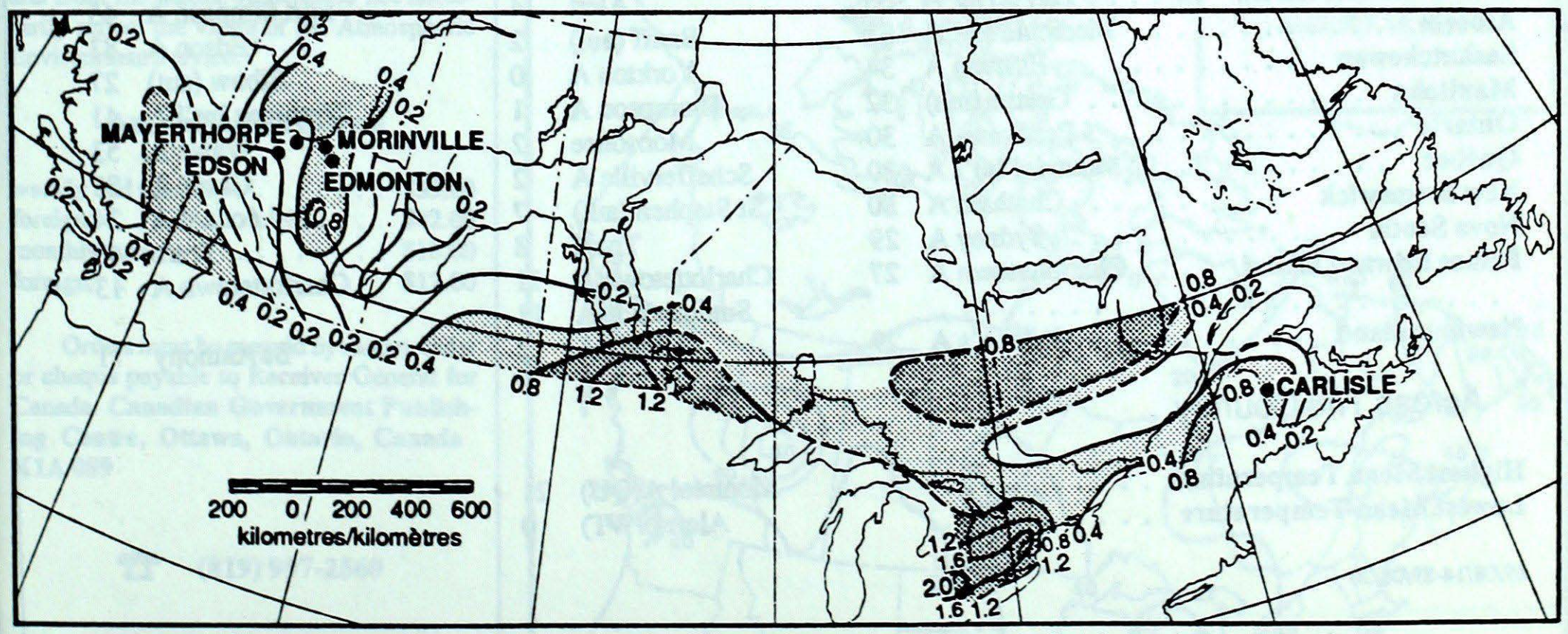
Iain Ross, Yellowknife Weather Office

Very warm temperatures to return to western Canada...

An eastward-moving ridge of high pressure from the north Pacific Ocean is expected to dominate the weather over western Canada for five days, beginning August 27. A flow from the south will bring above-normal readings to the Yukon, throughout British Columbia and the Prairies to the Great Lakes, during this period. At the same time, a persistent trough of low pressure over the eastern Arctic will continue to push cooler-than-normal temperatures over Atlantic Canada and the St. Lawrence Valley.

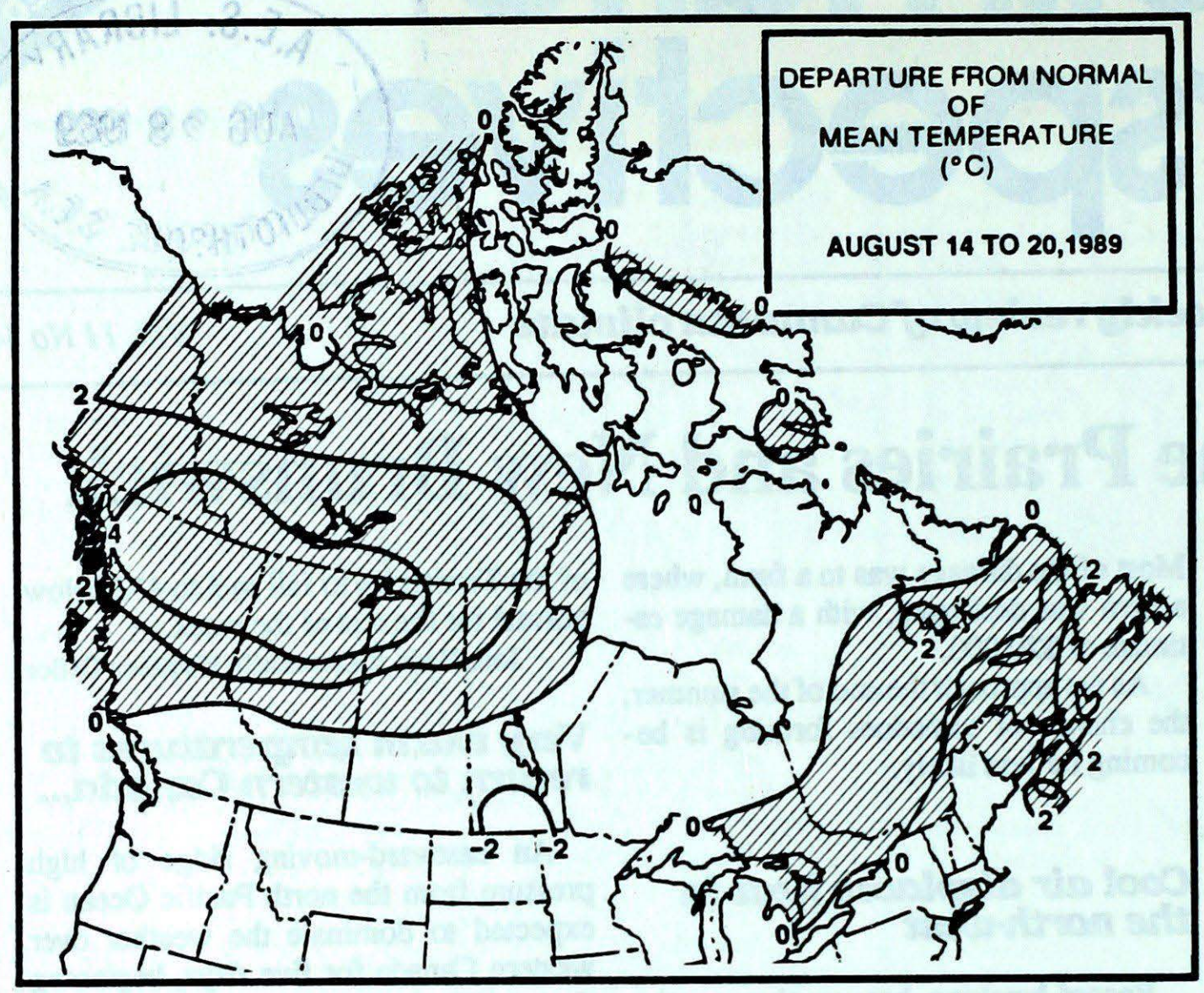
— *prepared August 22, 1989*

Amir Shabbar, Canadian Climate Centre



Average annual frequency of tornadoes per 10,000 square kilometres for the period 1950-1979

Canada



Thunderstorms in Québec

Significant thunderstorms occurred in southern Québec on the 14th, 15th, and 16th. In the Québec City region, 35,000 people were left without power due to storms on the 14th, and 15th. Near Trois-Pistoles, 240 km north-east of Québec City, 2 biologists, planting trees, were killed by lightning on the 16th. Again in Québec City, lightning struck a condominium for the second time this year,causing one million dollars damage. The first incident occurred on June 27th.

Roger Gauthier, AES, Montréal

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Fort Nelson A	30	Williams Lake A	6	Blue River A	62
Yukon Territory	Watson Lake A	31	Komakuk Beach A	3	Shingle Point A	21
Northwest Territories	Hay River A	33	Alert	-4	Fort Simpson A	45
Alberta	Medicine Hat A	32	Banff (aut)	2	Edson A	83
Saskatchewan	Estevan A	34	Yorkton A	0	Elbow (aut)	27
Manitoba	Gretna (aut)	32	Thompson A	1	Winnipeg Int'l A	41
Ontario	Petawawa A	30	Moosonee	2	Wawa A	53
Québec	Montréal Int'l A	30	Schefferville A	2	Gaspé A	81
New Brunswick	Chatham A	30	St Stephen (aut)	7	St-Léonard A	24
Nova Scotia	Sydney A	29	Truro	8	Truro	43
Prince Edward Island	Charlottetown A	27	Charlottetown A	11	Charlottetown A	13
			Summerside A	11		
Newfoundland	St John's A	29	Nain A	2	St Anthony	71

Across The Country...

Highest Mean Temperature	Montréal A(QU)	21
Lowest Mean Temperature	Alert(NWT)	0

89/08/14-89/08/20

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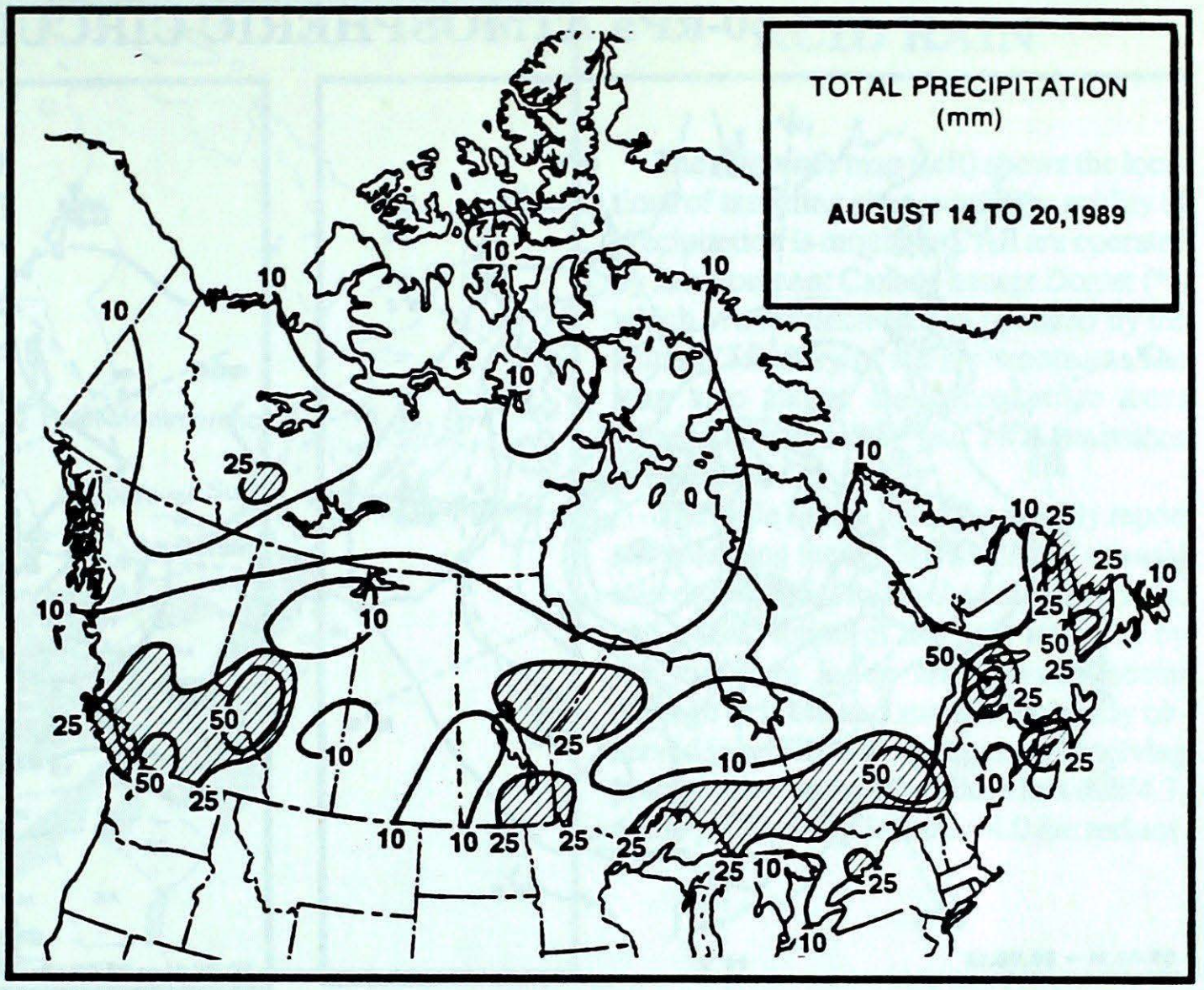
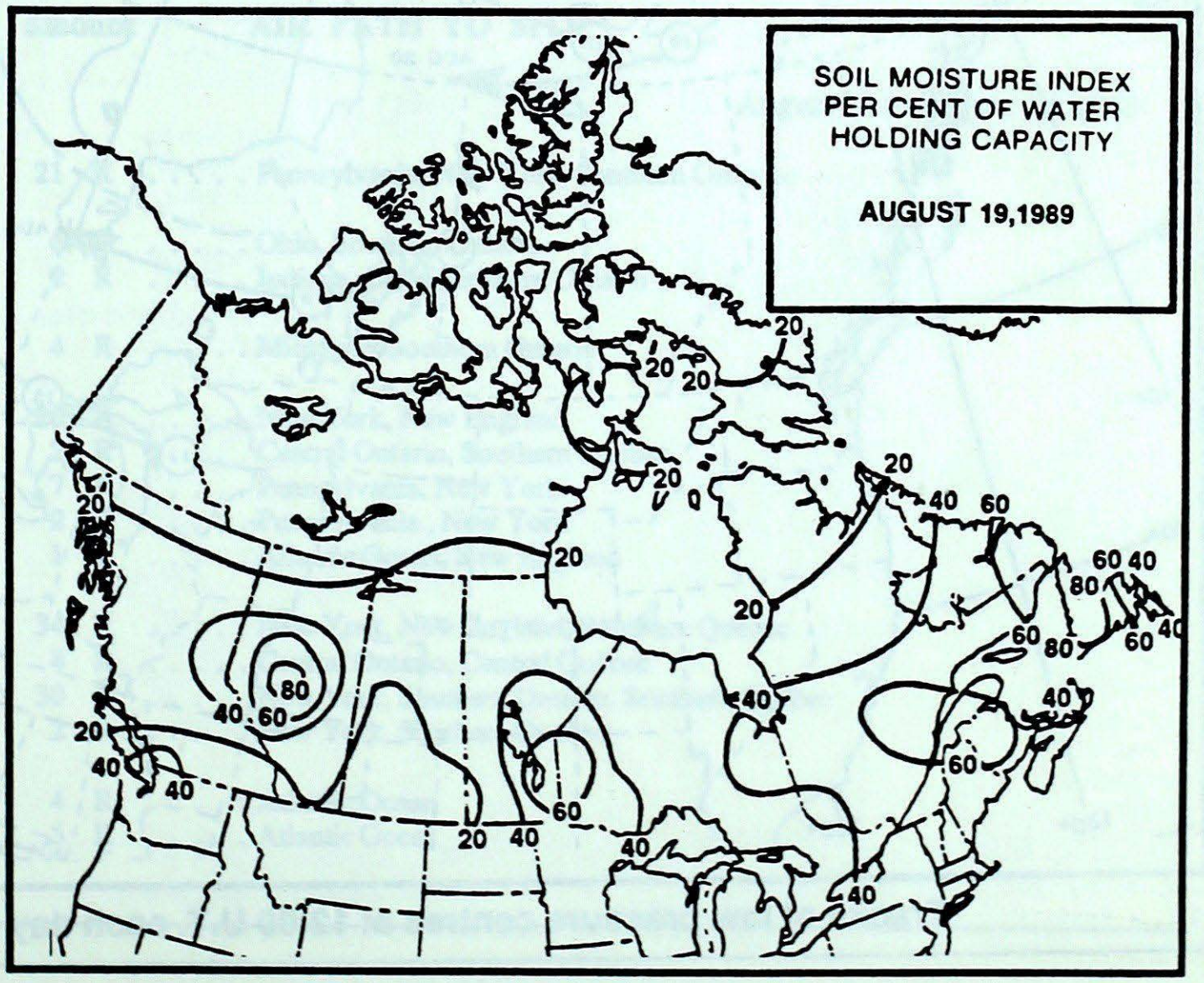
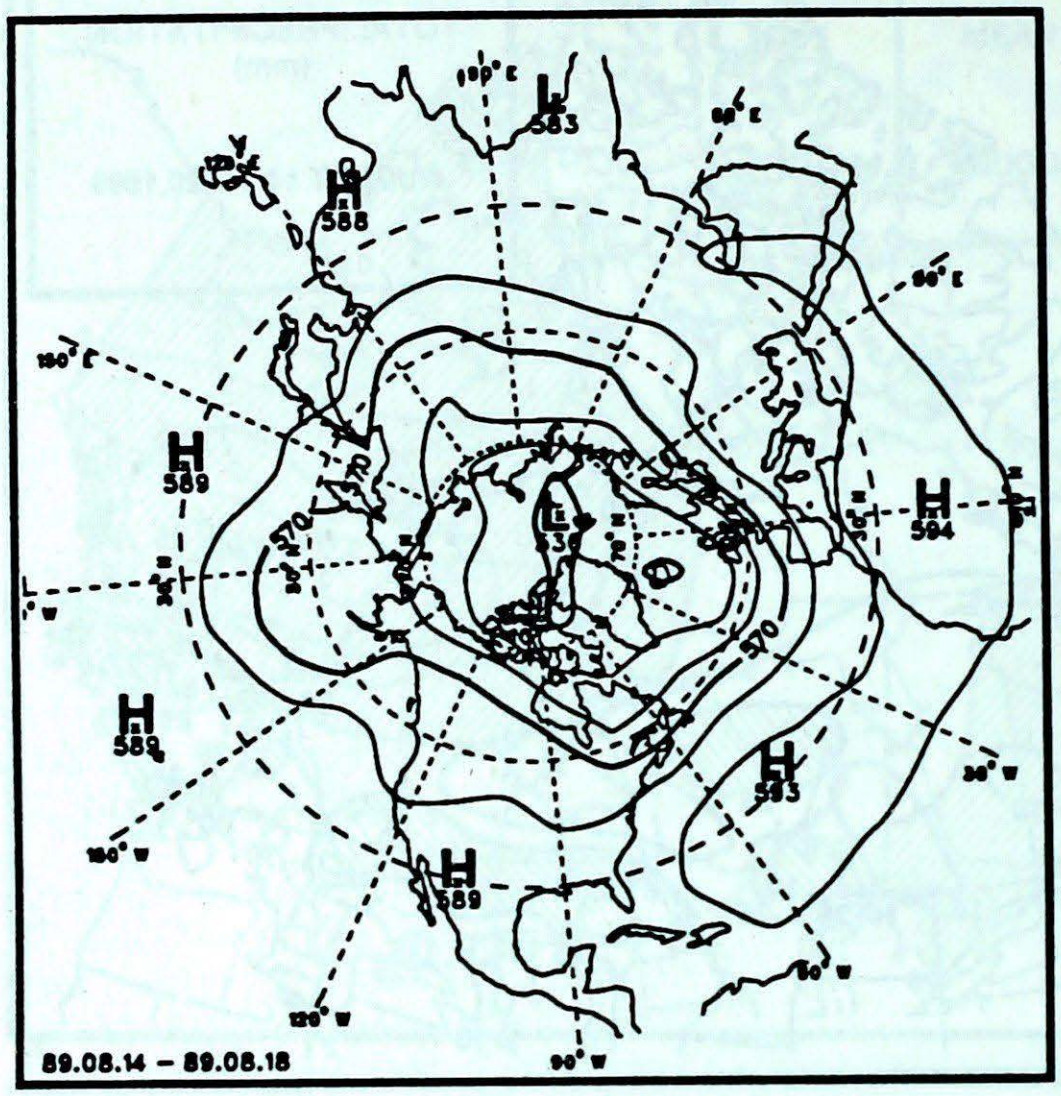
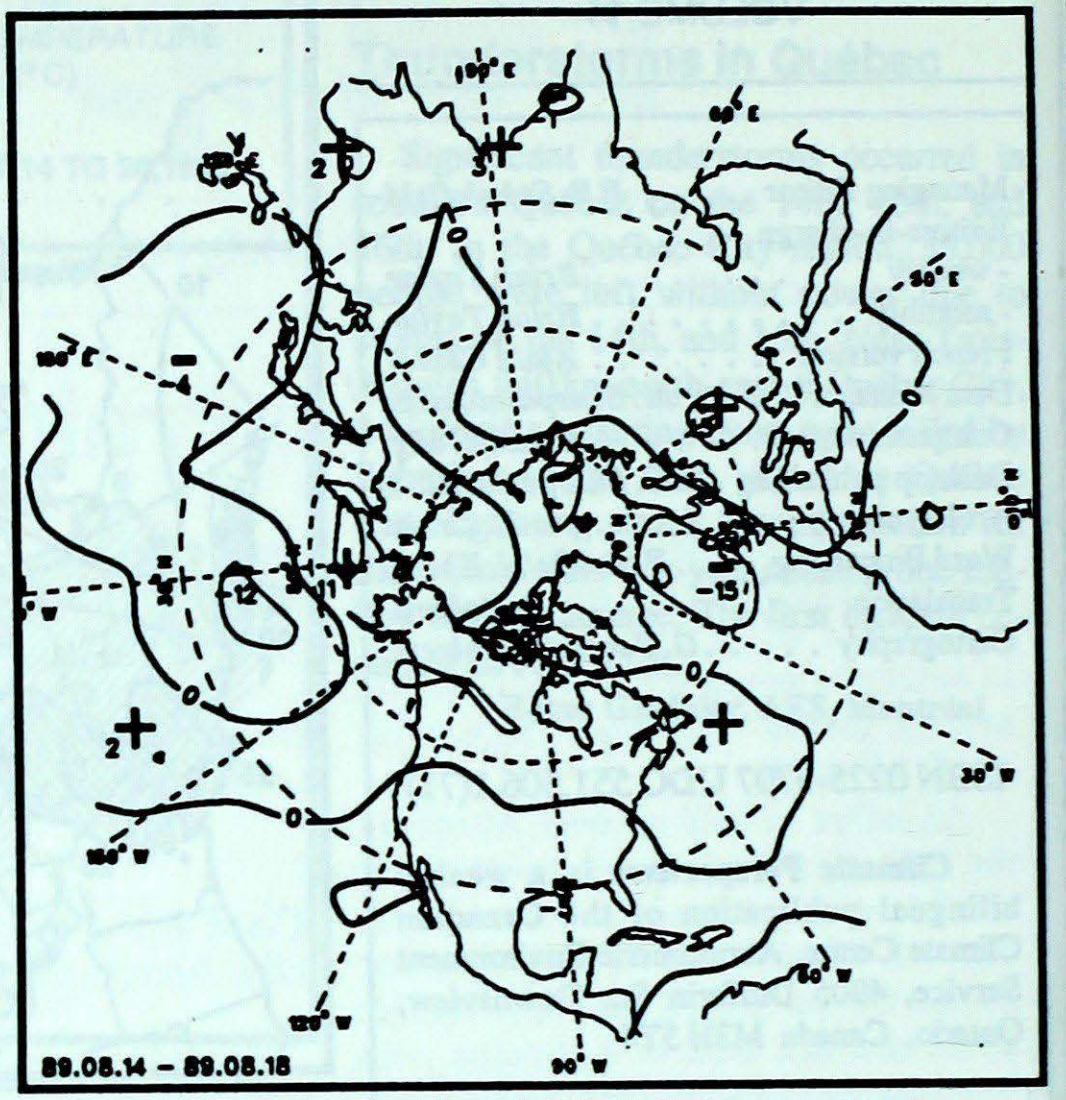




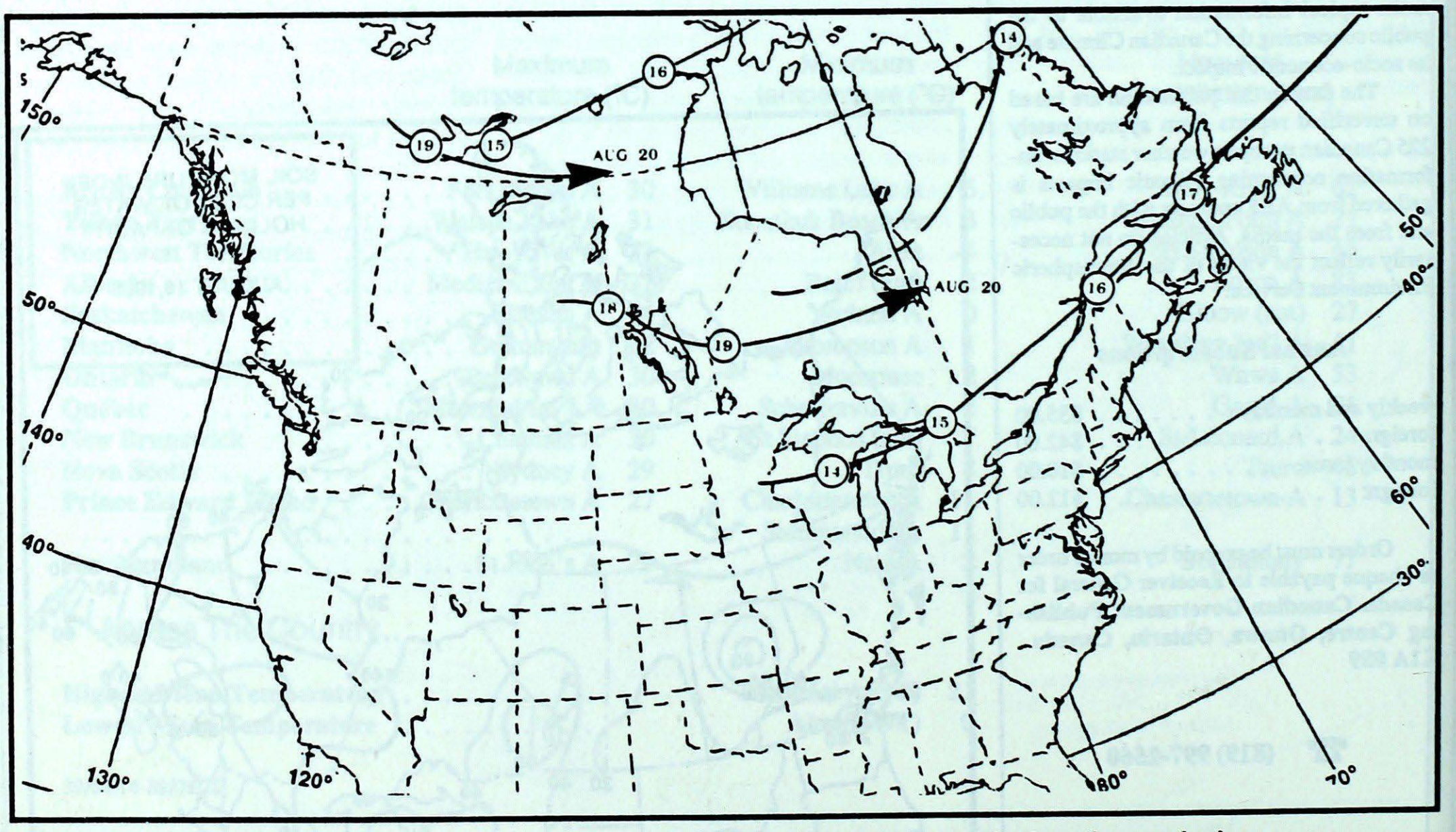
50-kPa ATMOSPHERIC CIRCULATION



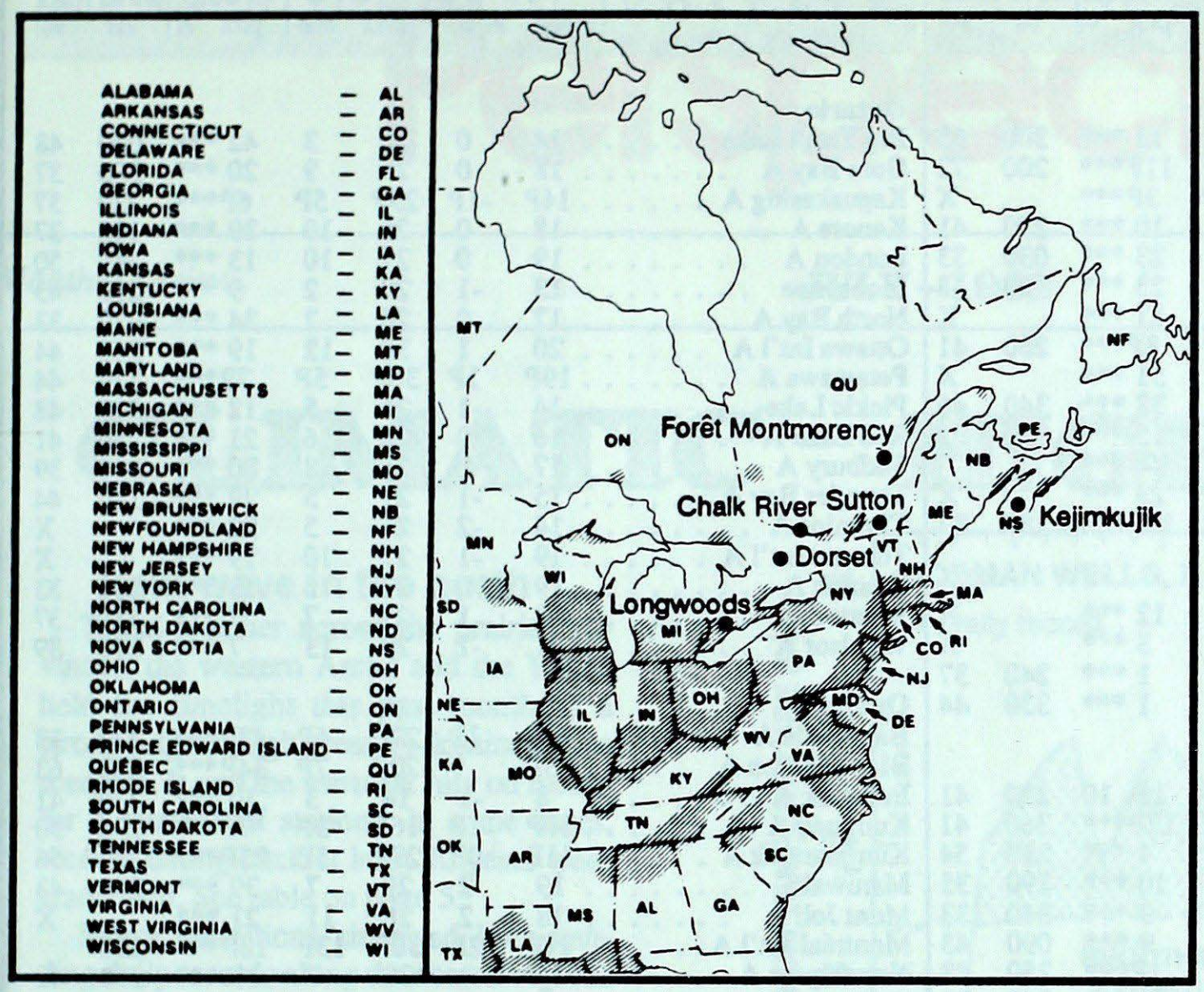
Mean geopotential height
50-kPa level (10 decametre intervals)



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.



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
					August 13 to August 19, 1989
Longwoods	13	4.0	21	R	. . . . . Pennsylvania, New York, Southern Ontario
Dorset *	14	3.8	6	R	. . . . . Ohio, Southern Ontario
	15	3.7	2	R	. . . . . Indiana, Ohio, Southern Ontario
Chalk River	15	3.5	4	R	. . . . . Michigan, Southern Ontario
Sutton	13	3.9	20	R	. . . . . New York, New England
	14	3.6	2	R	. . . . . Central Ontario, Southern Québec
	15	3.4	7	R	. . . . . Pennsylvania, New York
	16	4.4	2	R	. . . . . Pennsylvania , New York
	19	4.5	1	R	. . . . . Atlantic Ocean, New England
Montmorency	13	4.4	34	R	. . . . . New York, New England, Southern Québec
	14	4.0	4	R	. . . . . Central Ontario, Central Québec
	15	4.0	30	R	. . . . . New York, Southern Ontario, Southern Québec
	16	4.1	2	R	. . . . . New York, Southern Québec
Kejimkujik	13	4.3	4	R	. . . . . Atlantic Ocean
	14	4.9	5	R	. . . . . Atlantic Ocean

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
British Columbia								
Cape St James	15	1	19	12	11 ***		300	65
Cranbrook A	16P	-1P	27P	7P	11P***		200	72
Fort Nelson A	18P	3P	30P	10P	3P***			X
Fort St John A	18	3	25	12	10 ***		250	41
Kamloops A	18	-2	27	11	23 ***		030	33
Penticton A	18	-1	27	11	23 ***		180	48
Port Hardy A	16	2	21	12	17 ***			X
Prince George A	16P	2P	25P	8P	8P***		260	41
Prince Rupert A	14	1	18	10	51 ***			X
Revelstoke A	16	-2	24	10	38 ***		340	46
Smithers A	17	3	25	9	15 ***		350	32
Vancouver Int'l A	17	0	22	14	44 ***			
Victoria Int'l A	15	-1	21	10	23 ***			X
Williams Lake A	14P	0P	23P	6P	10P***		180	37
Yukon Territory								
Komakuk Beach A	9	3	21	3	12 ***			X
Teslin (aut)	16	*	27	6	3 ***			X
Watson Lake A	17	4	31	8	1 ***		240	37
Whitehorse A	16	3	27	4	1 ***		330	44
Northwest Territories								
Alert	0	0	4	-4	15	10	230	41
Baker Lake A	12P	2P	22P	5P	17P***		360	41
Cambridge Bay A	7	1	18	2	4 ***		290	54
Cape Dyer A	5	0	13	-1	10 ***		290	35
Clyde A	5	1	13	0	9 ***		340	33
Coppermine A	9	2	22	1	9 ***		090	43
Coral Harbour A	8P	0P	12P	3P	1P***		250	43
Eureka	3	0	8	0	7 ***		340	82
Fort Smith A	18	4	32	7	9 ***		060	33
Hall Beach A	5	0	9	1	3 ***		330	46
Inuvik A	10	-1	20	4	22 ***			X
Iqaluit A	8	1	13	3	24 ***		310	63
Mould Bay A	3P	1P	8P	-1P	1P***		240	44
Norman Wells A	15	1	24	8	13 ***		130	44
Resolute A	1	-1	6	-2	11 ***		340	69
Yellowknife A	17	3	27	8	9 ***		350	41
Alberta								
Calgary Int'l A	15	0	28	6	24 ***		160	70
Cold Lake A	17	2	28	6	23 ***		110	37
Edmonton Namao A	17	1	27	8	21 ***		110	41
Fort McMurray A	19	4	31	8	6 ***			X
High Level A	18P	4P	31P	6P	19P***		130	33
Jasper	13	-2	24	4	64 ***			X
Lethbridge A	17	-1	28	6	12 ***		230	56
Medicine Hat A	19	0	32	8	16 ***		240	52
Peace River A	18	4	27	10	17 ***		010	39
Saskatchewan								
Cree Lake	18	5	29	9	17 ***		050	43
Estevan A	19	0	34	6	0 ***		130	61
La Ronge A	16	2	28	5	21 ***			X
Regina A	18	0	30	9	15 ***		150	63
Saskatoon A	17	0	30	6	12 ***		210	46
Swift Current A	18	0	30	8	23 ***		170	37
Yorkton A	15	-1	28	0	1 ***		030	39
Manitoba								
Brandon A	17	0	29	5	3 ***		180	50
Churchill A	12	0	29	3	7 ***		300	80
Lynn Lake A	16	3	27	6	6 ***		220	41
The Pas A	16	0	28	3	14 ***		030	54
Thompson A	14	1	29	-2	11 ***		030	48
Winnipeg Int'l A	18	-1	30	6	41 ***		170	57

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	14	0	26	3	42 ***		050	48
Gore Bay A	18	0	25	9	20 ***		300	37
Kapuskasing A	14P	-1P	29P	5P	6P***		220	37
Kenora A	18	0	26	10	39 ***		180	37
London A	19	0	27	10	13 ***		240	50
Moosonee	13	-1	27	2	9 ***		210	43
North Bay A	17	0	26	7	34 ***		020	33
Ottawa Int'l A	20	1	30	12	19 ***		260	44
Petawawa A	19P	1P	30P	5P	7P***		320	44
Pickle Lake	14	-1	26	5	12 ***		210	48
Red Lake A	16	0	27	6	21 ***		250	41
Sudbury A	17	0	26	8	20 ***		010	39
Thunder Bay A	15	-1	27	5	29 ***		180	44
Timmins A	14	-2	26	5	22 ***			X
Toronto Int'l A	19	-1	27	10	19 ***			X
Trenton A	19	0	27	8	11 ***		200	33
Wiarton A	18	1	29	7	7 ***		250	37
Windsor A	21	-1	29	13	7 ***		210	39
Québec								
Bagotville A	17P	1P	27P	6P	43P***		220	33
Blanc Sablon A	13P	*	20P	7P	34P***		220	63
Inukjuak A	8	-1	14	3	10 ***		220	41
Kuujjuaq A	10P	-1P	16P	3P	7P***		290	50
Kuujjuarapik A	11P	0P	27P	5P	23P***		210	56
Maniwaki	19	2	29	7	39 ***		270	43
Mont Joli A	18	2	26	11	21 ***			X
Montréal Int'l A	21P	2P	30P	13P	18P***		250	
Natashquan A	15	1	20	7	19 ***		270	48
Québec A	19	1	28	9	58 ***		200	57
Schefferville A	10	-1	20	2	24 ***		250	69
Sept-Îles A	14	0	21	6	23 ***		270	48
Sherbrooke A	17	1	28	6	24 ***		250	46
Val-d'Or A	15	0	25	5	35 ***		210	37
New Brunswick								
Charlo A	19	3	29	9	8 ***		300	56
Chatham A	20	2	30	8	13 ***		220	44
Fredericton A	19	1	27	8	3 ***		180	39
Moncton A	19	2	29	8	1 ***		210	48
Saint John A	*		*	8	15 ***			X
Nova Scotia								
Greenwood A	20	2	28	9	25 ***		240	43
Shearwater A	20	2	27	13	24 ***			X
Sydney A	20	3	29	10	2 ***		320	48
Yarmouth A	19	2	24	11	15 ***		210	37
Prince Edward Island								
Charlottetown A	20	2	27	11	13 ***		220	33
Summerside A	20	1	27	11	5 ***		200	48
Newfoundland								
Cartwright	13P	1P	25P	6P	5P***		260	59
Churchill Falls A	13P	1P	22P	7P	7P***		250	7
Gander Int'l A	18	2	27	10	31 ***		320	56
Goose A	14	0	26	8	3 ***		250	65
Port Aux Basques	17	3	23	12	9 ***		320	57
St John's A	19	3	29	10	3 ***		300	63
St Lawrence	17	4	23	11	5 ***			X
Wabush Lake A	14	2	25	7	1 ***		260	57

89/08/14-89/08/20

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.