



# Climatic Perspectives

MONTHLY SUPPLEMENT INCLUDED

Archives Ref 1

June 10 to 16, 1991

A weekly review of Canadian climate and water

Vol.13 No.24

## More severe weather events

*It's nice to have the hot summer weather here, except for the severe storms that frequently accompany it.*

Violent thunderstorms tore through southern Saskatchewan on June 11, causing extensive damage. Winds reduced visibility to zero in blowing dust, and there was extensive wind damage in and around Regina. Tornadoes were reported at Assiniboia and Gravelbourg, and there are reports of two tornadoes touching down in Regina in the evening. At the time, winds at Regina Airport were clocked at 119 km/h, with gusts to 141 km/h.

On the morning of June 13, severe weather affected southern Manitoba. Tornadoes, golf ball size hail and heavy downpours occurred in and to the east of the Red River Valley, with some areas receiving as much as 70 mm. Some of the storms extended into Saskatchewan. A tornado touched down at Pilot Mound, causing thousands of dollars damage. Large hail was also reported, and areas to the south of Winnipeg received more than 60 mm of rain.

Severe thunderstorms struck southern Ontario on the evening of June 15. Hail, heavy rain and high winds caused flooding, power outages and downed trees. The lakeshore area of Toronto was hard hit, with hail covering the ground. A tornado touched down 10 km southeast of Waterloo/Kitchener, and a funnel cloud was reported near Windsor.

On the afternoon of the 12th, severe thunderstorms developed in a warm, humid air mass over southern Quebec. A tornado touched down during the lunch

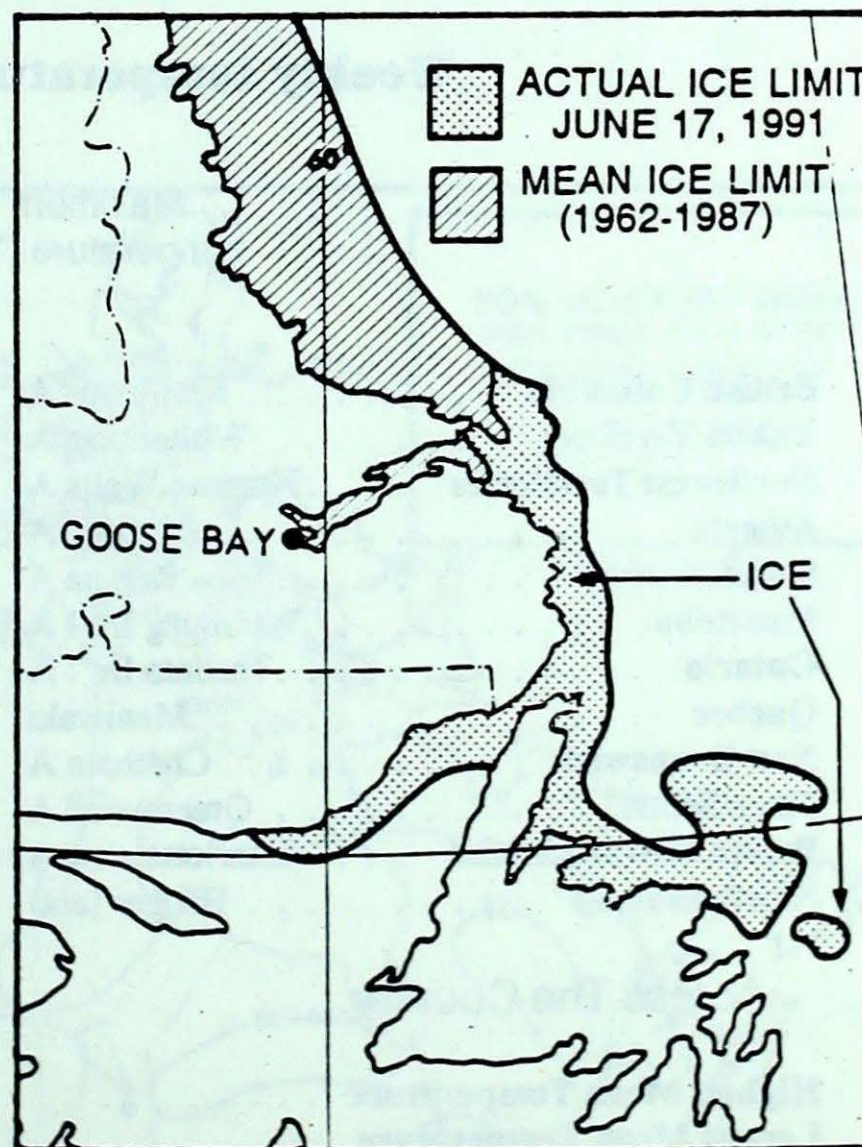
hour north of Saint-Hyacinthe. Roofs and barns were ripped apart in Saint-Barnabé and Présentation.

### Newfoundland plagued by Arctic sea ice

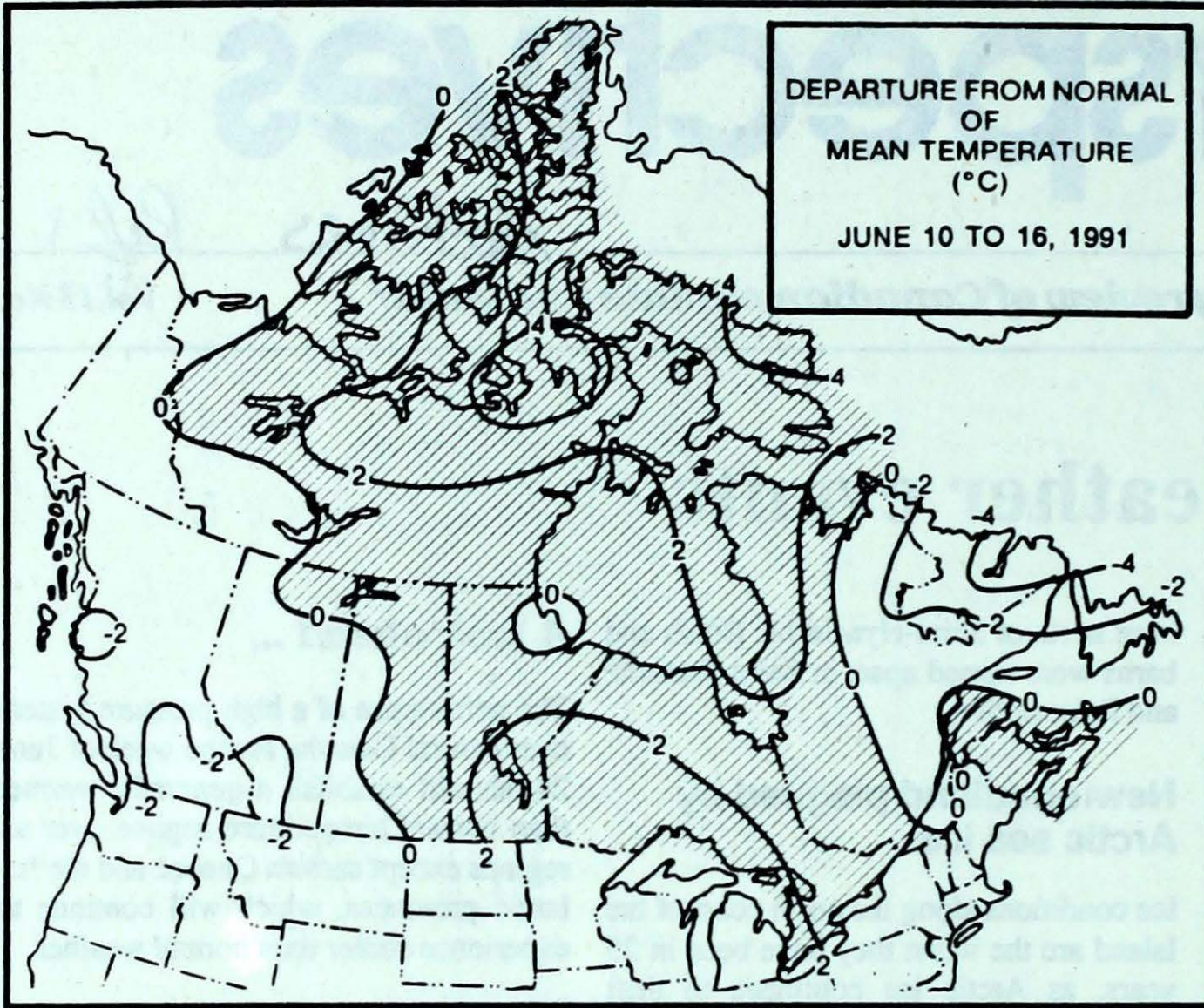
Ice conditions along the north coast of the Island are the worst they have been in 25 years, as Arctic ice continues to drift southwards along the Labrador coast. The pack ice, 3 to 5 metres thick, is unusually hard and accompanied by large ice flows up to 3 km in diameter. Icebergs are mixed in with the pack ice along the coast. Fast ice, which normally forms along the coast every winter, has melted and is no longer blocking the southward progression of this Arctic ice, and as a result, the ice is pushing right into the many small harbours. There have been numerous reports of ice damage to commercial vessels. In-shore fishing, which should have started 6 to 8 weeks ago is still delayed. It is taking ships 3 weeks to sail from St. John's to Botwood, where normally it would take 1 to 2 days. Coastal ferry services have also been severely affected.

### A look ahead ...

The persistence of a high pressure system over central Canada, for the week of June 24, should establish a generally warmer than normal temperature regime over all regions except eastern Quebec and the Atlantic provinces, which will continue to experience cooler than normal weather.



Retreat of the Labrador ice pack off the Newfoundland's north and east coast is six weeks later than normal this year.



**Weekly normal temperatures (°C)**

	max.	min.
Whitehorse A	18.7	5.1
Iqaluit A	6.5	-0.1
Yellowknife A	17.3	7.5
Vancouver Int'l A	18.9	10.7
Victoria Int'l A	18.9	9.3
Calgary Int'l A	19.6	6.6
Edmonton Int'l A	20.1	7.2
Regina A	22.5	8.9
Saskatoon A	22.0	8.9
Winnipeg Int'l A	22.9	10.0
Ottawa Int'l A	23.1	11.5
Toronto (Pearson Int'l A)	23.5	11.3
Montréal Int'l A	23.1	12.2
Québec A	22.3	9.9
Fredericton A	22.3	8.6
Saint John A	18.9	7.7
Halifax (Shearwater)	18.0	8.5
Charlottetown A	18.8	8.5
Goose A	16.0	4.8
St John's A	14.7	5.3

**Weekly temperature and precipitation extremes**

	Maximum temperature (°C)	Minimum temperature (°C)	Heaviest precipitation (mm)
British Columbia	Kamloops A 25	Puntzi Mountain (aut) -1	Hope A 66
Yukon Territory	Whitehorse A 23	Shingle Point A -2	Watson Lake A 25
Northwest Territories	Norman Wells A 27	Alert -3	Fort Smith A 41
Alberta	Lethbridge A 29	Banff (aut) 0	High Level 101
Saskatchewan	Regina A 31	Cree Lake 4	Broadview 27
Manitoba	Winnipeg Int'l A 30	Churchill A -2	Lynn Lake A 61
Ontario	Toronto Int'l A 34	Moosonee -2	Red Lake A 78
Québec	Maniwaki 30	Kuujuarapik A -2	Gaspe A 72
New Brunswick	Chatham A 32	St-Léonard A 1	Fredericton A 41
Nova Scotia	Greenwood A 31	Sydney A 3	Truro 65
Prince Edward Island	Charlottetown A 28	Charlottetown A 3	East Point (aut) 24
Newfoundland	Badger (aut) 28	Nain A -4	Daniels Harbour 66

**Across The Country...**

Highest Mean Temperature	Windsor A(ONT) 22
Lowest Mean Temperature	Mould Bay A(NWT) -1

CLIMATIC PERSPECTIVES  
VOLUME 13

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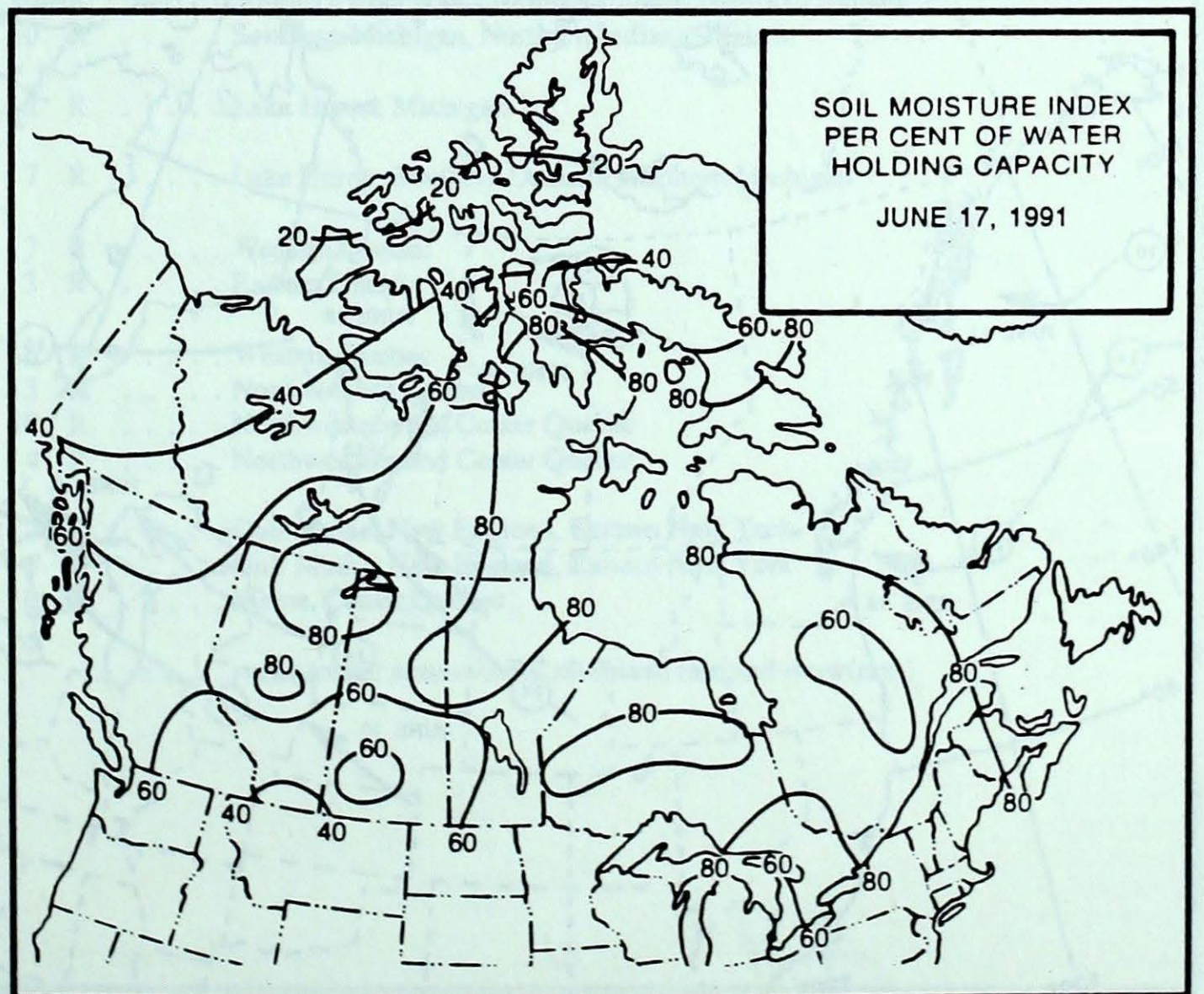
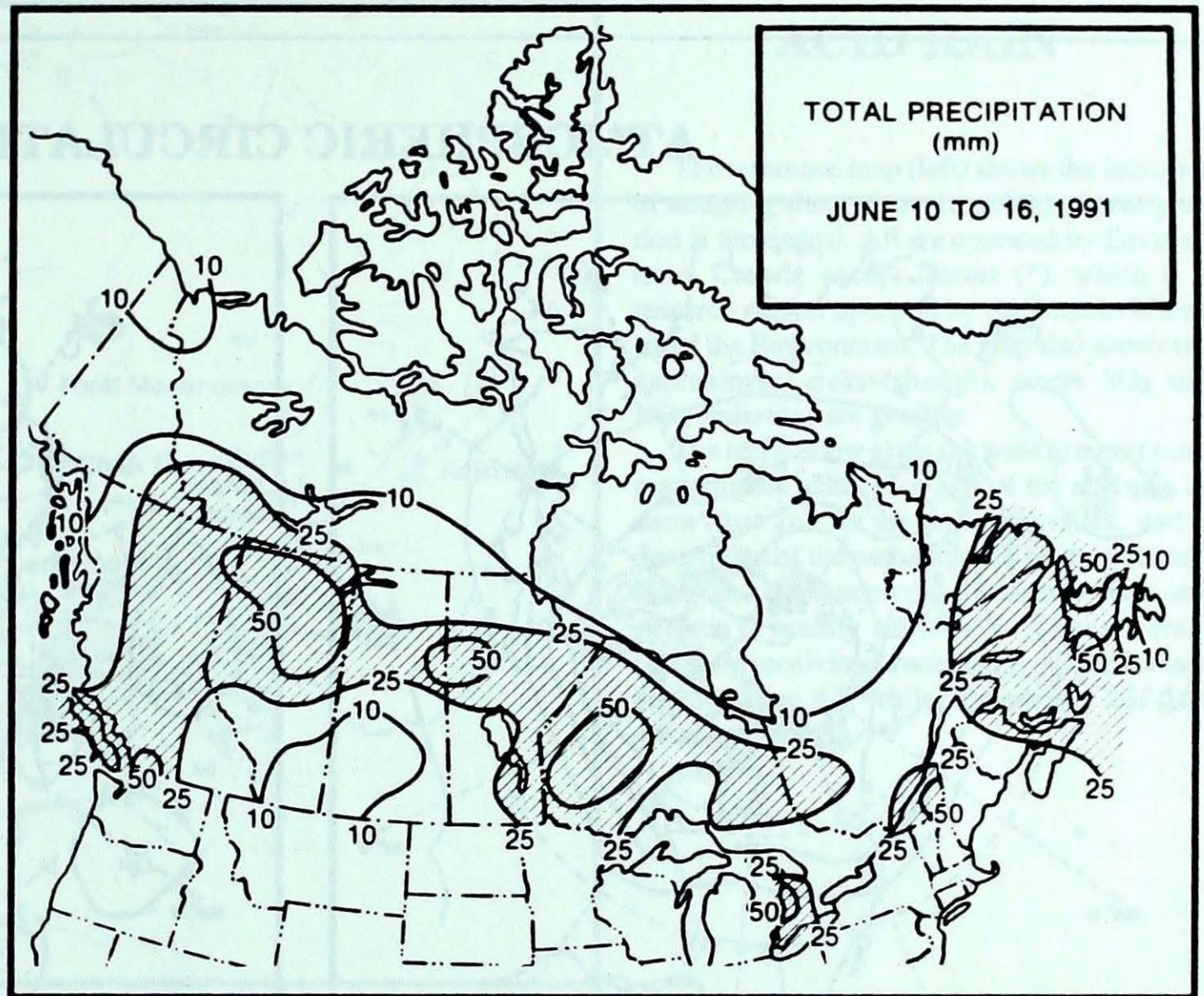
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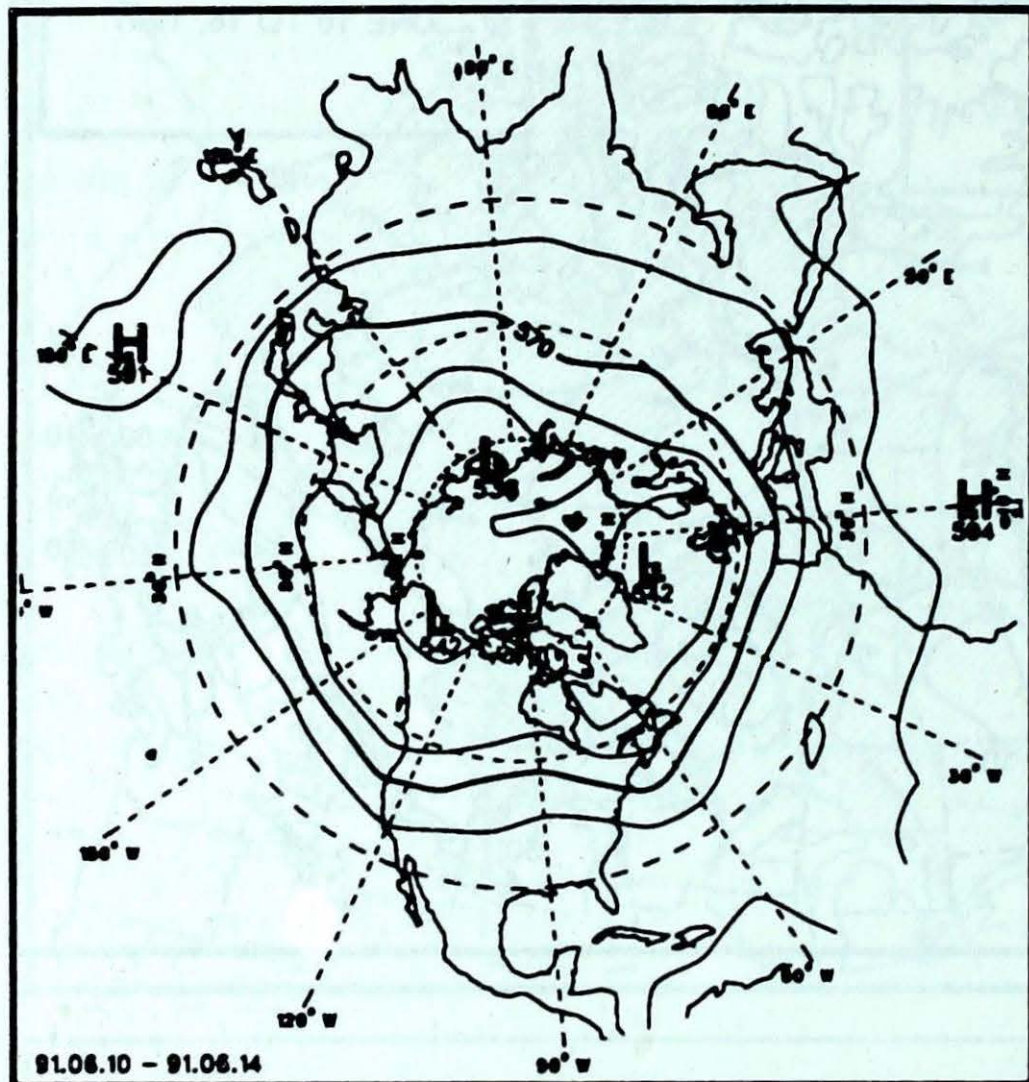
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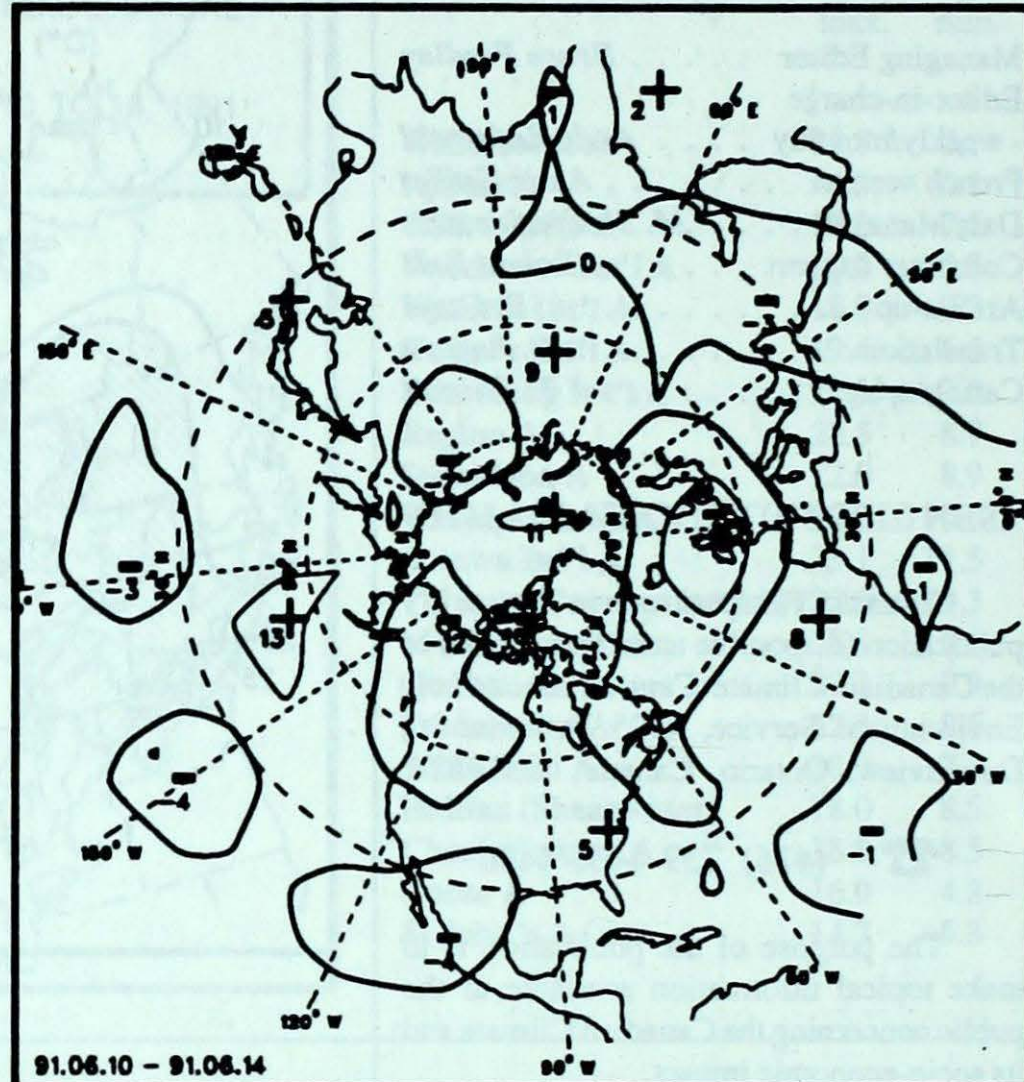
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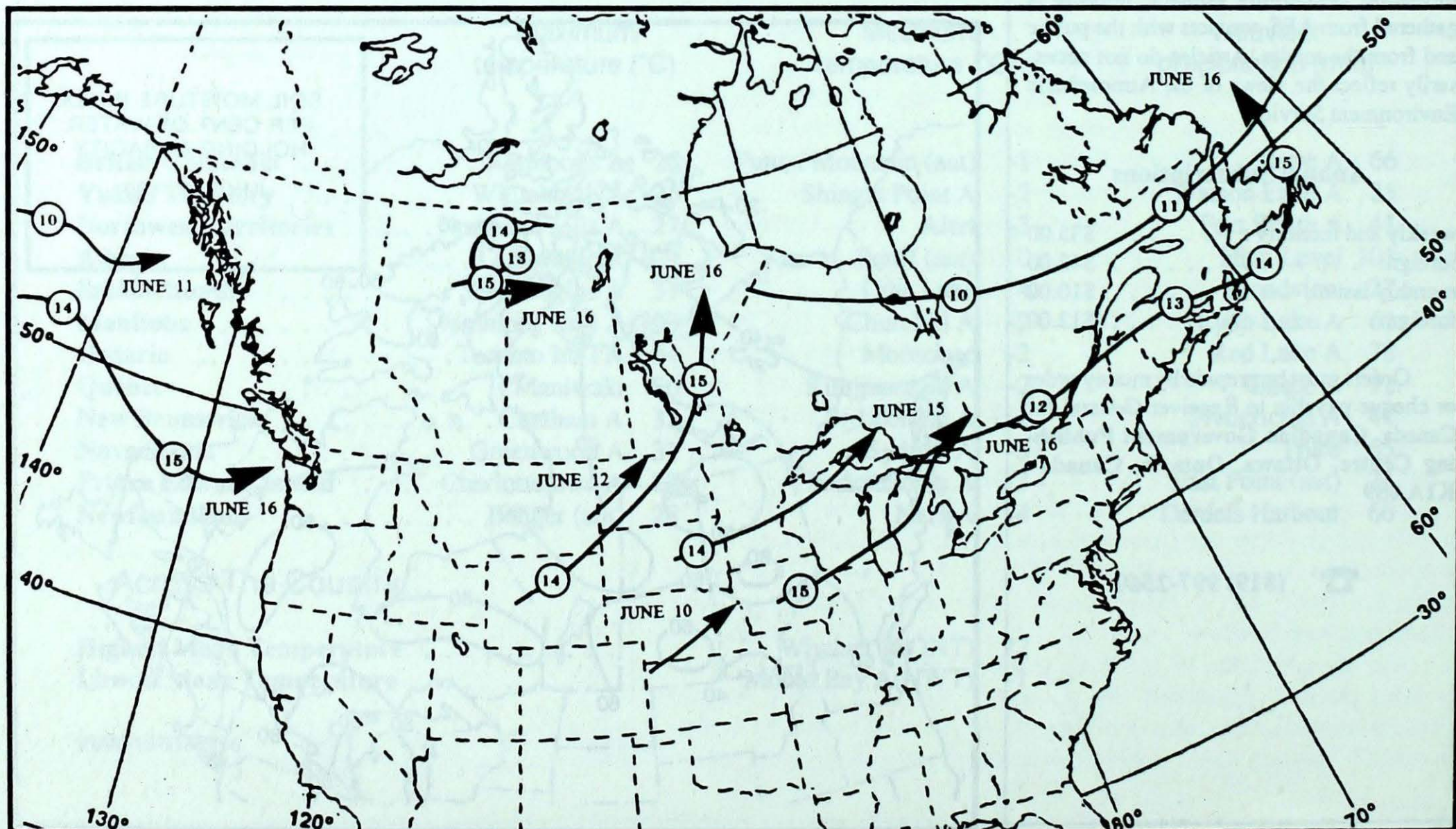
### ATMOSPHERIC CIRCULATION



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



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

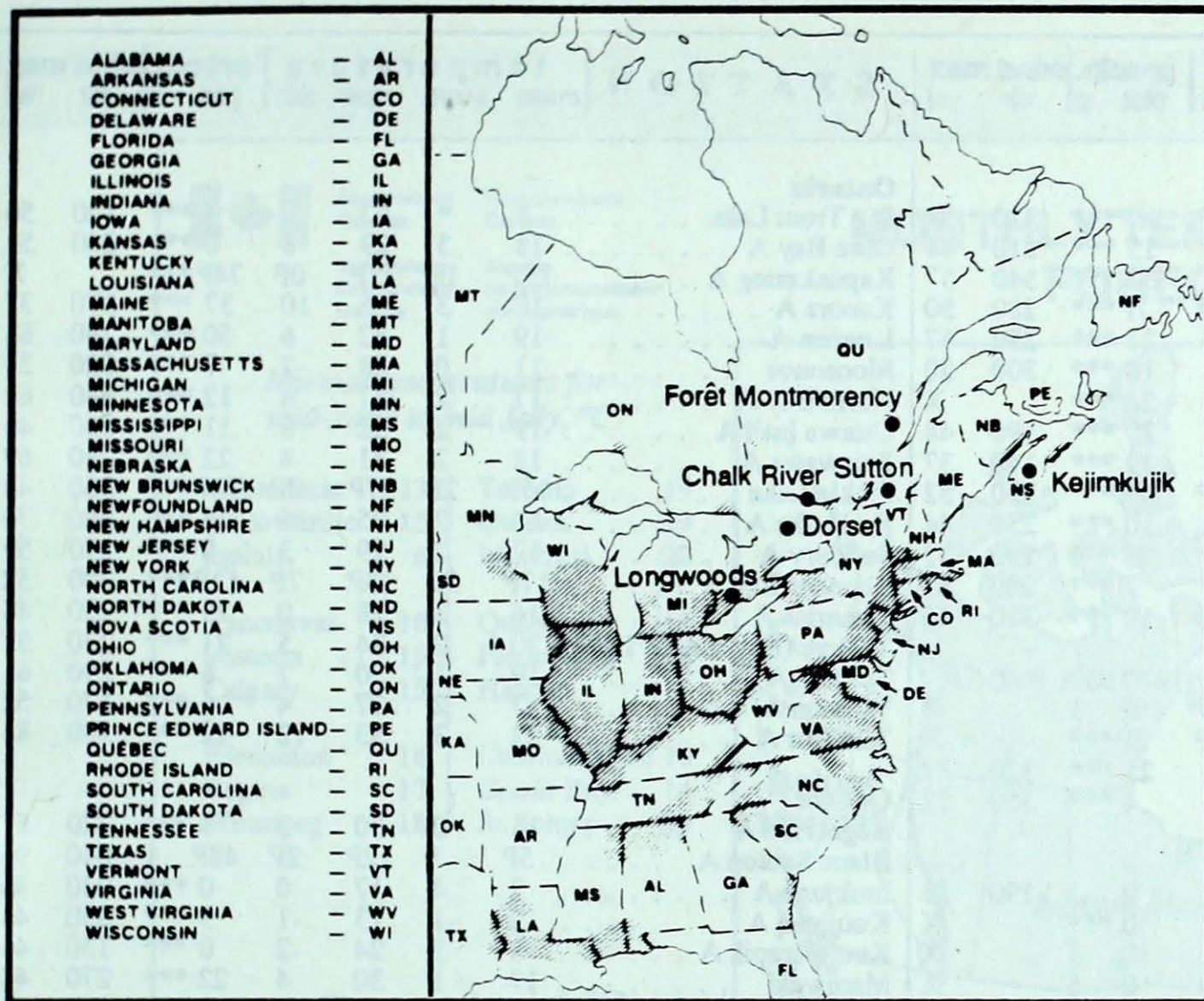


Tracks of low pressure centres at 12:00 U.T. each day during the period.

# 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<sub>2</sub> and NO<sub>x</sub> 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
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June 9 to 15, 1991

Longwoods	11	4.1	16 R	..... Southern Michigan, Northern Illinois, Northern Indiana
	15	5.1	10 R	..... Southern Michigan, Northern Indiana, Illinois
Dorset*	15	4.2	2 R	..... Lake Huron, Michigan
Chalk River	15	4.1	7 R	..... Lake Huron, Southern Ontario, Northern Michigan
Sutton	12	5.4	7 R	..... Western Quebec
	15	3.7	3 R	..... Eastern Ontario
Montmorency	10	4.3	16 R	..... Western Quebec
	12	5.4	13 R	..... Northwestern Quebec
	14	4.8	10 R	..... Northwestern and Center Quebec
	15	5.1	4 R	..... Northwestern and Center Quebec
Kejimikujik	11	3.6	2 R	..... Gulf Maine, New England, Eastern New York
	12	4.4	5 R	..... Gulf Maine, New England, Eastern New York
	15	4.2	2 R	..... Maine, Center Quebec

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

STATION	temperature				precip.		wind max		STATION	temperature				precip.		wind max	
	mean	anom	max	min	ptot	st	dir	vel		mean	anom	max	min	ptot	st	dir	vel
<b>British Columbia</b>									<b>Ontario</b>								
Cape St James	10P	0P	14P	8P	4P***		310	57	Big Trout Lake	*	*	27	*	****		120	56
Cranbrook A	12	-2	24	3	15 ***		210	44	Gore Bay A	18	3	29	6	0 ***		260	52
Fort Nelson A	13	-1	23	7	37 ***		340	57	Kapuskasing A	15P	1P	27P	0P	74P***			X
Fort St John A	13P	0P	22P	7P	7P***		280	50	Kenora A	19	3	26	10	37 ***		270	37
Kamloops A	15	-3	25	6	21 ***		280	67	London A	19	1	32	6	50 ***		280	63
Penticton A	14	-3	25	3	16 ***		300	50	Moosonee	11	0	24	-2	7 ***		020	37
Port Hardy A	11	-1	18	7	24 ***			X	North Bay A	17	2	27	4	12 ***		340	61
Prince George A	11	-1	19	4	29 ***		190	48	Ottawa Int'l A	19	2	32	8	11 ***		260	46
Prince Rupert A	10	-1	13	5	19 ***		140	37	Petawawa A	18	2	31	4	22 ***		280	69
Revelstoke A	13P	-2P	22P	8P	12P***		330	52	Pickle Lake	15P	2P	27P	0P	74P***		330	48
Smithers A	12	0	21	1	10 ***		250	44	Red Lake A	16	2	25	5	78 ***		360	70
Vancouver Int'l A	14	-1	19	9	28 ***		290	37	Sudbury A	17	2	29	3	8 ***		230	59
Victoria Int'l A	12	-2	19	5	7 ***		280	43	Thunder Bay A	17P	3P	28P	7P	11P***		300	52
Williams Lake A	10	-3	21	3	19 ***		310	46	Timmings A	16	2	28	0	29 ***		230	48
<b>Yukon Territory</b>									<b>Toronto(Pearson Int'l A)</b>								
Komakuk Beach A	3P	0P	10P	-1P	10P	1		X	Trenton A	19	1	30	7	6 ***		290	61
Teslin (aut)	12P	*	22P	2P	2P***			X	Warton A	17	2	27	4	6 ***		170	52
Watson Lake A	12	0	22	4	25 ***		320	37	Windsor A	22	3	33	12	22 ***		300	83
Whitehorse A	12	0	23	1	4 ***		350	52	<b>Québec</b>								
<b>Northwest Territories</b>									Bagotville A	15	0	30	3	4 ***		320	67
Alert	2	3	9	-3	0	1	190	63	Blanc Sablon A	5P	*	12P	2P	48P	1	040	96
Baker Lake A	5	2	14	-2	0	***		X	Inukjuak A	7	4	17	0	0 ***		040	46
Cambridge Bay A	4	3	11	-1	0	5		X	Kuujuuaq A	5	-1	13	-1	3 ***		030	44
Cape Dyer A	4	4	9	0	0	6		X	Kuujuarapik A	8	2	24	-2	0 ***		130	46
Clyde A	3	3	9	0	0	1		X	Maniwaki	17	1	30	4	22 ***		270	48
Coppermine A	6	2	14	1	0	1	342	33	Mont Joli A	14	0	27	3	11 ***		230	63
Coral Harbour A	3	1	9	-2	0	1	030	44	Montréal Int'l A	17	0	29	8	29 ***		230	59
Eureka	4P	2P	8P	0P	4P***		300	56	Natashquan A	9	-1	16	3	47 ***		050	69
Fort Smith A	14	1	23	4	41 ***		030	41	Québec A	16	0	28	7	35 ***		300	67
Hall Beach A	2	2	5	-2	1	1	280	35	Schefferville A	5	-3	13	-1	0 ***		340	43
Inuvik A	9	-2	19	1	16 ***		290	61	Sept-Îles A	12	0	22	4	34 ***		020	57
Iqaluit A	6	3	14	-1	0	1	310	44	Sherbrooke A	15	0	28	7	62 ***		320	54
Mould Bay A	-1	0	2	-3	11	18	080	43	Val-d'Or A	14	0	29	2	40 ***		270	56
Norman Wells A	15	2	27	2	1	***	190	46	<b>New Brunswick</b>								
Resolute A	1	2	4	-2	9	1	140	44	Charlo A	*	*	30	*	****			X
Yellowknife A	14	2	22	3	2	***	050	56	Chatham A	16	1	32	3	37 ***		250	52
<b>Alberta</b>									Fredericton A	16	1	30	5	41 ***		330	59
Calgary Int'l A	13	-1	26	3	11 ***		290	65	Moncton A	14	0	29	2	29 ***		010	63
Cold Lake A	15	0	26	7	25 ***		250	69	Saint John A	14	0	28	3	10 ***		330	72
Edmonton Namao A	13	-1	25	5	24 ***		270	65	<b>Nova Scotia</b>								
Fort McMurray A	13	-1	23	7	91 ***		110	44	Greenwood A	16	1	31	5	13 ***		250	78
High Level A	14	0	23	8	101 ***		330	48	Shearwater A	13	0	23	6	7 ***		340	67
Jasper	11	-2	19	2	9 ***			X	Sydney A	13	0	28	3	3 ***		220	52
Lethbridge A	14	-1	29	5	5 ***		250	83	Yarmouth A	13	0	20	6	15 ***		320	67
Medicine Hat A	14	-2	27	1	7 ***		250	78	<b>Prince Edward Island</b>								
Peace River A	13	-1	23	7	40 ***		310	56	Charlottetown A	14	0	28	3	19 ***		350	70
<b>Saskatchewan</b>									East Point (auto)	13P	*	25P	6P	24P***			
Cree Lake	13	0	22	4	24 ***		210	57	<b>Newfoundland</b>								
Estevan A	18	1	31	6	27 ***		280	59	Cartwright	3	-5	11	-1	37	2	010	65
La Ronge A	15	2	23	7	23 ***		120	46	Churchill Falls A	6	-2	16	1	1	1	330	69
Regina A	17	2	31	7	18 ***		270	141	Gander Int'l A	10	-1	26	3	49 ***		230	52
Saskatoon A	16	1	28	5	6 ***		240	52	Goose A	5	-5	15	0	31 ***		360	52
Swift Current A	15	0	29	7	14 ***		280	54	Port Aux Basques	8	0	18	4	31 ***		080	65
Yorkton A	16	1	26	8	26 ***		281	41	St John's A	11	1	23	3	7 ***		250	78
<b>Manitoba</b>									St Lawrence	8	0	13	3	20 ***			X
Brandon A	18	2	28	7	15 ***		280	63	Wabush Lake A	8	-1	18	-1	1 ***		030	50
Churchill A	5	-1	17	-2	8 ***		070	61	91/06/10-91/06/16								
Lynn Lake A	13	1	23	5	61 ***		180	74									
The Pas A	15	1	26	6	16 ***		280	59									
Thompson A	13	2	26	0	46 ***		080	74									
Winnipeg Int'l A	20	3	30	12	27 ***		060	63									

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.



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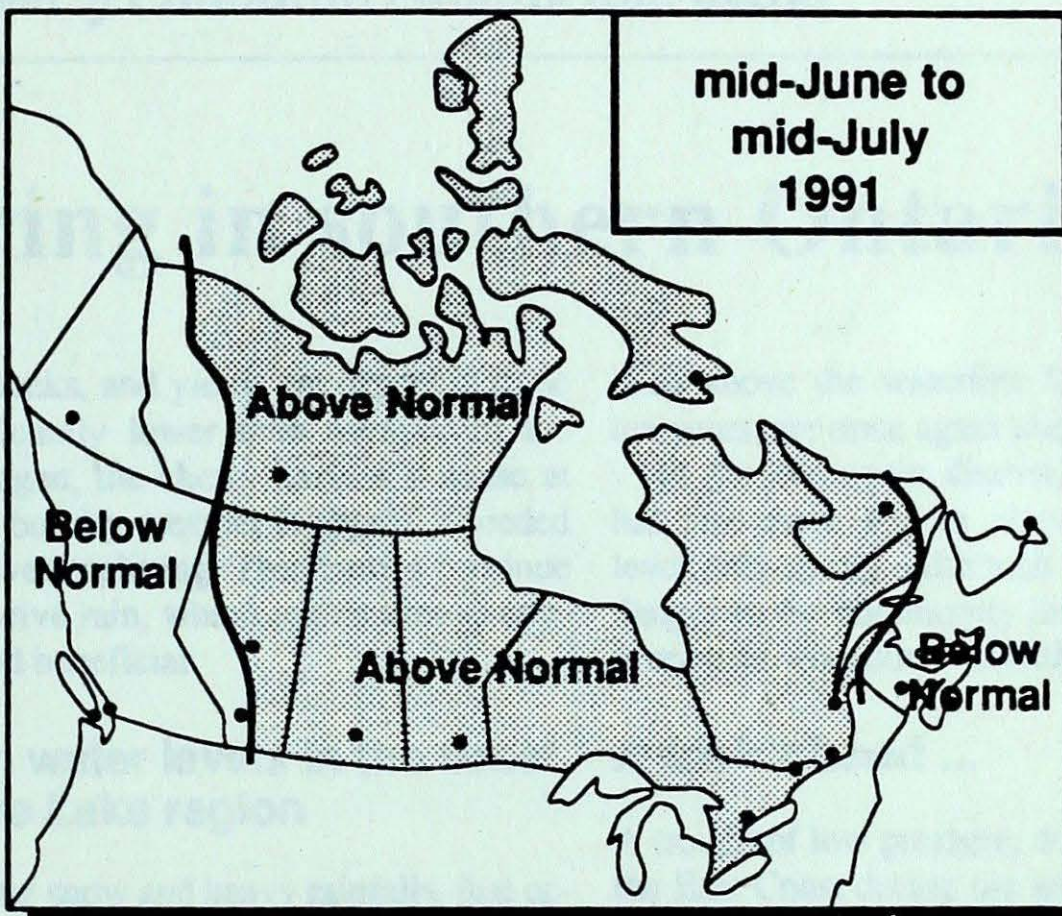
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## MONTHLY TEMPERATURE FORECAST

*Normal temperatures for  
mid-June to mid July, °C*

Whitehorse	13	Toronto	19
Yellowknife	15	Ottawa	19
Iqaluit	6	Montréal	20
Vancouver	16	Québec	18
Victoria	15	Fredericton	18
Calgary	15	Halifax	16
Edmonton	16	Charlottetown	16
Regina	17	Goose Bay	14
Winnipeg	18	St. John's	13

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