Environment Canada Environnement Canada

Climatic Perspectives

ARCH. C 1.

July 22 to 28, 1991 **A weekly review of Canadian climate and water** *Vol. 13 No 30*

Arctic shipping season fares well

Favourable, near to above normal temperatures in Canada's eastern Arctic waters have resulted in a relatively timely ice breakup this year. On the other hand, ice has been slow in decaying along Labrador's north coast and in the Beaufort Sea.

Persistently cooler than normal temperatures continue to make this one of the worst ice-years on record along the northern Labrador coastline. Hard, multi-year ice is finally breaking up into patches, but until now, resupply vessels have been unable to reach northern coastal communities, which are fast running out of supplies.

Heavy ice has persisted across the eastern end of Hudson Strait for the past few weeks, hampering vessels sailing into Hudson Bay. The problem was also compounded by fog and the fact that this ice is hard multi-year ice. The Coast Guard has had to assist vessels in and out, but the situation has now improved, with the ice decaying and becoming quite loose. Ungava Bay is still heavily ice covered, and there is a greater than normal ice cover in Frobisher Bay.

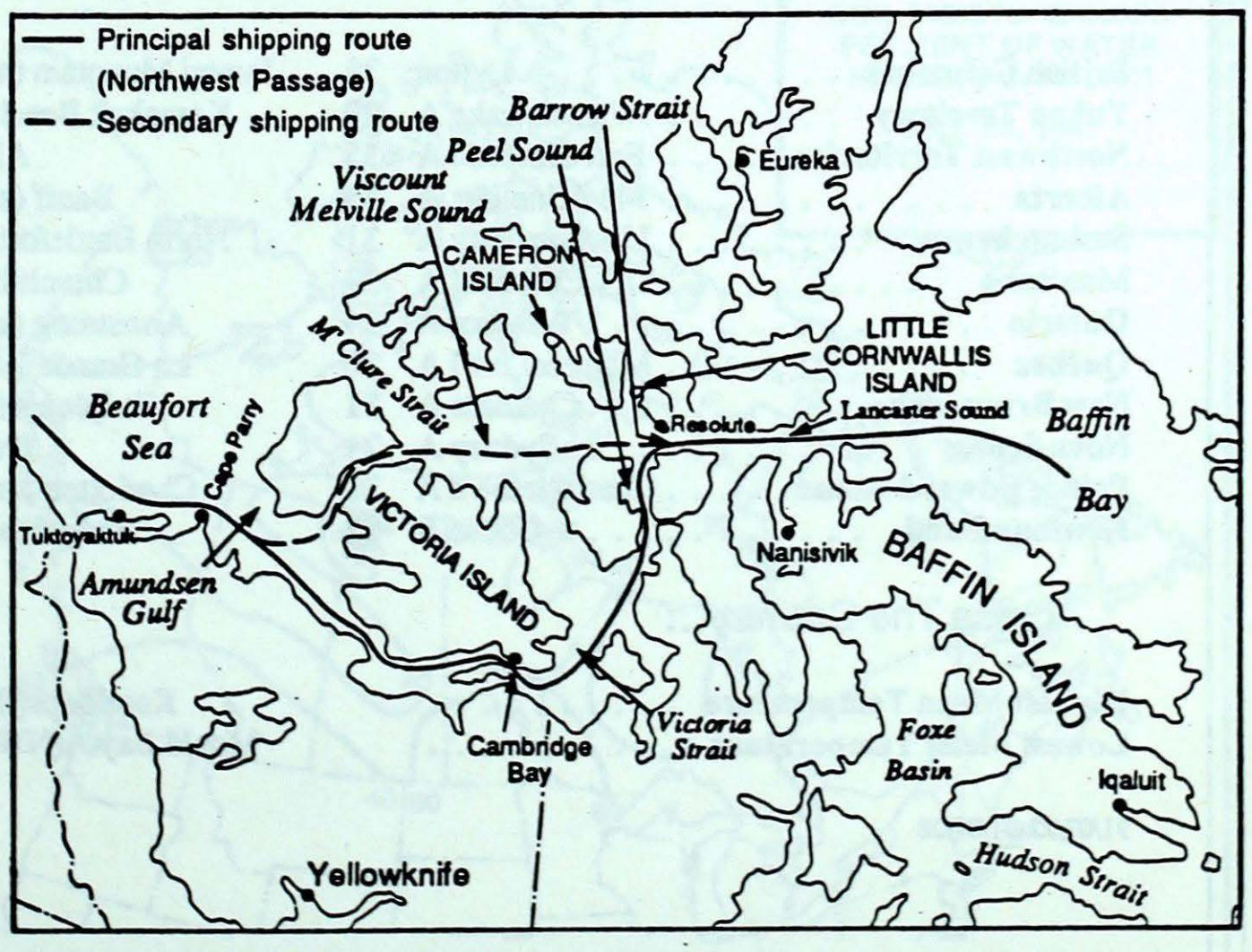
Ice conditions in Davis Strait, Baffin Bay and Lancaster Sound are better than average, with large areas of open water evident, albeit strewn with icebergs. Old ice is still persistently hanging in, but first year ice is dispersing nicely. Temperatures in the eastern Arctic have been above normal for the last little while, and in fact, readings this week have climbed to the record high teens. With early clearing taking place in Lancaster Sound, there is concern that large amounts of difficult multi-year ice will eventually drift southeastwards into Barrow Strait and Lancaster Sound. This would severely hamper resupply operations scheduled for August.

The powerful, ice-strengthened ship, M.V. Arctic, made its inaugural voyage into the Arctic in May. The Coast Guard presently has five icebreakers operating in the region. Operations are continuing into Nanisivik, on northern Baffin Island, Cornwallis Island, Little Cornwallis Island, and in August are scheduled to work areas of Cameron Island and Arctic outposts as far north as Eureka.

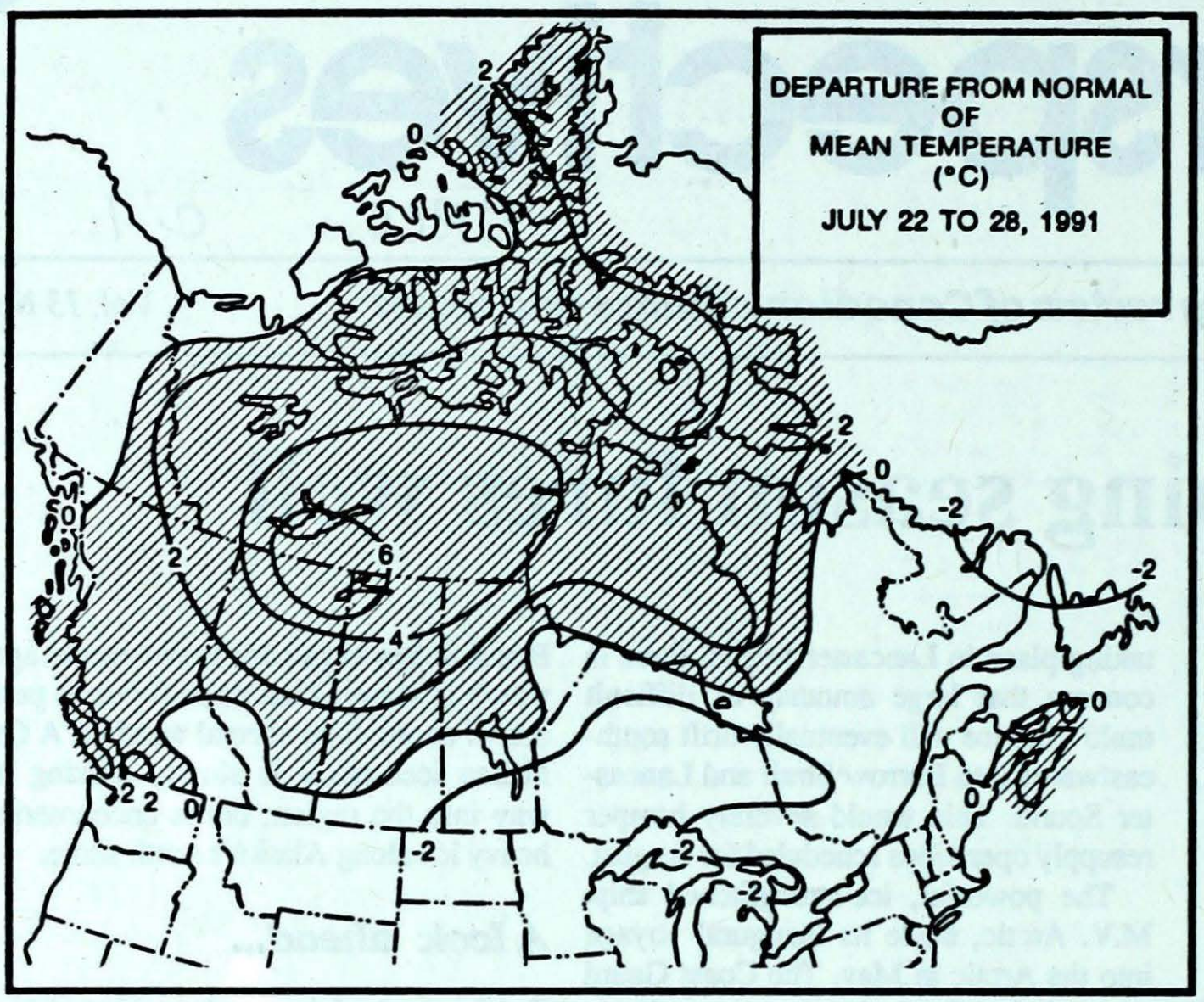
Ice breakup in the western Arctic and Beaufort Sea began one to two weeks ago, which is slower than normal due to periods of cooler than normal weather. A Canadian icebreaker is slowly making its way into the region, but is encountering heavy ice along Alaska's north shore.

A look ahead...

For the week of August 4, a ridge of high pressure will continue to bring above normal temperatures to British Columbia, the Prairies, northern Ontario and Quebec. The lower Great Lakes, the St. Lawrence Valley and the Atlantic provinces, as well as the southern Yukon will experience below normal temperatures.



Canada



Weekly normal temperatures (°C)

	max.	min.
Whitehorse A	20.1	7.6
Iqaluit A	12.6	4.6
Yellowknife A	19.5	11.2
Vancouver Int'l A	22.5	13.0
Victoria Int'l A	22.4	10.9
Calgary Int'l A	23.8	9.4
Edmonton Int'l A	22.3	9.1
Regina A	26.3	11.7
Saskatoon A	25.7	11.4
Winnipeg Int'l A	26.1	13.3
Ottawa Int'l A	26.7	15.4
Toronto (Pearson Int'l A)	27.5	15.1
Montréal Int'l A	26.7	16.3
Québec A	25.5	13.8
Fredericton A	26.2	13.1
Saint John A	22.5	12.0
Halifax (Shearwater)	22.0	13.5
Charlottetown A	23.4	13.9
Goose A	22.0	10.7
St John's A	20.3	11.0

Weekly temperature and precipitation extremes

	Maximum temperature (°C)		Minimum temperature (°C)		Heaviest precipitation (mm)	
British Columbia	Lytton	38	Puntzi Mountain (aut)	3	Blue River A	54
Yukon Territory	Watson Lake A	29	Komakuk Beach A	0	Faro (aut)	40
Northwest Territories	Fort Simpson A	35	Alert	-1	Cape Parry A	27
Alberta	Medicine Hat A	33	Banff (aut)	2	Whitecourt A	19
Saskatchewan	Uranium City A	31	North Battleford A	6	Buffalo Narrows A	21
Manitoba	Churchill A	29	Churchill A	4	Churchill A	34
Ontario	Windsor A	34	Armstrong (aut)	4	Big Trout Lake	40
Québec	Montréal Int'l A	30	La Grande IV A	0	La Grande Rivière	44
New Brunswick	Chatham A	31	St-Léonard A	7	Saint John A	49
Nova Scotia	Sydney A	31	Truro	7	Shearwater A	49
Prince Edward Island	Charlottetown A	30	Charlottetown A	9	East Point (aut)	15
Newfoundland	Goose A	28	Badger (aut)	3	Wabush Lake A	20

Across The Country...

Highest Mean Temperature	Kamloops(BC)	22
Lowest Mean Temperature	Mould Bay A(NWT)	3

91/07/22-91/07/28

CLIMATIC PERSPECTIVES
VOLUME 13

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The data in this publication are based on unverified reports from approximately 225 Canadian synoptic weather stations. Information concerning climatic impacts is gathered from AES contacts with the public and from the media. Articles do not necessarily reflect the views of the Atmospheric Environment Service.

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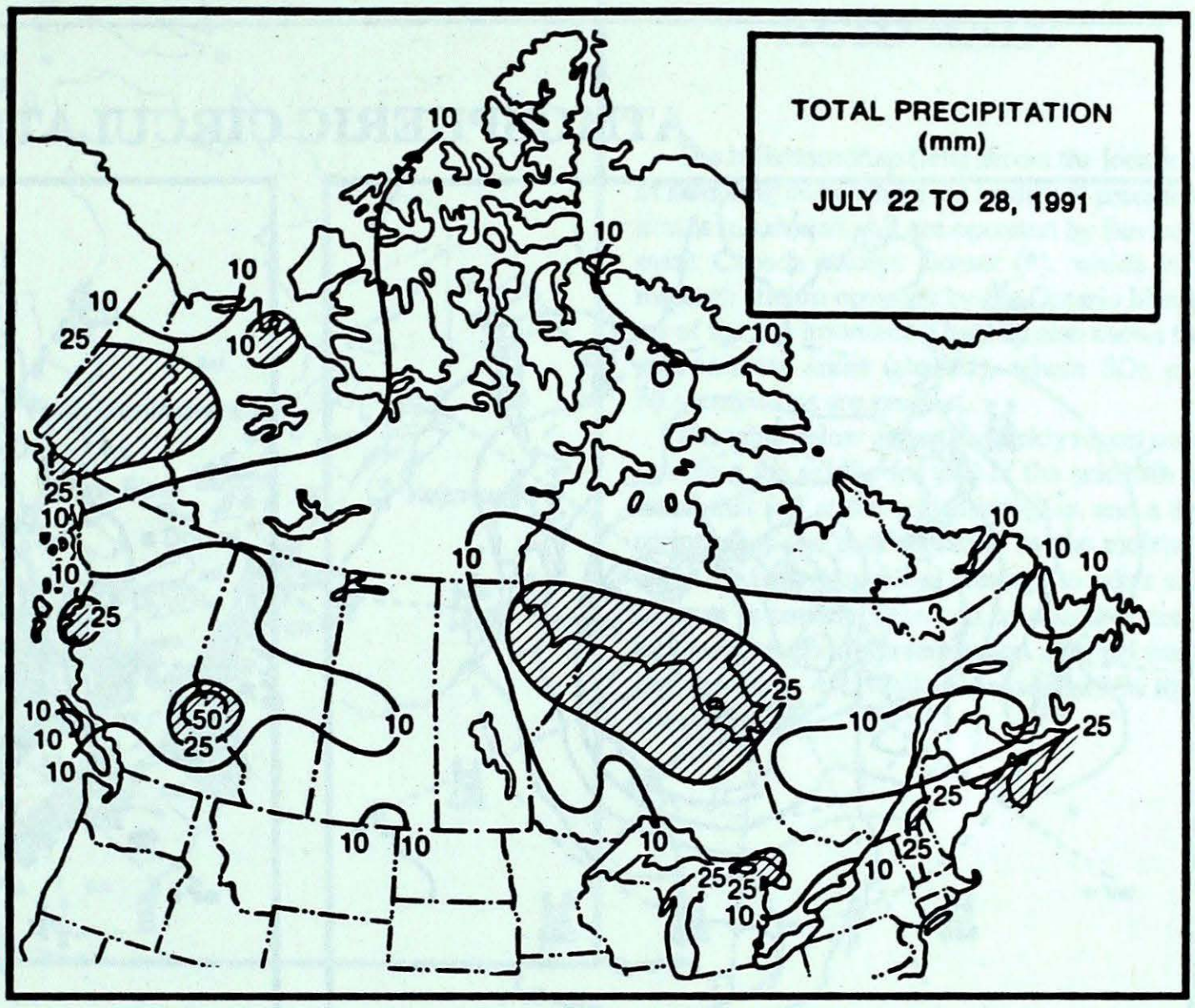
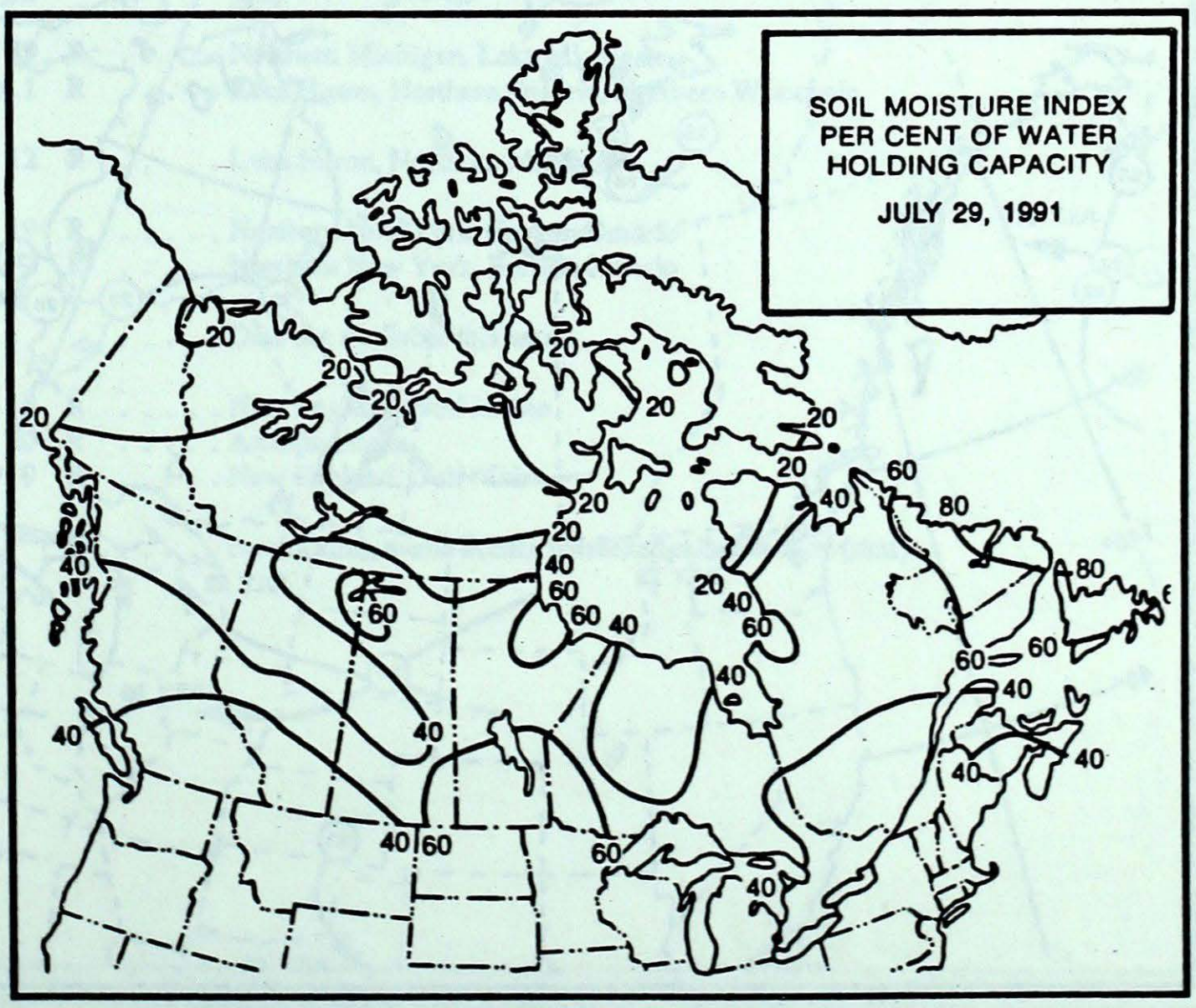
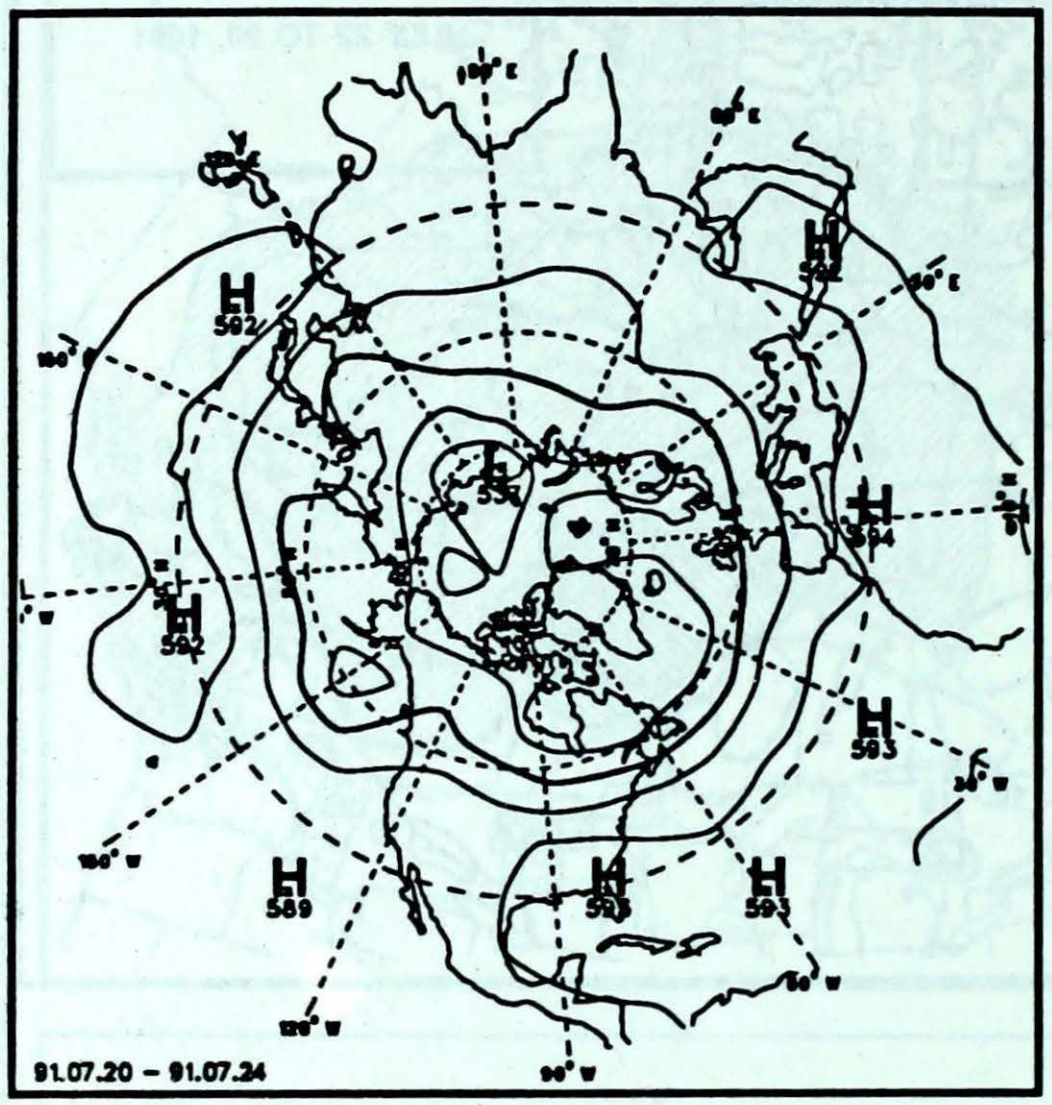
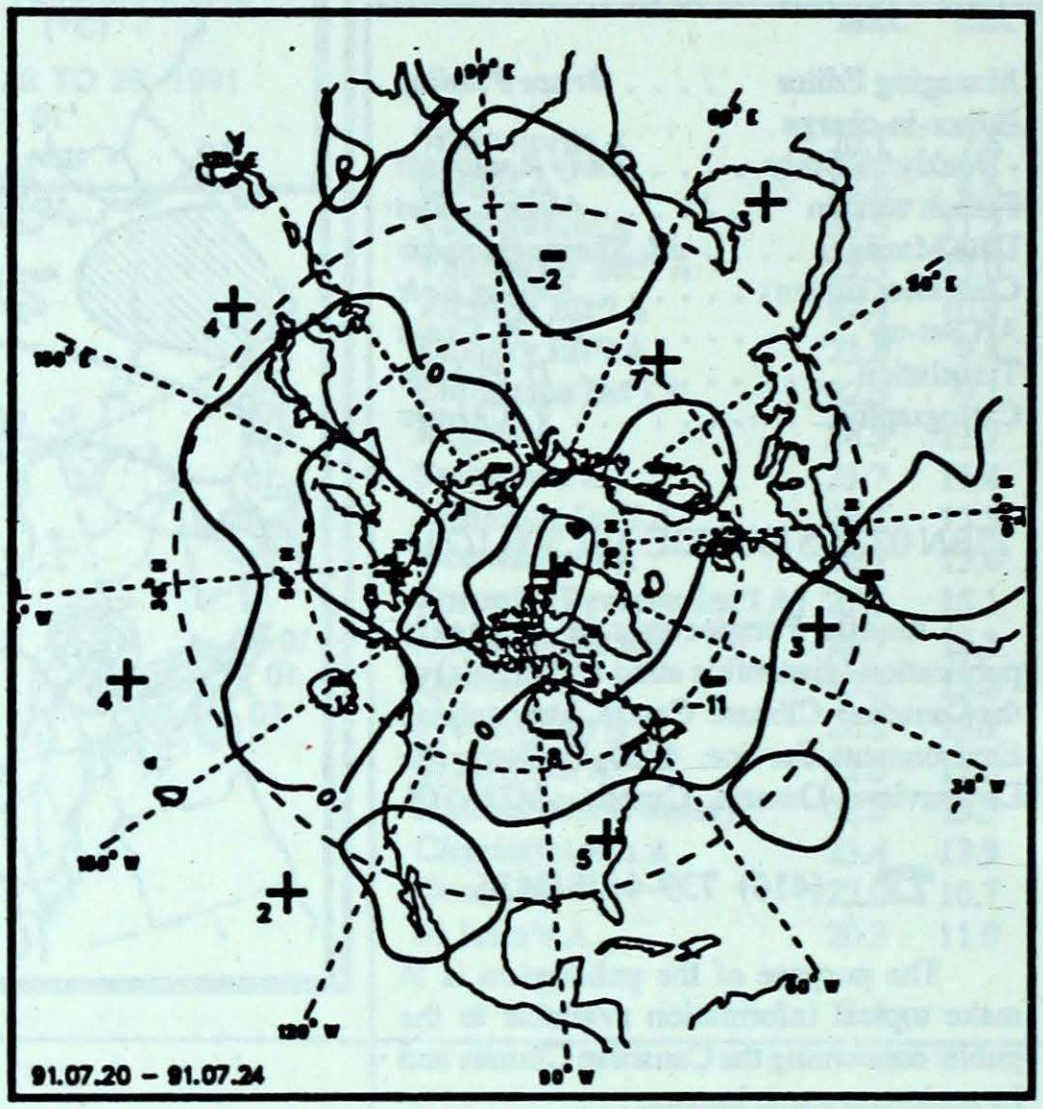




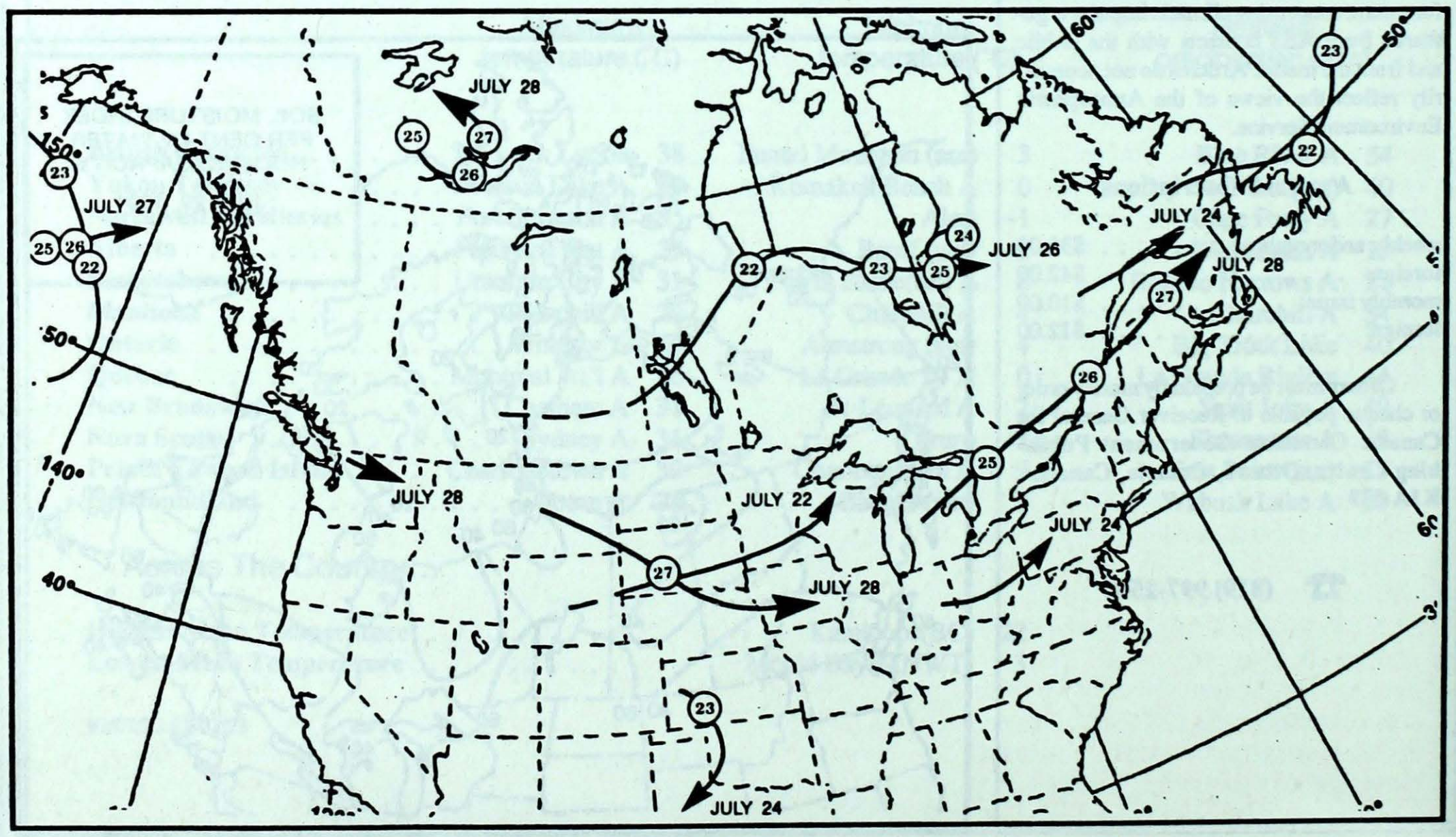
ATMOSPHERIC CIRCULATION



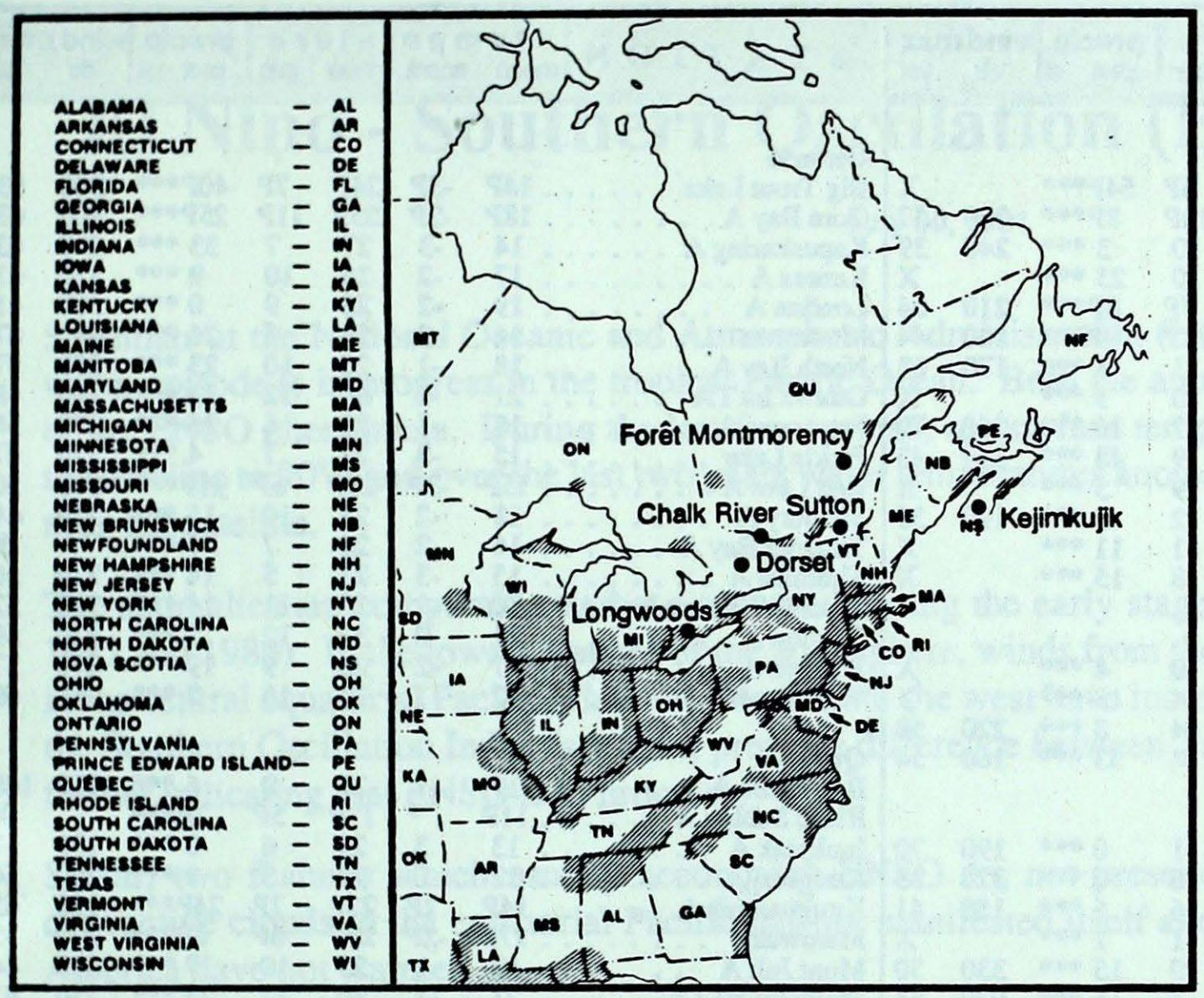
Mean geopotential height
50-kPa level (10-decametre intervals)



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
					July 21 to 27, 1991
Longwoods	22	6.4	2	R	. . . . . Southern Michigan, Southern Ontario
Dorset*	22	4.3	49	R	. . . . . Northern Michigan, Lake Michigan
	25	4.5	1	R	. . . . . Lake Huron, Northern Ontario, Northern Wisconsin
Chalk River	22	4.5	12	R	. . . . . Lake Huron, Northern Michigan
Sutton	22	4.6	19	R	. . . . . Northern New York, Eastern Ontario
	23	5.6	2	R	. . . . . Northern New York, Eastern Ontario
Montmorency					. . . . . Data not available this week
Kejimkujik	23	4.4	10	R	. . . . . New England, Gulf Maine
	26	4.6	20	R	. . . . . Atlantic Ocean
	27	4.6	9	R	. . . . . New England, Gulf Maine

. . . . . 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								
Blue River A	17P	-1P	31P	6P	54P***			X
Cape St James	13P	0P	18P	10P	8P***		300	57
Cranbrook A	19	-1	31	10	3 ***		240	39
Fort Nelson A	20	4	33	10	23 ***			X
Fort St John A	19P	4P	31P	7P	0P***		210	54
Kamloops A	22P	1P	36P	12P	9P***		100	44
Penticton A	22	1	34	13	1 ***		170	63
Port Hardy A	16	2	26	10	3 ***			X
Prince George A	17	2	32	7	16 ***		240	70
Prince Rupert A	15	2	24	9	48 ***		150	43
Smithers A	17	2	33	9	5 ***			X
Vancouver Int'l A	19	1	29	12	3 ***		190	35
Victoria Int'l A	18	1	32	11	11 ***			X
Williams Lake A	17	1	31	8	15 ***			X
Yukon Territory								
Komakuk Beach A	5	-2	18	0	4 ***			X
Teslin (aut)	13	*	26	4	13 ***			X
Watson Lake A	16	1	29	4	8 ***		220	59
Whitehorse A	14	0	23	4	33 ***		160	54
Northwest Territories								
Alert	7	3	15	-1	0 ***		190	70
Baker Lake A	17	6	33	6	0 ***		320	33
Cambridge Bay A	11	3	20	6	6 ***		150	41
Cape Dyer A	11	4	19	1	1 ***			X
Clyde A	8	3	17	0	15 ***		330	50
Coppermine A	12	3	31	4	16 ***		070	54
Coral Harbour A	12	2	27	5	7 ***		270	67
Eureka	8	2	16	1	6 ***			X
Fort Smith A	21	6	33	10	2 ***		170	44
Hall Beach A	7	1	18	0	8 ***		290	59
Inuvik A	14	1	25	6	6 ***		310	41
Iqaluit A	11	3	22	2	3 ***		310	63
Mould Bay A	3	-1	10	-1	11	1	290	48
Norman Wells A	18	3	34	9	25 ***		320	52
Resolute A	4	-1	12	-1	3 ***		120	61
Yellowknife A	21	6	30	14	0 ***		280	48
Alberta								
Calgary Int'l A	18	1	29	7	3 ***		160	59
Cold Lake A	19	3	30	9	12 ***		200	48
Edmonton Namao A	19	2	29	8	4 ***		290	63
Fort McMurray A	20P	4P	31P	8P	3P***		230	41
High Level A	18	2	31	6	12 ***		280	54
Jasper	16	1	31	6	11 ***			X
Lethbridge A	19	0	30	9	0 ***		260	56
Medicine Hat A	20	0	33	8	0 ***		210	65
Peace River A	18	3	32	5	8 ***		180	74
Saskatchewan								
Cree Lake	19	4	29	10	2 ***		170	50
Estevan A	18	-2	28	9	6 ***		300	59
La Ronge A	19	3	28	10	4 ***		300	46
Regina A	19	0	30	8	12 ***		310	65
Saskatoon A	20	1	30	8	9 ***		180	48
Swift Current A	19	0	28	8	3 ***		310	44
Yorkton A	17	-2	26	8	6 ***		310	56
Manitoba								
Brandon A	17	-2	26	6	6 ***		300	67
Churchill A	14	2	29	4	34 ***		050	56
Lynn Lake A	19	3	29	5	2 ***		320	63
The Pas A	18	0	27	7	1 ***		300	78
Thompson A	17	2	28	6	4 ***		330	63
Winnipeg Int'l A	18	-2	27	9	0 ***		290	82

STATION	temperature mean	anom	max	min	precip. ptot	st	wind max dir	vel
Ontario								
Big Trout Lake	14P	-3P	24P	7P	40P***		300	93
Gore Bay A	18P	-2P	25P	11P	25P***		300	63
Kapuskasing A	14	-3	27	7	33 ***		290	63
Kenora A	17	-2	25	10	9 ***		310	61
London A	19	-2	28	9	0 ***		300	41
Moosonee	14	-2	26	5	26 ***		280	67
North Bay A	18	-1	26	10	23 ***		250	57
Ottawa Int'l A	21	-1	30	12	15 ***		210	48
Petawawa A	18	-1	29	6	16 ***		270	56
Pickle Lake	15	-3	24	7	4 ***		320	67
Red Lake A	15P	-3P	25P	6P	11P***		300	50
Sudbury A	18	-2	25	10	11 ***		270	44
Thunder Bay A	16	-2	26	7	7 ***			X
Timmins A	15	-3	27	5	14 ***		270	56
Toronto(Pearson Int'l A)	20	-1	28	11	14 ***		320	52
Trenton A	21	0	31	12	2 ***		270	59
Wiarton A	17	-2	26	9	19 ***		270	37
Windsor A	22	-1	34	13	2 ***		260	69
Québec								
Bagotville A	17	-1	27	9	6 ***		010	146
Blanc Sablon A	11P	*	17P	5P	7P***			X
Inukjuak A	13	3	23	6	0 ***		130	57
Kuujjuaq A	12	0	23	3	1 ***		290	54
Kuujjuarapik A	14P	2P	23P	7P	24P***		120	65
Maniwaki	17P	-2P	29P	6P	8P***		270	35
Mont Joli A	17	-1	25	10	17 ***		310	44
Montréal Int'l A	21	-1	30	12	23 ***		230	41
Natashquan A	13	-2	20	7	34 ***			X
Québec A	19	0	27	9	5 ***		240	54
Schefferville A	11	-2	21	4	10 ***		340	46
Sept-Îles A	14	-2	24	6	14 ***		080	50
Sherbrooke A	18	0	27	7	28 ***		250	35
Val-d'Or A	16	-2	26	6	7 ***		270	56
New Brunswick								
Chatham A	20	0	31	9	2 ***		280	41
Fredericton A	19	-1	30	9	6 ***		180	48
Miscou Island (aut)	17P	-2P	25P	10P	0P***			
Moncton A	19	0	29	10	6 ***		240	48
Saint John A	18	1	28	11	49 ***		300	44
Nova Scotia								
Greenwood A	19	0	30	9	39 ***		190	50
Shearwater A	20	2	30	13	49 ***		320	33
Sydney A	19P	1P	31P	9P	21P***		360	48
Yarmouth A	17P	0P	26P	12P	41P***		330	46
Prince Edward Island								
Charlottetown A	20	1	30	9	11 ***		200	52
East Point (auto)	18P	*	24P	10P	15P***			
Newfoundland								
Cartwright	9	-4	27	4	10 ***		330	54
Churchill Falls A	13	-2	22	6	8 ***		310	48
Gander Int'l A	15	-2	25	7	19 ***		290	39
Goose A	14	-2	28	4	8 ***		240	48
Port Aux Basques	14	0	22	8	17 ***		320	56
St John's A	14	-1	25	7	12 ***		210	56
St Lawrence	13	0	19	10	8 ***			X
Wabush Lake A	13	-1	20	5	20 ***		330	44

91/07/22-91/07/28

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.

El Nino - Southern Oscillation (ENSO) Update

July 30, 1991

Scientists at the National Oceanic and Atmospheric Administration (NOAA) in Washington report that a warm episode is in progress in the tropical Pacific Ocean. Both the atmosphere and the ocean show signs of the ENSO phenomena. During the last few months, sea surface temperatures have increased from near the dateline to 90W and over the last two years water temperatures anomalies have warmed from -2 to 1.5C near the dateline.

The anomalies are comparable to those observed during the early stages of previous ENSO (1972, 1977, 1982 and 1986). In the lowest reaches of the atmosphere, winds from the east have substantially weakened in the central equatorial Pacific while the winds from the west have increased (a precursor to ENSO). Also the Southern Oscillation Index (sea level pressure difference between Tahiti and Darwin) has averaged -1, further indicating that ENSO is in progress.

So far, two features which usually accompany ENSO are not present, however. The buildup of deep convective clouds in the equatorial Pacific has not manifested itself and the waters off the coast of South America have not warmed up.

Consistent with the observed atmospheric and oceanic conditions, NOAA reports that the statistical models are also predicting warmer than normal conditions in the equatorial Pacific Ocean during the next two to three seasons.

Through mechanisms not fully understood, the prolonged warmth of the tropical Pacific is usually communicated into higher latitudes. An ENSO phenomenon in the tropical Pacific Ocean is usually accompanied by a warmer than normal winter in western Canada.

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