



Environment  
Canada

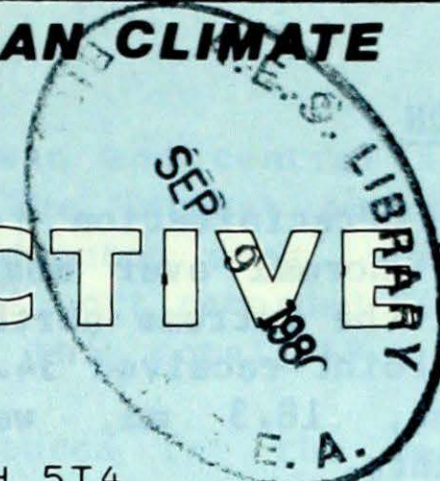
Environnement  
Canada

# A WEEKLY REVIEW OF CANADIAN CLIMATE

Atmospheric  
Environment

Environnement  
atmosphérique

# CLIMATIC PERSPECTIVES

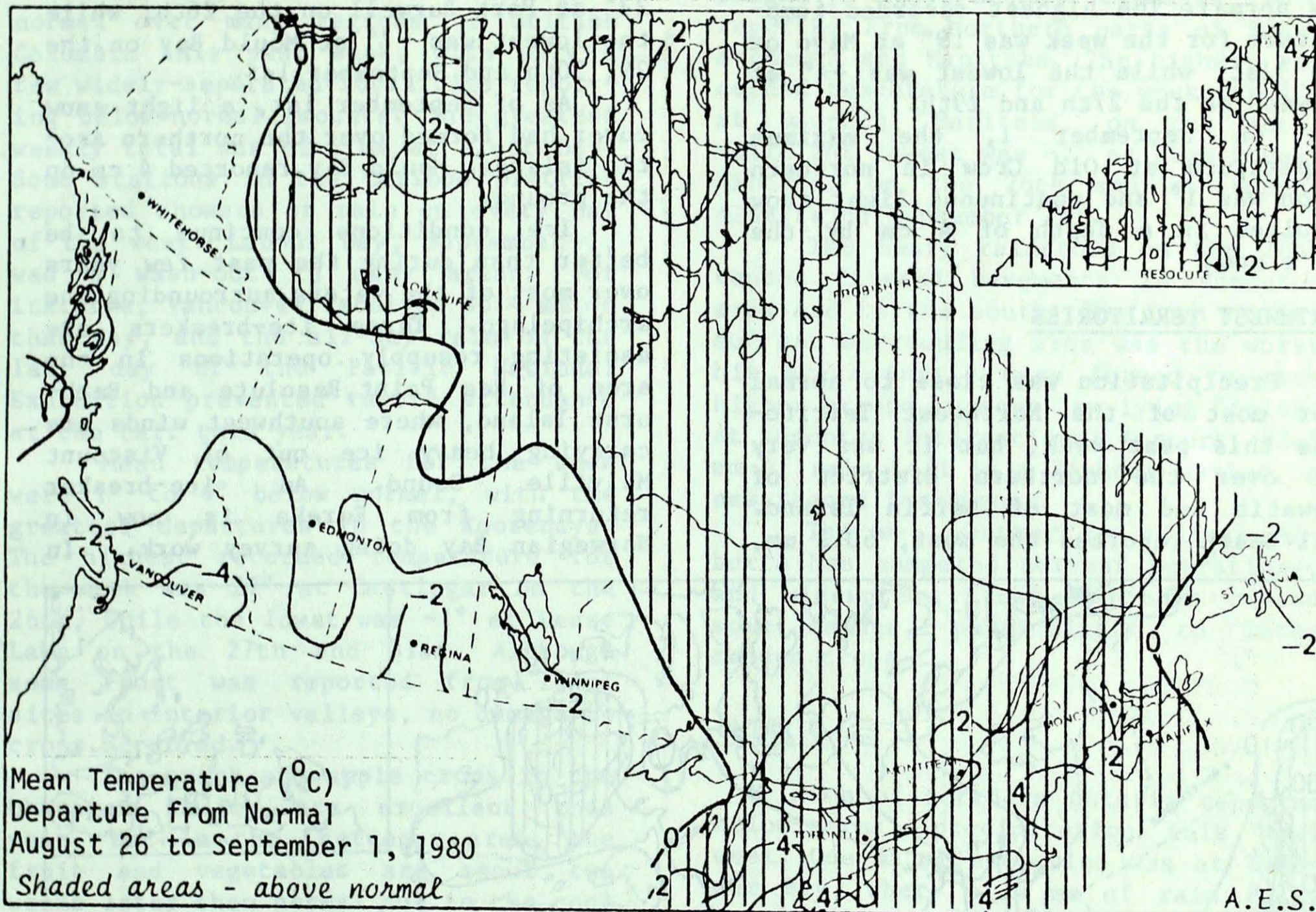


THE CANADIAN CLIMATE CENTRE,  
ATMOSPHERIC ENVIRONMENT SERVICE,  
4905 DUFFERIN ST., DOWNSVIEW, ONTARIO M3H 5T4

SEPTEMBER 5, 1980

(Aussi disponible en français)

VOL. 2 NO. 35



## WEATHER HIGHLIGHTS FOR THE WEEK - AUGUST 25-SEPTEMBER 1, 1980

### Heavy Rainstorms Hit Edmonton and Montréal

Dull, rainy weather hampered Labour Day weekend activities in British Columbia, Ontario, Quebec and the Maritime Provinces.

Cool, rainy weather continued to hamper harvesting in British Columbia and Alberta.

A heavy rainstorm on the 28th caused flooding in Edmonton and Leduc, Alta. At the International Airport, 83.5 mm fell in 24 hours. Basements were flooded, and cattle in low-lying fields were forced to higher ground.

A severe thunderstorm struck Montréal on the evening of September 1st. St-Hubert Airport reported 45 mm of rain in one hour. Millions of dollars of damage occurred due to flooding, and two deaths were reported.

The highest reported temperature in Canada this week was  $32^{\circ}$  at Toronto International Airport on the 27th, while the lowest was  $-7^{\circ}$  at Mould Bay, N.W.T., on the 29th, 30th and 1st. The greatest weekly precipitation was 86.7 mm at Edmonton International Airport.

NOTE: The data shown in this publication are based on unverified reports from approximately 225 Canadian and 115 northern United States Synoptic stations.



YUKON

Precipitation for the week was near normal over most of the Yukon. Over the extreme north, however, Shingle Point received 34.4 mm and Komakuk Beach, 18.3 mm, well-above normal amounts.

Mean temperatures for the week ranged near normal to just over 1° below normal. The highest recorded temperature for the week was 19° at Mayo on the 31st, while the lowest was -4° at Burwash on the 27th and 29th.

On September 1, the maximum temperature at Old Crow in northern Yukon was 1° and continuous light snow resulted in a depth of 4 cm by the day's end.

NORTHWEST TERRITORIES

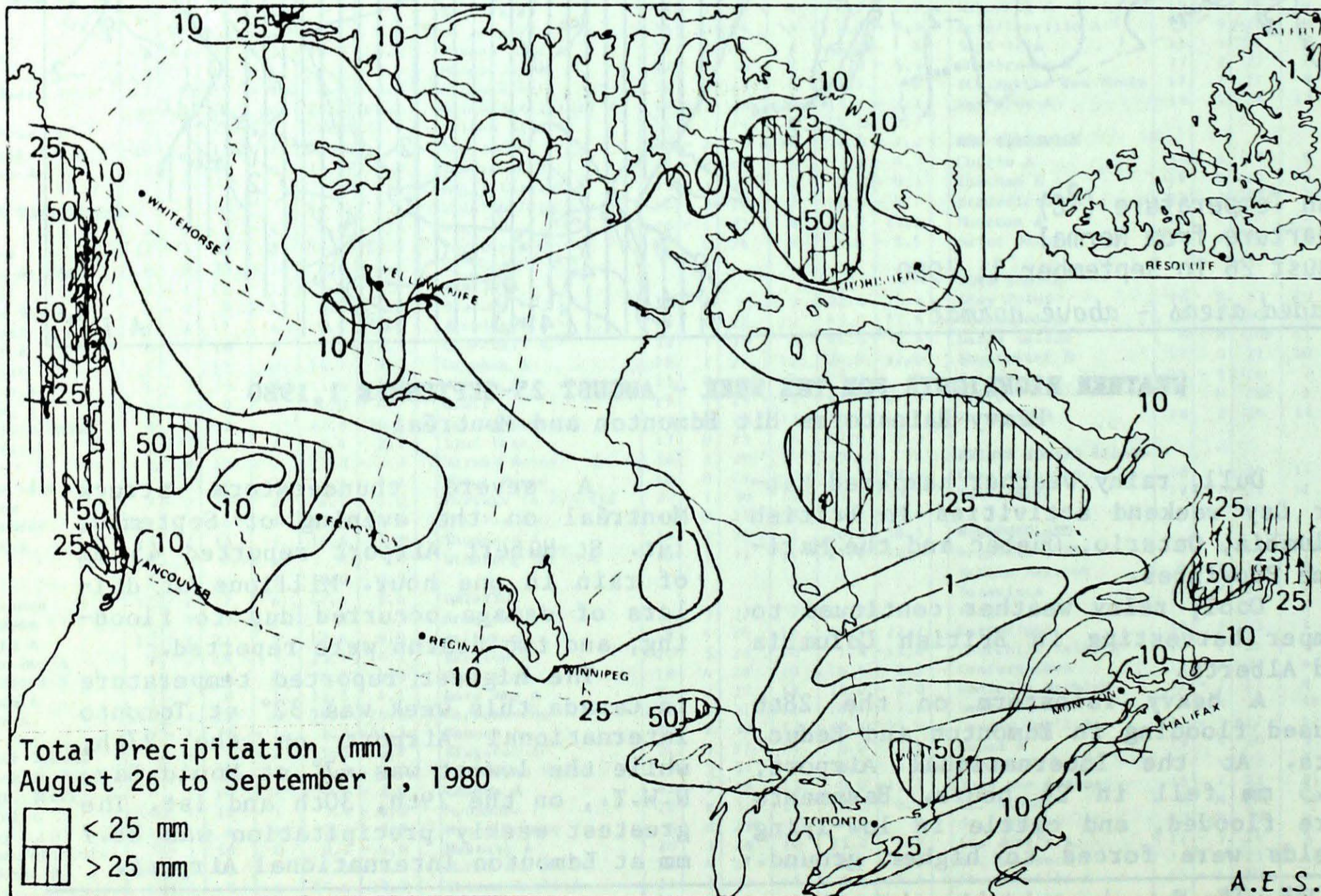
Precipitation was close to normal over most of the Northwest Territories this past week, but it was very wet over the northern District of Keewatin and most of Baffin Island. Hall Beach reported the most, 60.2 mm,

of which 52.6 mm fell on the 27th. Dewar Lakes was close behind with a weekly total of 56.4 mm.

Although mean temperatures for the week were near normal in a few localities, most of the territories was warmer than normal, with much of the eastern archipelago recording departures 2° to 4° above normal. The highest recorded temperature for the week was 23° at Port Burwell on the 26th, while the lowest was -7° at Mould Bay on the 29, 30th and September 1st.

As of September 1st, a light snow cover had formed over the northern Arctic islands. Mould Bay reported 4 cm on the ground.

Ice conditions continue to be better than during the past few years over most of the waters surrounding the archipelago. Three ice-breakers are assisting resupply operations in the area of Rea Point, Resolute and Bathurst Island, where southwest winds are carrying heavy ice out of Viscount Melville Sound. An ice-breaker returning from Eureka is now in Norwegian Bay doing survey work. In





the Beaufort Sea area, a northerly flow is now carrying the pack ice southward. Some ice floes are reported in the drill site areas, with loose ice about 80 km to 90 km to the north and heavy ice 130 km to 140 km away.

#### BRITISH COLUMBIA

Precipitation was well-above normal over many regions of British Columbia this past week, with only a few widely-separated localities reporting below-normal amounts. The greatest weekly total was 62.1 mm at Alert Bay. Some stations in the Cariboo District reported showers or rain on every day of the week. Labour Day, September 1, was a wash-out in many areas. For instance, Vancouver received 45.4 mm on that day, and the all-day rain on the last day of the Pacific National Exhibition prevented record attendance at the fair this year.

Mean temperatures for the week were 1° to 4° below normal, with the greatest departures in the Kootenays. The highest recorded temperature for the week was 27° at Castlegar on the 26th, while the lowest was -1° at Dease Lake on the 27th and 31st. Although some frost was reported from local sites in interior valleys, no damage to crops occurred.

The peach and apple crops in the Okanagan Valley are excellent this year, but in the Castlegar area, the fruit and vegetables are about two weeks later than normal due to the cool August. In this latter area, however, both the quality and quantity are good. The continued cool, showery weather is hampering the harvesting of grain in many regions.

Fort Nelson reported visibility as low as 5 km in smoke over the weekend due to forest fires in the Mackenzie River Valley.

#### PRAIRIE PROVINCES

Precipitation was light over much of the Prairies this past week, with many stations reporting less than 10 mm over the seven-day period. A band of heavy precipitation was recorded across

northern Saskatchewan and central and northern Alberta. The largest amounts occurred in the Edmonton area, where the International Airport recorded 86.7 mm for the week. Of this total, 69.5 mm fell on the 28th.

Mean temperatures for the week were generally about 2° below normal over most of the Prairies, but slightly above-normal averages were reported from northern parts of Saskatchewan and Manitoba. The highest recorded temperature for the week was 27° at Dauphin, Manitoba, on the 28th, while the lowest was -2° at High Level, Alberta, on the 26th and at Edson, Alberta on September 1st.

The heavy rainstorm on the 28th caused flooded basements in Edmonton area and to the south. The town of Leduc and surrounding area was the worst hit area. Cattle were forced to seek higher ground in some low lying fields. At Edmonton International Airport, 83.5 mm of rain fell in a 24-hour period, a new record for August.

The wet weather in central Alberta has hampered harvest operations, and widespread frost may have caused some damage, particularly to late-seeded crops.

#### ONTARIO

Much of northern Ontario reported below-normal precipitation this past week. One major exception was at Thunder Bay, where 67.0 mm of rain fell, mostly on the 29th and 30th. The remainder of the province was wet, and most of this precipitation occurred over the Labour-Day weekend from heavy showers and thundershowers. Windsor reported 83.8 mm over the week, with 50.8 mm occurring on the 31st and 29.8 on September 1st. Kingston had a weekly total of 80.6 mm and Ottawa 75.6 mm. On the 1st, Prince Edward County was hit by a deluge of more than 60 mm of rain in a thirty-minute period.

Mean temperatures for the week were mostly 1° to 3° above normal over southern and central Ontario, but a few localities in the northern part of the province were slightly cooler than normal. The highest recorded temperature



for the week was 32° at Toronto International Airport on the 27th, while the lowest was 2° at Kapuskasing on the 28th.

### QUÉBEC

In general, below-normal precipitation was reported over northern Québec this past week, but the reverse was true over southern regions of the province. The Labour-Day weekend was especially wet. The heaviest weekly rain was 48.9 mm at Poste-de-la-Baleine, of which 41.3 mm occurred on the 30th. Schefferville, Maniwaki and Sherbrooke all reported more than 40 mm over the week.

Mean temperatures for the week ranged from mostly 1° to 3° above normal. The highest recorded temperature for the week was 28° at both Bagotville and Québec on the 26th, while the lowest was -1° at Koartak on September 1st.

Severe thunderstorms were reported in the Abitibi Region on the 30th. Near La Sarre and Amos, hail with diameters as great as 1 cm to 2 cm was reported, along with wind gusts to 70 km/h.

A severe thunderstorm struck the Montréal area on the evening of September 1st, accompanied by heavy rain. Between 7 and 8 p.m., St-Hubert Airport reported 45 mm of rain. Almost the whole of Montréal Island except Verdun and LaSalle reported heavy flooding. Streets were turned into canals, hundreds of vehicles, some with trapped passengers, were caught in flooded underpasses, and thousands of basement apartments were flooded. The north end of St-Laurent Street was particularly badly hit. Man-hole covers were forced open due to the force of overflowing storm sewers. All in all, millions of dollars of damage occurred. A resident of Drolet Street in Montréal died of electrocution when he attempted to unplug an electrical appliance in his flooded basement, while another man on the same street drowned in his basement apartment.

### ATLANTIC PROVINCES

Many parts of the Atlantic Provinces reported below-normal precipitation this past week, but it was wet over southern New Brunswick, much of the Island of Newfoundland and western Labrador. The greatest weekly rainfall was 62.8 mm at Stephenville, Nfld., but more than 40 mm fell at St. John's on the Island, and at Churchill Falls, in Labrador.

Mean temperatures for the week ranged from about 2° above normal in the western Maritimes and western Labrador to about 2° below normal over the eastern Island of Newfoundland. The highest recorded temperature for the week in the Maritimes was 29° at Chatham, N.B., on the 27th, and in Newfoundland and Labrador, 25° at Churchill Falls. The lowest in the Maritimes was 4° at Truro, N.S., on the 30th, and in Newfoundland and Labrador, 2° at St. Albans on the 26th.

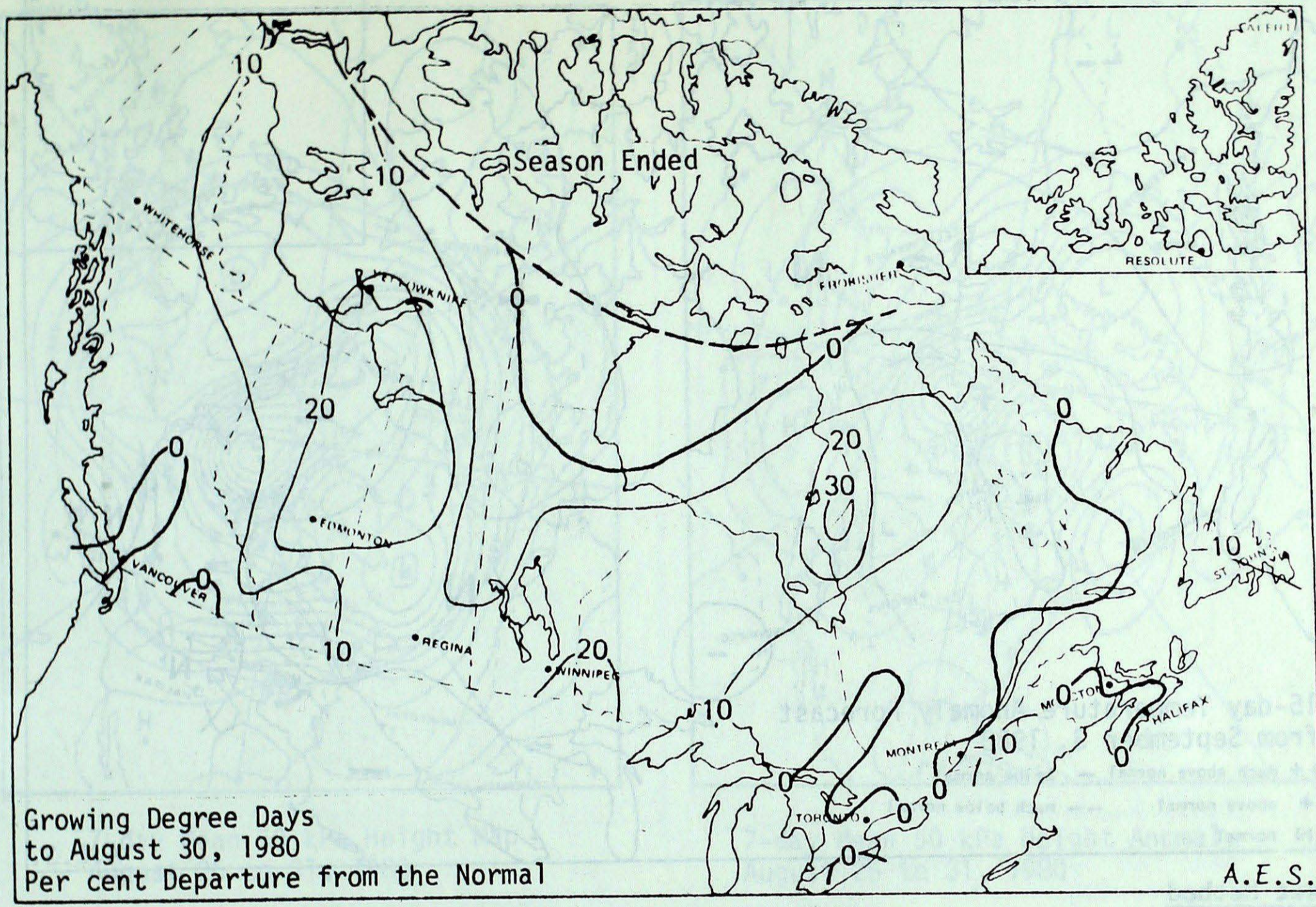
Heavy thunderstorms struck the Halifax area on the afternoon and evening of the 31st. There were power outages and a tractor trailer was damaged by a falling tree.

The grain harvest is going to be slightly less than average in the Maritimes, mainly because of diseases. Recent heat has helped to increase corn size in New Brunswick. The blueberry crop is improving, but will be less than during the last two years because of poor pollination and spring frosts. Unseasonable weather patterns of prolonged July rains and a hot August has resulted in late blueberry varieties ripening before the early varieties. This is very unusual.

The cool, very wet summer has hampered agriculture on the Island of Newfoundland. St. John's reported the least sunny August on record, while Gander was close to a record. Gander had 26 days of measurable rain in August and St. John's 27, both new records. Total monthly precipitation and mean monthly temperature approached high and low record levels, respectively.



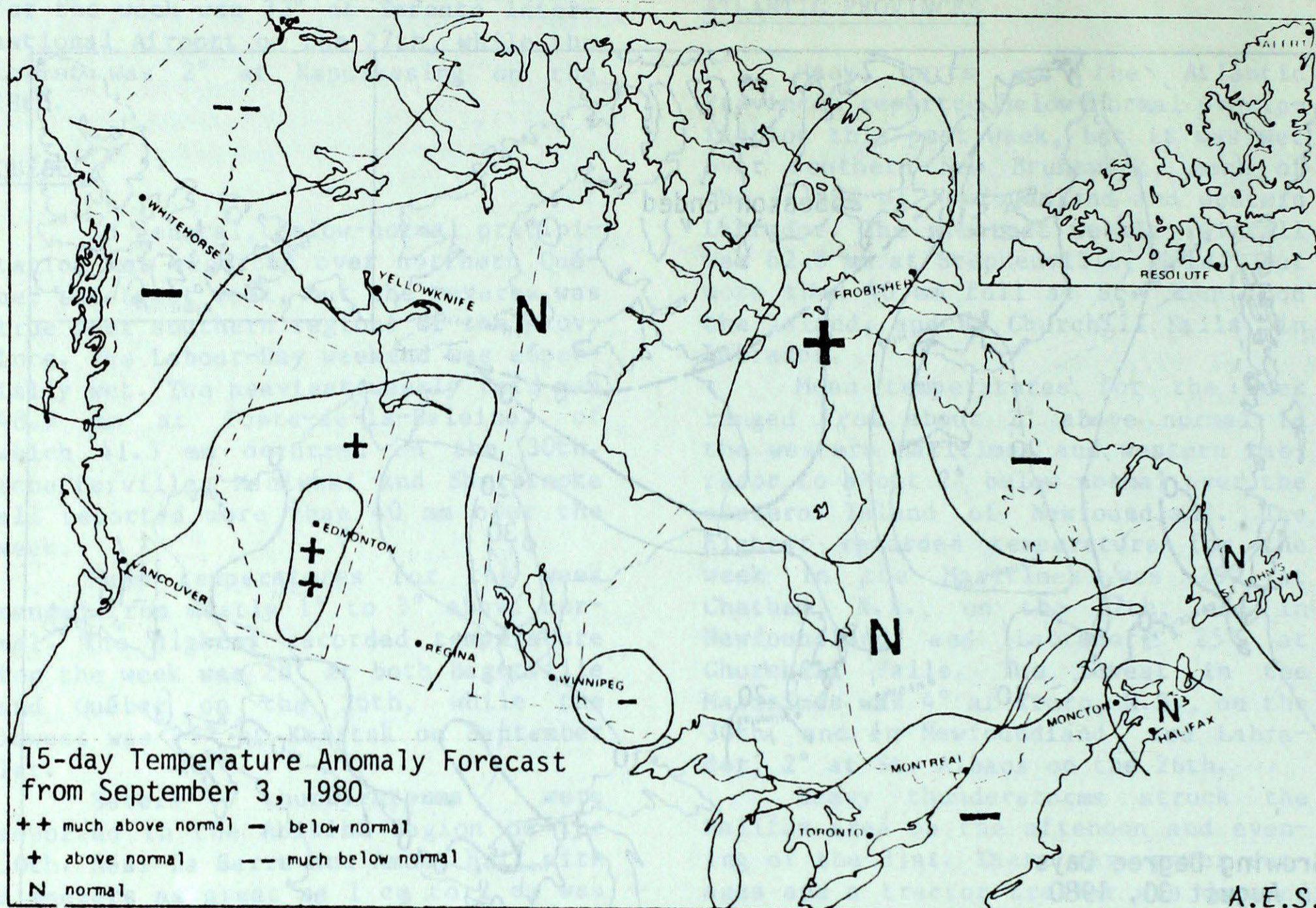
GROWING DEGREE-DAY SUMMARY TO AUGUST 30, 1980



CITY	MONTHLY CUMULATIVE TOTAL	MONTHLY DIFF. FROM 1941-70 NORMAL	SEASONAL TOTAL	SEASONAL DIFF. FROM 1941-70 NORMAL	SEASONAL PERCENT OF NORMAL
Whitehorse	199.0	-23.0	820.6	32.0	104
Penticton	396.0	-33.0	1730.5	74.5	104
Vancouver	346.5	-16.5	1380.0	-66.0	95
Edmonton	275.0	-37.0	1399.0	284.0	125
Calgary	235.0	-74.0	1162.5	96.5	109
Regina	325.0	-65.0	1568.5	241.5	118
Saskatoon	323.0	-52.0	1550.5	240.5	118
Winnipeg	363.5	-47.5	1666.0	254.0	113
Thunder Bay	372.0	26.0	1296.0	177.0	116
Windsor	538.5	47.5	1872.5	0.5	100
Toronto	487.0	36.0	1589.5	-37.5	98
Ottawa	470.0	39.0	1617.0	32.0	102
Montréal	454.5	6.5	1585.5	-46.5	97
Québec	421.0	37.0	1363.5	12.5	101
Fredericton	435.5	43.5	1406.5	53.5	104
Halifax	398.0	10.0	1148.0	-56.0	95
Charlottetown	395.0	8.0	1137.5	-36.5	97
St John's	220.5	-94.5	732.0	-95.0	89



## 15 DAY TEMPERATURE ANOMALY FORECAST

Forecast Method

Analogue technique based on point prediction at 70 Canadian stations.

Temperature Scale

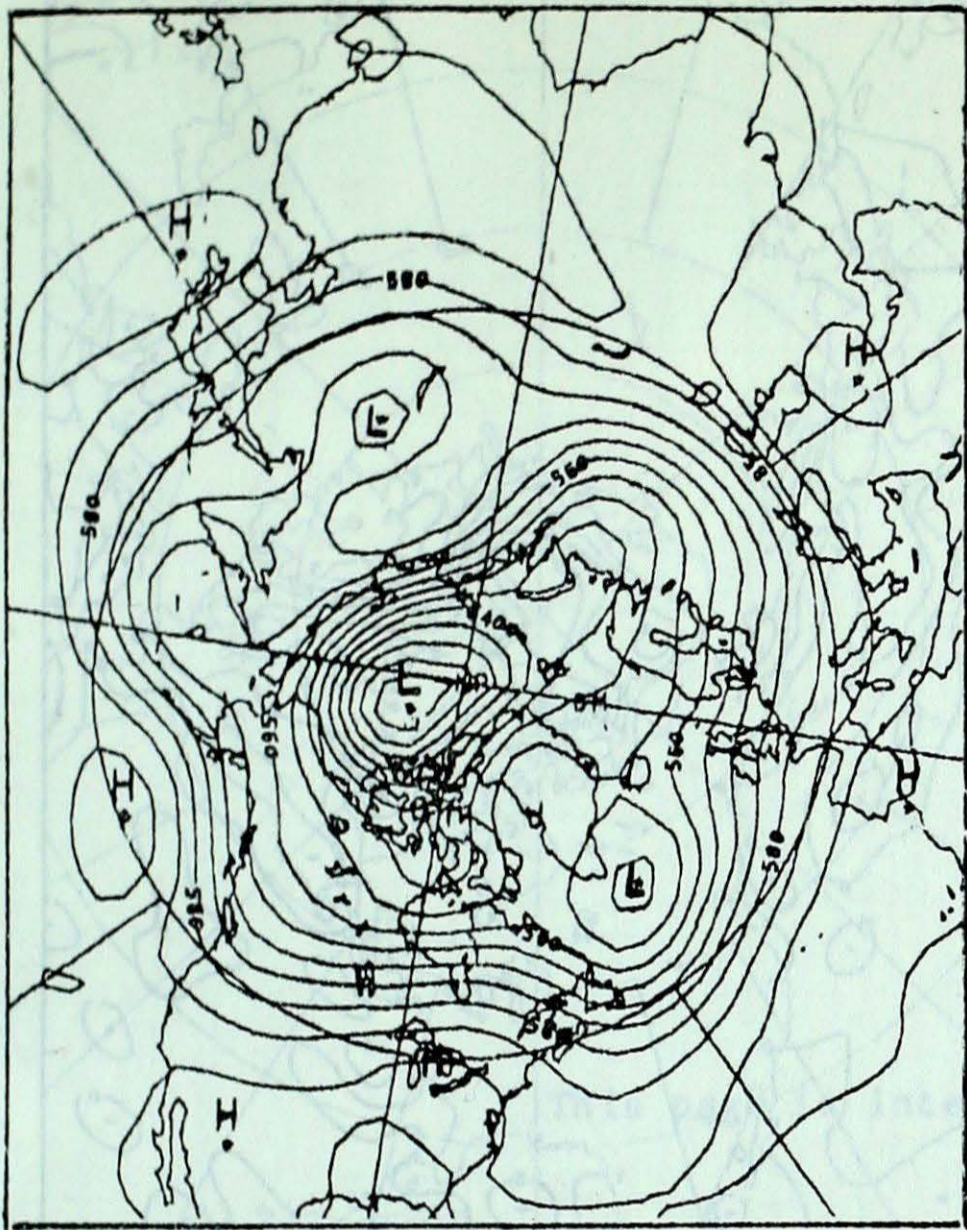
Each temperature class is designed to contain 20% of the historically observed 15 day means pertinent to specific location and time of year:

<u>Station</u>	<u>Current Temperature Anomaly Forecast</u>	
Whitehorse	Below Normal	From 0.5° to 1.6° below Normal
Victoria	Near Normal	Within 0.3° of Normal
Vancouver	Near Normal	Within 0.3° of Normal
Edmonton	Much Above Normal	More than 2.1° above Normal
Regina	Above Normal	From 0.6° to 2.0° above Normal
Winnipeg	Near Normal	Within 0.5° of Normal
Thunder Bay	Near Normal	Within 0.4° of Normal
Toronto	Below Normal	From 0.5° to 1.6° below Normal
Ottawa	Below Normal	From 0.5° to 1.6° below Normal
Montreal	Below Normal	From 0.4° to 1.5° below Normal
Quebec	Below Normal	From 0.4° to 1.4° below Normal
Fredericton	Below Normal	From 0.4° to 1.4° below Normal
Halifax	Near Normal	Within 0.3° of Normal
Charlottetown	Near Normal	Within 0.4° of Normal
St. John's	Near Normal	Within 0.3° of Normal
Goose Bay	Below Normal	From 0.4° to 1.3° below Normal
Frobisher Bay	Above Normal	From 0.3° to 1.2° above Normal
Inuvik	Much Below Normal	More than 2.2° below Normal

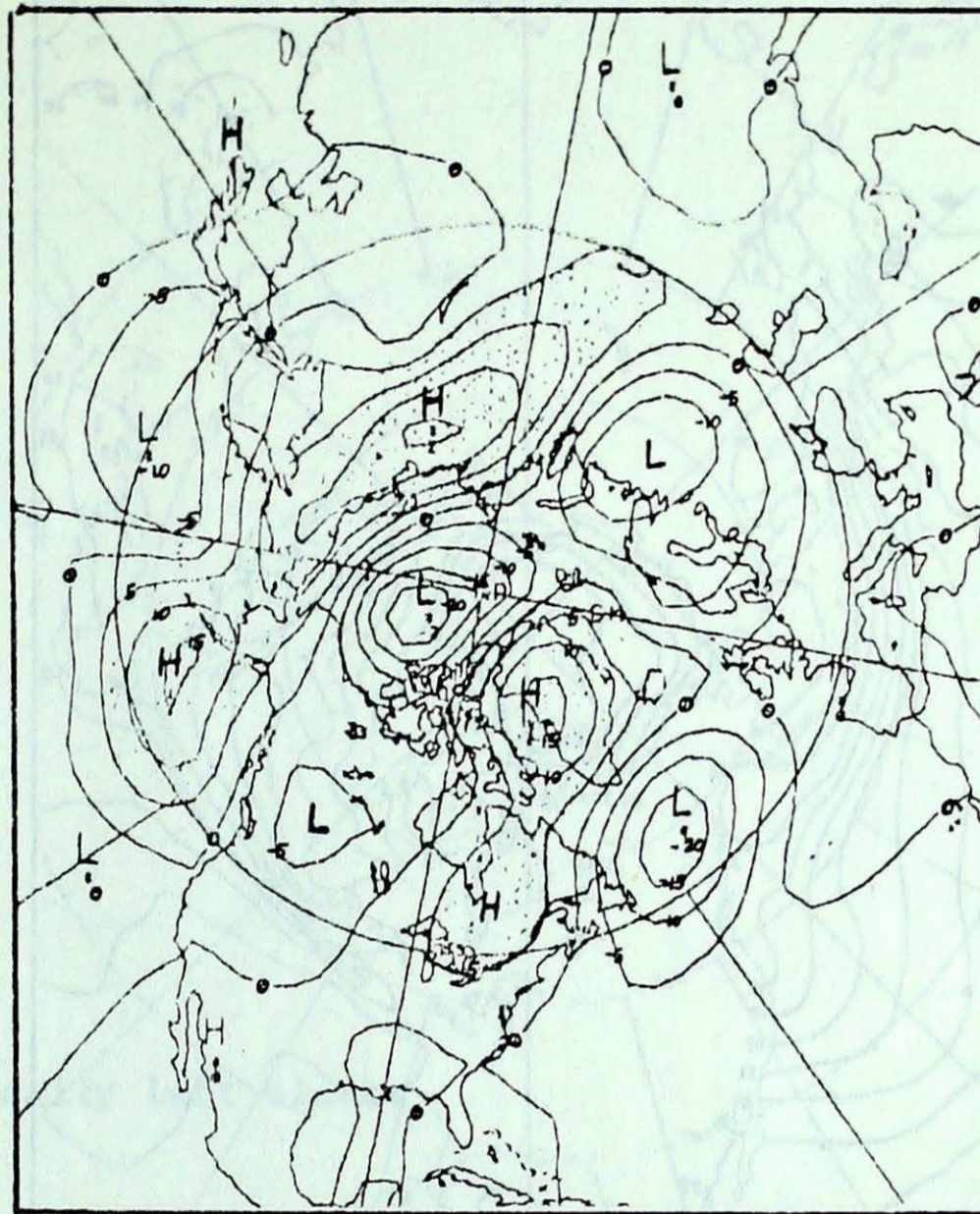
Note: Anomaly denotes departure from the 1949-73 mean.



## Atmospheric Circulation



7-day Mean 50 kPa Height Map  
August 25 to 31, 1980



7-day Mean 50 kPa Height Anomaly  
August 25 to 31, 1980

A major atmospheric trough continued to affect western Canada. The mean Arctic vortex, more than 20 Dam deeper than normal, remained nearly stationary over the Arctic Ocean. Cold Arctic air is now poised ready to penetrate southward across Alaska and the northern Yukon, where some new snow has already been reported.

Temperatures across British Columbia and the Prairie Provinces were as much as 4° below normal in southern areas, quite consistent with negative 50 KPa height anomalies. Saskatchewan and Manitoba were relatively dry. A strong surface high pressure area dominated and drifted eastward early in the period. In its wake a cyclonic disturbance moving in from the Pacific left significant precipitation amounts in British Columbia, central Alberta and northern Québec.

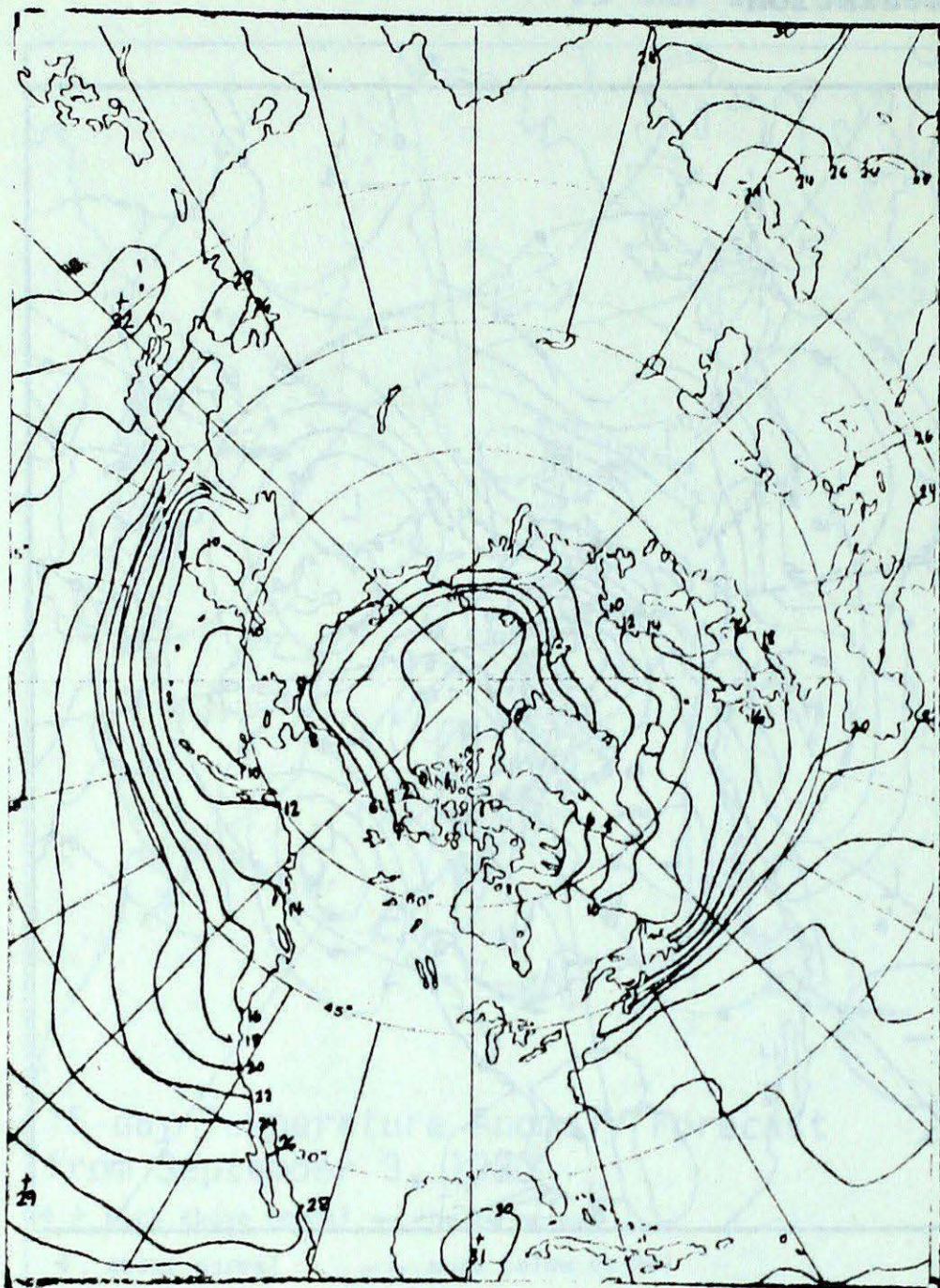
The eastern half of the country continued under the weakening influence of an atmospheric ridge. An associated southwesterly flow pumped

very warm, humid, unstable air into southern areas. A sharp, oscillating frontal zone dividing strong contrasting air masses remained in the vicinity of the Great Lakes Basin and the St. Lawrence River Valley. Unsettled, changeable conditions with numerous showers and thunderstorms, some in the severe category, deposited more than 25 mm of rain. Southwestern and eastern Ontario received more than 50 mm. Mean temperatures were as much as 4° above normal.

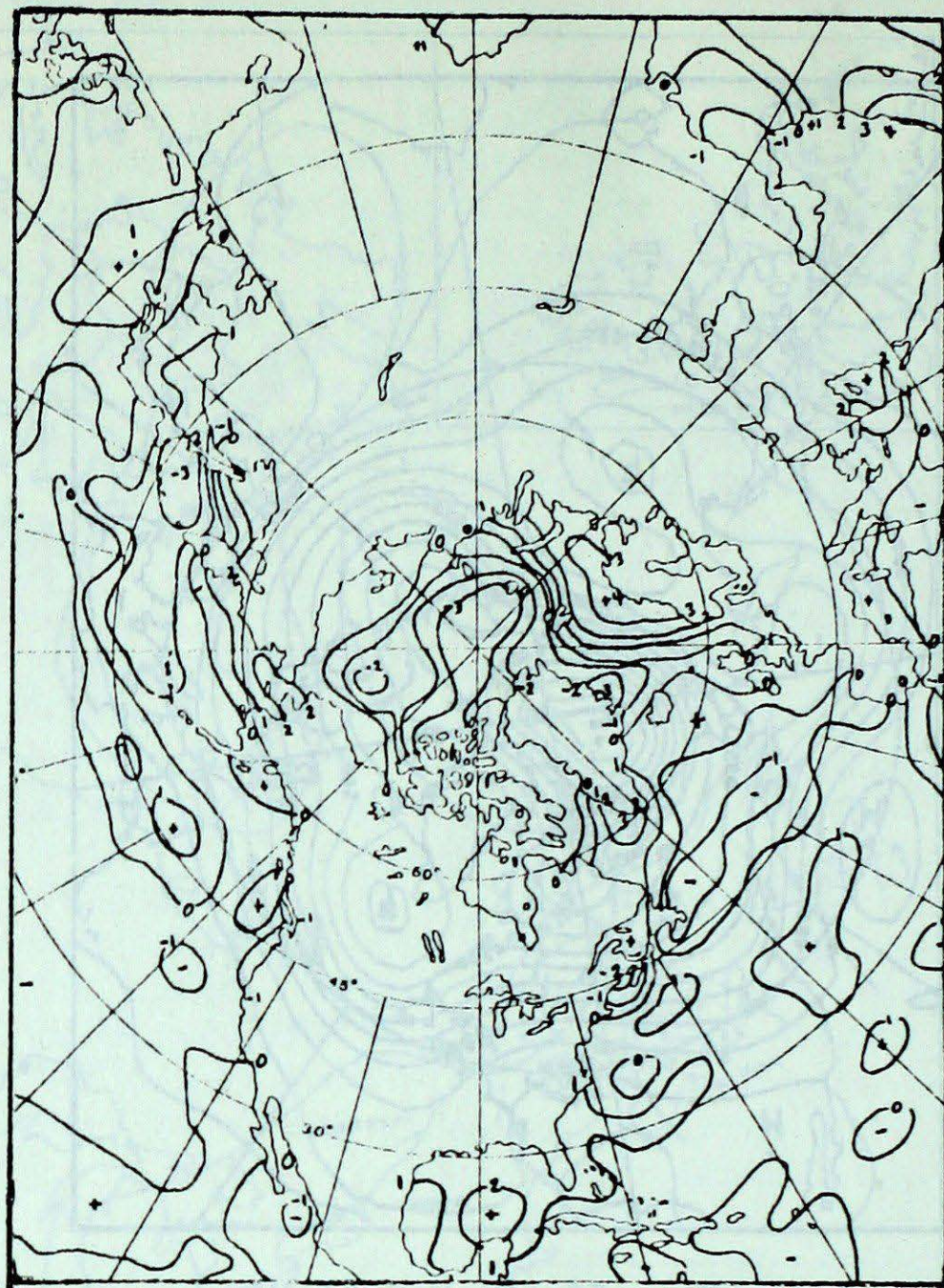
Northern Ontario, central Québec and the Maritimes escaped the relatively heavy rainfalls due to the strong high pressure cell moving eastward from the Canadian Prairies.

The Island of Newfoundland, on the other hand, continued to be cool, cloudy and wet, as in previous weeks. A northerly wind flow both at the surface and aloft, together with low pressure troughs in the vicinity, combined to give above-normal precipitation amounts with below normal mean temperatures.





Mean Sea Surface Temperature  
August, 1980



Sea Surface Temperature Anomalies  
for August 1980

#### CLIMATIC PERSPECTIVES

##### Staff

Editor:	Yves Durocher
Assistant Editor:	Ron Crowe
Technical Staff:	Fred Richardson, Andy Radomski
Graphics and Layout:	Velma MacDonald, Gregory Wilson
Word Processing:	Lillian Methven, Una Ellis

##### Correspondents

Terry Mullane,	(Ice Forecasting Central)
H.E. Wahl,	(Whitehorse)
Bill Prusak,	(Western Region)
Fred Luciw,	(Central Region)
Bryan Smith,	(Ontario Region)
Jacques Miron,	(Quebec Region)
J.F. Amirault,	(Atlantic Region)
Staff of Prince George, Kamloops, Castlegar, Fort Nelson, Penticton and Kelowna weather office	(Pacific Region)

Telephone Inquiries (416) 667-4711/4506



# STATISTICAL RESPECTIVES

No.	Name	Age	Sex	Religion	Marital Status	Education	Occupation	Income	Assets	Liabilities	Net Worth	Life Insurance		Accident Insurance		Health Insurance		Other Insurance	
												Policy No.	Amount	Policy No.	Amount	Policy No.	Amount	Policy No.	Amount
1	John A. Smith	35	M	Catholic	Married	High School	Teacher	\$12,000	\$50,000	\$20,000	\$30,000	101	\$10,000	201	\$5,000	301	\$2,000	401	\$1,000
2	Mary B. Jones	28	F	Protestant	Single	College	Nurse	\$8,000	\$30,000	\$10,000	\$20,000	102	\$8,000	202	\$4,000	302	\$1,500	402	\$800
3	Robert C. Brown	42	M	Jewish	Married	University	Engineer	\$15,000	\$70,000	\$30,000	\$40,000	103	\$15,000	203	\$7,000	303	\$3,000	403	\$1,500
4	Elizabeth D. White	55	F	Methodist	Widowed	High School	Homemaker	\$6,000	\$25,000	\$15,000	\$10,000	104	\$6,000	204	\$3,000	304	\$1,000	404	\$500
5	William E. Green	30	M	Baptist	Single	College	Student	\$4,000	\$15,000	\$5,000	\$10,000	105	\$4,000	205	\$2,000	305	\$800	405	\$400
6	Patricia F. Black	22	F	Anglican	Single	High School	Secretary	\$3,000	\$10,000	\$2,000	\$8,000	106	\$3,000	206	\$1,500	306	\$600	406	\$300
7	James G. Gray	48	M	Presbyterian	Married	University	Lawyer	\$18,000	\$80,000	\$40,000	\$40,000	107	\$18,000	207	\$9,000	307	\$4,000	407	\$2,000
8	Susan H. King	38	F	Quaker	Married	College	Accountant	\$10,000	\$40,000	\$15,000	\$25,000	108	\$10,000	208	\$5,000	308	\$2,000	408	\$1,000
9	Richard I. Lee	52	M	Episcopal	Widowed	High School	Retired	\$7,000	\$28,000	\$18,000	\$10,000	109	\$7,000	209	\$3,500	309	\$1,200	409	\$600
10	Barbara J. Scott	25	F	Protestant	Single	College	Teacher	\$5,000	\$18,000	\$3,000	\$15,000	110	\$5,000	210	\$2,500	310	\$900	410	\$450

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TEMPERATURE AND PRECIPITATION DATA FOR THE WEEK ENDING 0600 G.M.T. SEPTEMBER 2, 1980

Table with columns for Station, Temperature (°C) (Average, Departure from Normal, Extreme Maximum, Extreme Minimum, Total), and Precip. (mm) (Departure from Normal, Total). It is organized into three main sections: BRITISH COLUMBIA, ALBERTA, and SASKATCHEWAN, followed by YUKON, NORTHWEST TERRITORIES, MANITOBA, ONTARIO, QUÉBEC, NEW BRUNSWICK, PRINCE EDWARD ISLAND, and NEWFOUNDLAND.

P - extreme value based on less than 7 days X - no normal due to short period M - not available at press time