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VOL 2 ISS 4  
CLIMATIC PERSPECTIVES

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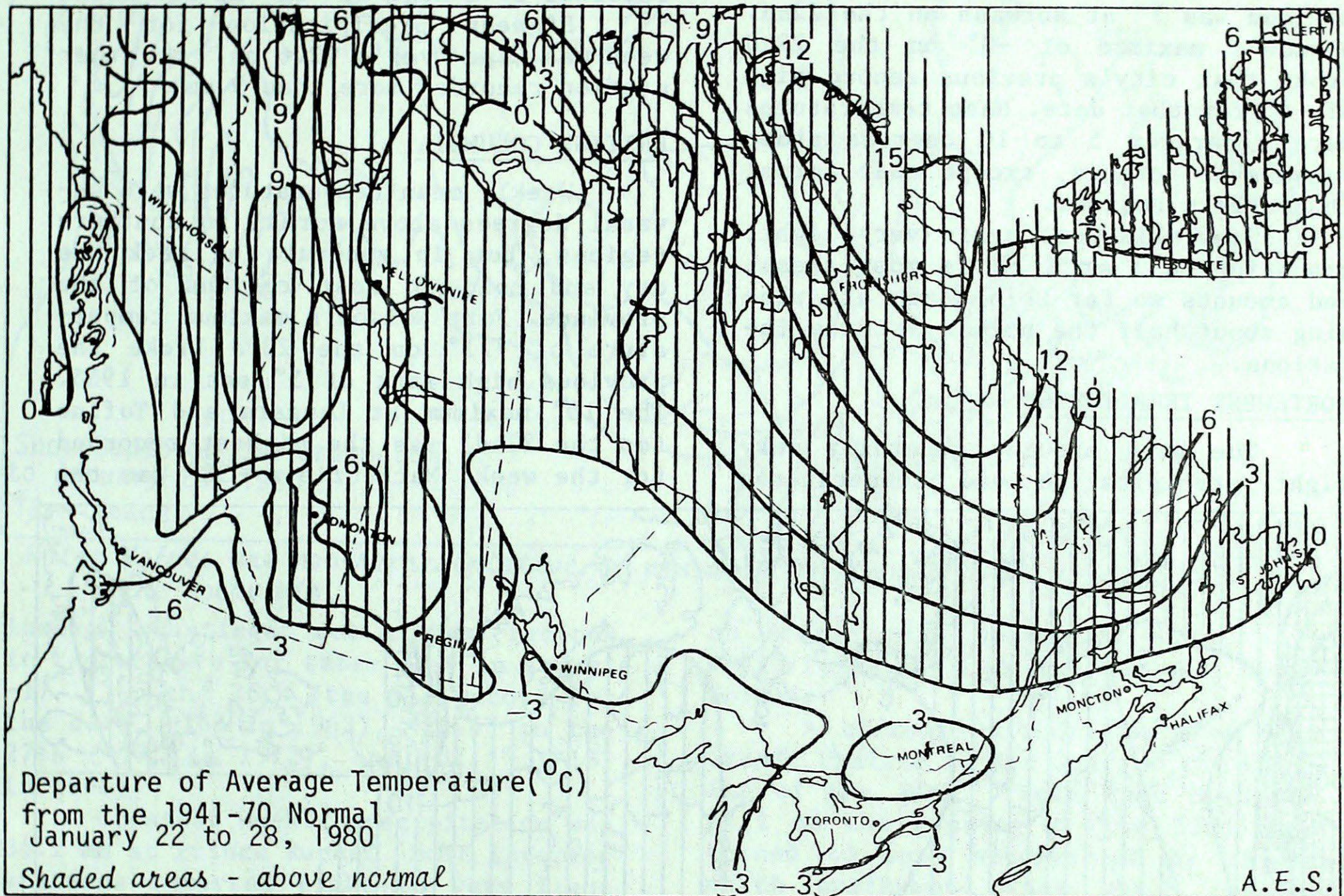
THE CANADIAN CLIMATE CENTRE  
ATMOSPHERIC ENVIRONMENT SERVICE,  
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## NON-CIRCULATING

FEBRUARY 1, 1980

(Aussi disponible en français)

VOL. 2 NO. 4



### WEATHER HIGHLIGHTS FOR THE WEEK - JANUARY 22 - 28, 1980

#### Fierce Storm Strikes the Atlantic Provinces

The record lowest pressure (corrected to sea level) in Canada, 94.02 kPa at St. Anthony on January 20, 1977 was nearly broken at the same station on January 25th, as an exceptionally severe storm savaged the Atlantic Provinces for three days; St. Anthony's pressure fell to 94.22 kPa. Power lines, roads and airline schedules were affected throughout the region by strong winds and snowfalls.

Temperatures in the Yukon and Baffin Island were more than  $10^{\circ}$  and  $17^{\circ}$  above normal, respectively, while over southeastern British Columbia and parts of Ontario temperatures were more than  $3^{\circ}$  below normal. Highest maximum was  $12^{\circ}$  at Rocky Mountain House, Alberta, on the 22nd; lowest minimum was  $-45^{\circ}$  at Shepherd's Bay on the same day.

Precipitation totalled 90.2 mm at Cape Dyer, Baffin Island.

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



YUKON

Arctic air re-established its grip on the Yukon during the week after the mild spell of the previous week. Due to the presence of warm air aloft, temperatures did not fall nearly as low as in the cold spell of early January. The lowest temperature of  $-44^{\circ}$  for the week was recorded at Ross River, over the January 26-27 weekend. The highest maximum was  $7^{\circ}$  at Burwash on the 22nd. Dawson's maximum of  $-3^{\circ}$  on the 22nd broke that city's previous record high of  $-4^{\circ}$  for that date. Mean temperatures were generally 5 to 10 degrees above seasonable normals, except near normal in southern regions.

Snowfalls were again very light, amounting to 1 or 2 cm in most areas, and amounts so far this month are running about half the normal at many locations.

NORTHWEST TERRITORIES

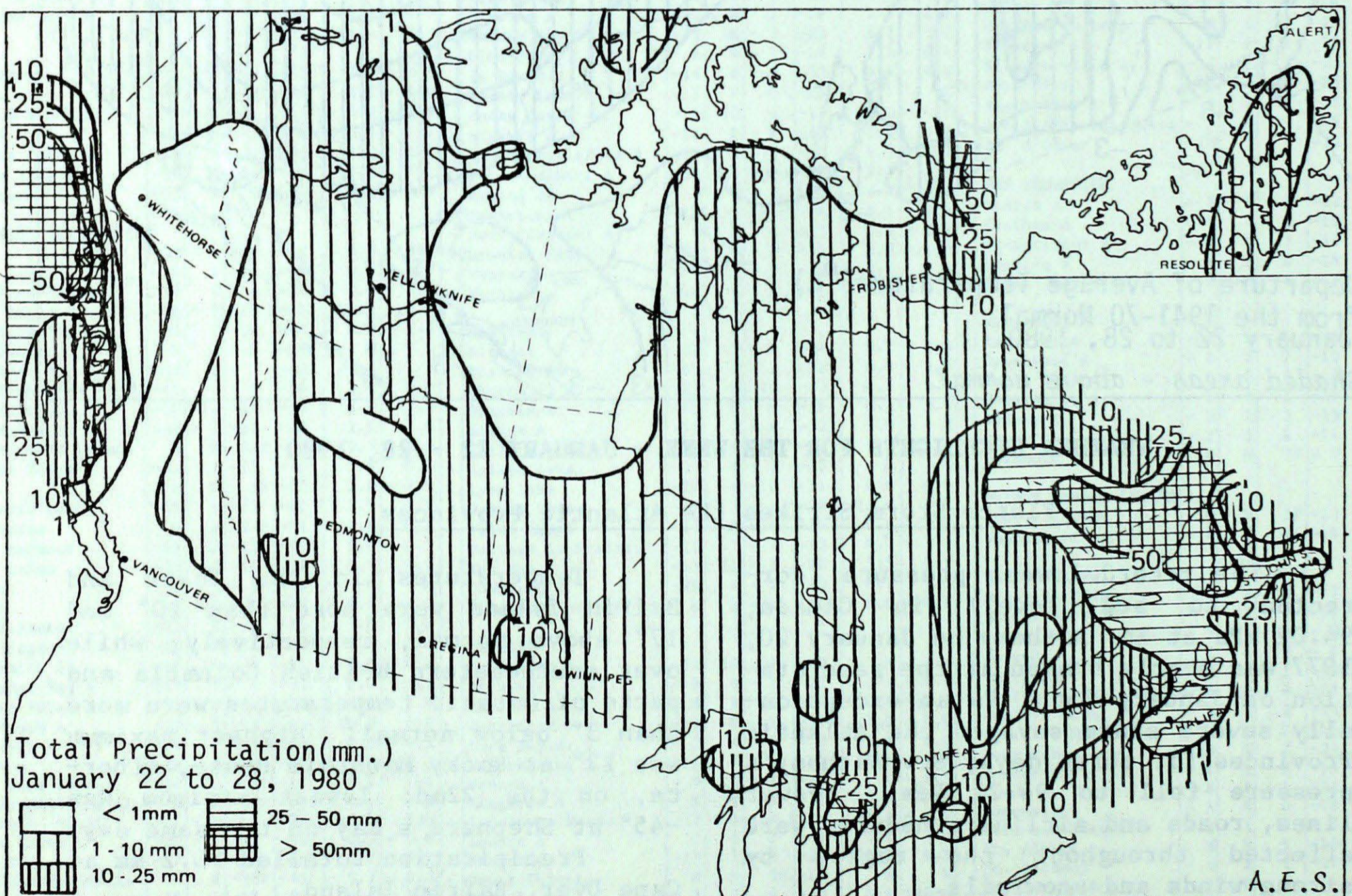
The week brought generally very light precipitation and temperatures

that were more than  $15^{\circ}$  above normal over Baffin Island. However, temperatures that are "normal" in the Northwest Territories in January are still on the low side of the thermometer scale. Shepherd Bay had a minimum of  $-45^{\circ}$  on both the 22nd and 23rd; Pond Inlet's  $2^{\circ}$  on the 23rd, the highest temperature of the week, followed a high of  $-20^{\circ}$  the day before, and was followed by a high of  $-22^{\circ}$  on the 27th.

Highest precipitation for the week was Cape Dyer's 92.6 mm. No other station recorded more than 9 mm.

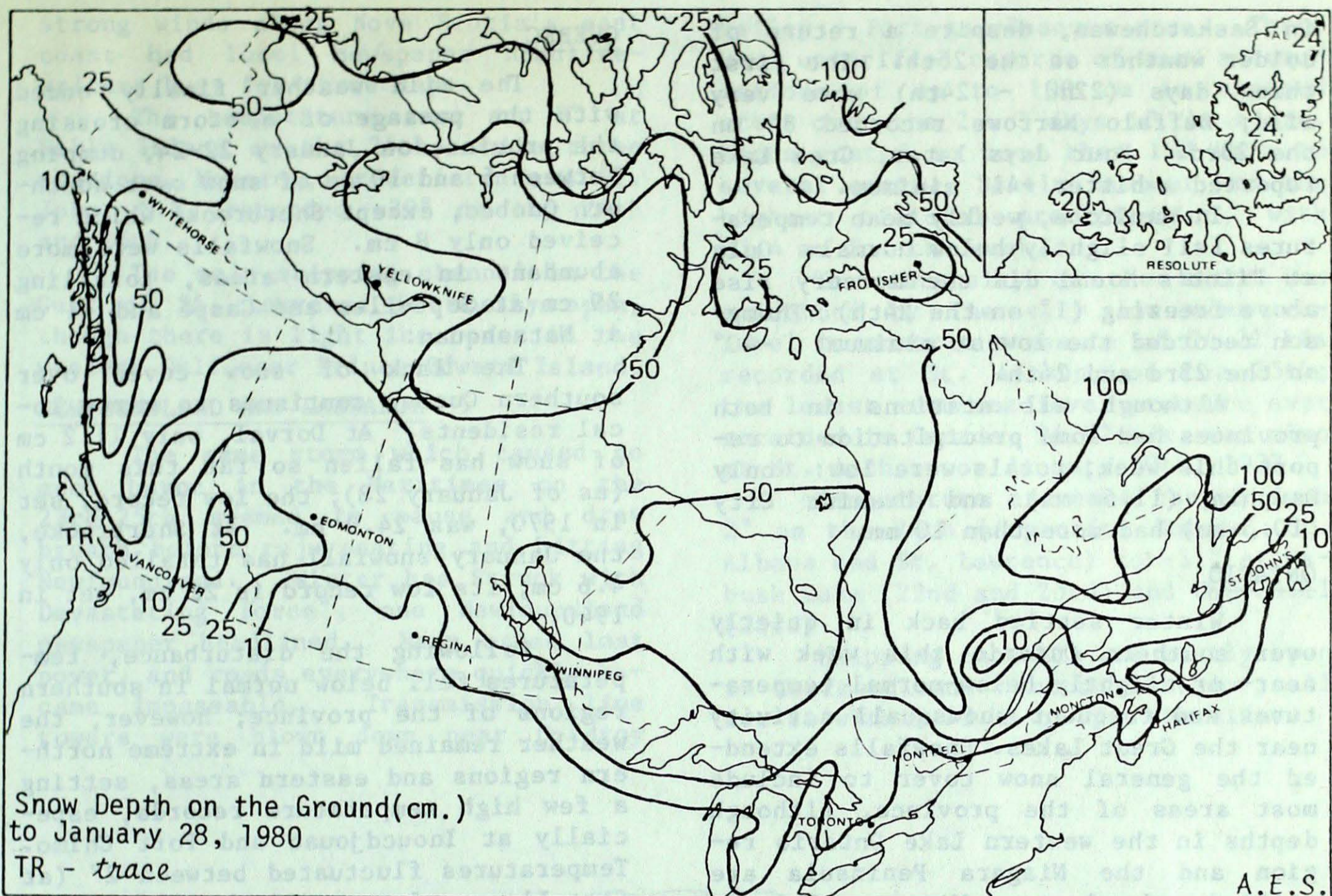
BRITISH COLUMBIA

Weekly mean temperatures were several degrees above normal in southern regions, but in general the week was dry and cold in most regions of the province. Fort Nelson's maximum temperature of  $7.1^{\circ}$  on the 23rd broke the previous high mark of  $5^{\circ}$  set in 1955. The  $10^{\circ}$  maximum at Langara and Tofino (on the 22nd) was the highest recorded for the week; Mackenzie's  $-38^{\circ}$  was the



Note: Values are non-representative in non-uniform topographical regions such as the Rocky Mts.





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lowest. Castlegar set minimum records in temperature for three days in a row:  $-17.1^{\circ}$  on the 26th (the old record for the date,  $-16^{\circ}$  in 1963),  $-21.4^{\circ}$  on the 27th ( $-17^{\circ}$  in 1972), and  $-21.5^{\circ}$  ( $-18^{\circ}$  in 1968).

Greatest weekly precipitation was 34.2 mm at Prince Rupert. Most interior stations reported light to very light snowfalls, and skiing conditions at, for example, Prince George continue "fair to poor". On the other side of the coin (the good news), driving conditions on the Alaska Highway are reported excellent!

Eight stations had bright sunshine totalling more than 35 hours. The leader was Cranbrook (40.3 hours).

#### ALBERTA

The unseasonable mild spell came to an abrupt halt on Thursday with the passage of a vigorous Arctic outbreak. Eight stations on the 22nd and three on the 23rd established or tied record daily maximum temperatures. As of the 28th most districts, still gripped by

an Arctic high pressure system, were still reporting temperatures well below normal.

A blizzard struck the area from Grande Prairie to Red Deer on the morning of the 24th. Rain that began to fall on the evening of the 23rd soon turned to snow accompanied by strong north northwest winds which reduced visibilities to near zero and turned highways to glare sheets of ice. A number of highways were closed on the 24th.

Precipitation amounts were variable and a mixture of rain and snow occurred throughout most districts. The heaviest precipitation amounts were reported in the Red Deer/Rocky Mountain House areas where the weekly total precipitation amounts exceeded 10 millimetres. The Calgary office reported the first thunderstorm of the year in the early morning hours on January 24.

#### SASKATCHEWAN AND MANITOBA

The 7-day mean temperatures stayed a few degrees above normal this week



in Saskatchewan, despite a return of colder weather on the 25th. The first three days (22nd - 24th) were very mild; Buffalo Narrows recorded 8° on the 23rd. Four days later, Cree Lake reported a bitter -41° minimum.

In Manitoba, weekly mean temperatures fell slightly below normal. Only at Pilot's Mound did the mercury rise above freezing (1° on the 24th). Thompson recorded the lowest minimum: -40° on the 23rd and 24th.

Although all stations in both provinces had some precipitation to report this week, totals were low: only Dauphin (11.5 mm) and Uranium City (10.5 mm) had more than 10 mm.

#### ONTARIO

Winter settled back in quietly over southern Ontario this week with near- or slightly below-normal temperatures and frequent snowsquall activity near the Great Lakes. Snowfalls extended the general snow cover to include most areas of the province, although depths in the western Lake Ontario region and the Niagara Peninsula are still barely 1 cm. Wiarton, between Georgian Bay and Lake Huron, had 28.2 mm of precipitation for the week.

The return to winter was good news for all outdoor sport enthusiasts, especially the "winter carnival" operators and organizers. Virtually every weekend is marked by winter carnivals in one town or another across the province so mid-winter lack of snow and ice was creating numerous problems. Also off to a late start are the "ice-fishing" people. Ontario Ministry of Natural Resources reported that only once in the last 50 years (1937) was Lake Simcoe unfit for ice fishing over the winter. To the Ministry's satisfaction, ice conditions are now looking good.

In the Great Lakes, ice conditions are several weeks behind schedule. Ice is beginning to form in western Lake Erie, southern Lake Huron, and central Georgian Bay. Lake Ontario is mostly open, while some shore ice is reported on Lake Superior.

Temperature extremes ranged from 2° at Windsor and Trenton (on the 22nd) to -44° at Armstrong and Geraldton (on the 24th).

#### QUEBEC

The mild weather finally ended with the passage of a storm crossing the province on January 22-24, dumping between 5 and 10 cm of snow over southern Quebec, except Sherbrooke which received only 8 cm. Snowfalls were more abundant in eastern areas, totalling 29 cm at Sept-Iles and Gaspé and 41 cm at Natashquan.

The lack of snow cover over southern Quebec continues to worry local residents. At Dorval, only 11.2 cm of snow has fallen so far this month (as of January 28); the low record, set in 1970, was 24.9 cm. At Sherbrooke, the January snowfall has totalled only 4.6 cm; its low record is 22 cm, set in 1940.

Following the disturbance, temperatures fell below normal in southern regions of the province; however, the weather remained mild in extreme northern regions and eastern areas, setting a few high temperature records, especially at Inoucdjouac and Fort Chimo. Temperatures fluctuated between 2° (at Sept-Iles on January 25th) and -32° (at Poste-de-la-Baleine on the 23rd).

A newspaper from the Trois-Rivières area, "le Nouvelliste", reported that some farmers from the Yamachiche area harvested oats around mid-January, an unheard-of happening as far as anyone can remember. This harvest should have been completed in the fall but heavy rainfalls at that time had left the fields too wet for farm machinery to go onto.

#### MARITIME PROVINCES

A fierce storm swept through the Maritimes during the 23rd - 25th, leaving behind a variety of emotions. Driveway-shovelling homeowners were exhausted, stumping politicians and airline schedules were frustrated, utility repairmen were overworked, and skiers and snowmobilers were delighted. Upwards of 22 cm of snow, followed by heavy rain and howling winds, combined to make driving conditions extremely dangerous in spots. Sydney, N.S., recorded 40.6 mm in 24 hours (on the 23rd), out of its weekly total of 48.2 mm. The fog, snow, sleet, rain and



strong winds along Nova Scotia's east coast had local newspaper headline-writers busy for three days.

The temperature rose to 8° at Sable Island on the 24th, while three stations, Moncton, Fredericton and St. John, N.B. recorded -20° on the 24th and 25th.

The main shipping channel in the Gulf of St. Lawrence is mostly open, though there is light ice cover in the western Gulf near Prince Edward Island.

#### NEWFOUNDLAND AND LABRADOR

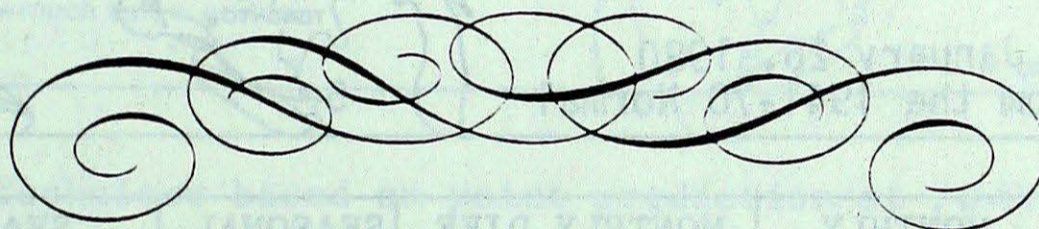
The same storm which caused so much havoc in the Maritimes on the 23rd-25th seemed to pause and draw breath before rejuvenating and hitting Newfoundland. "Winter has Struck with Devastating Force", one Newfoundland newspaper headlined. Many areas lost power, and roads everywhere quickly became impassable. Transmission line towers were blown down near Cordroy

Valley - Port-Aux-Basques area. There were unverified reports of snow accumulations of up to 100 cm in exposed areas over the 2 - 3 days of the storm. Winds gusted to more than 100 km/h in several spots. Battle Harbour had the highest official precipitation, with 83.4 mm for the week.

The intensity of the storm was evidenced by the very low mean-sea-level barometric pressure of 94.22 kPa recorded at St. Anthony on the 25th; the lowest mean-sea-level pressure ever recorded in Canada, 94.02 kPa, was also at St. Anthony on January 20th, 1977.

Temperature extremes ranged from 2° on the 24th (Argentia, Burgeo, St. Albans and St. Lawrence) to -31° at Wabush Lake (22nd and 23rd) and Churchill (23rd).

Shipping channels are mostly open in Newfoundland. Around Labrador, all ice is within 75 km of the shoreline.



#### ON THIS DATE ...

.....January 19-20, 1935, extremely low temperatures were recorded in Vancouver and Victoria which resulted in fuel shortages and frozen water supplies. Temperatures as low as -16°C at Vancouver were followed by 44 cm of snow on the 20th. Many roads were impassable for days. A mild spell and rain followed causing the roof of the Forum, among others, to collapse in Vancouver. Weatherwise, the winter of 1934-1935 was one of the worst on record throughout southern British Columbia, but especially at Vancouver and Victoria.

.....January 23, 1935, the lowest temperature ever officially reported from

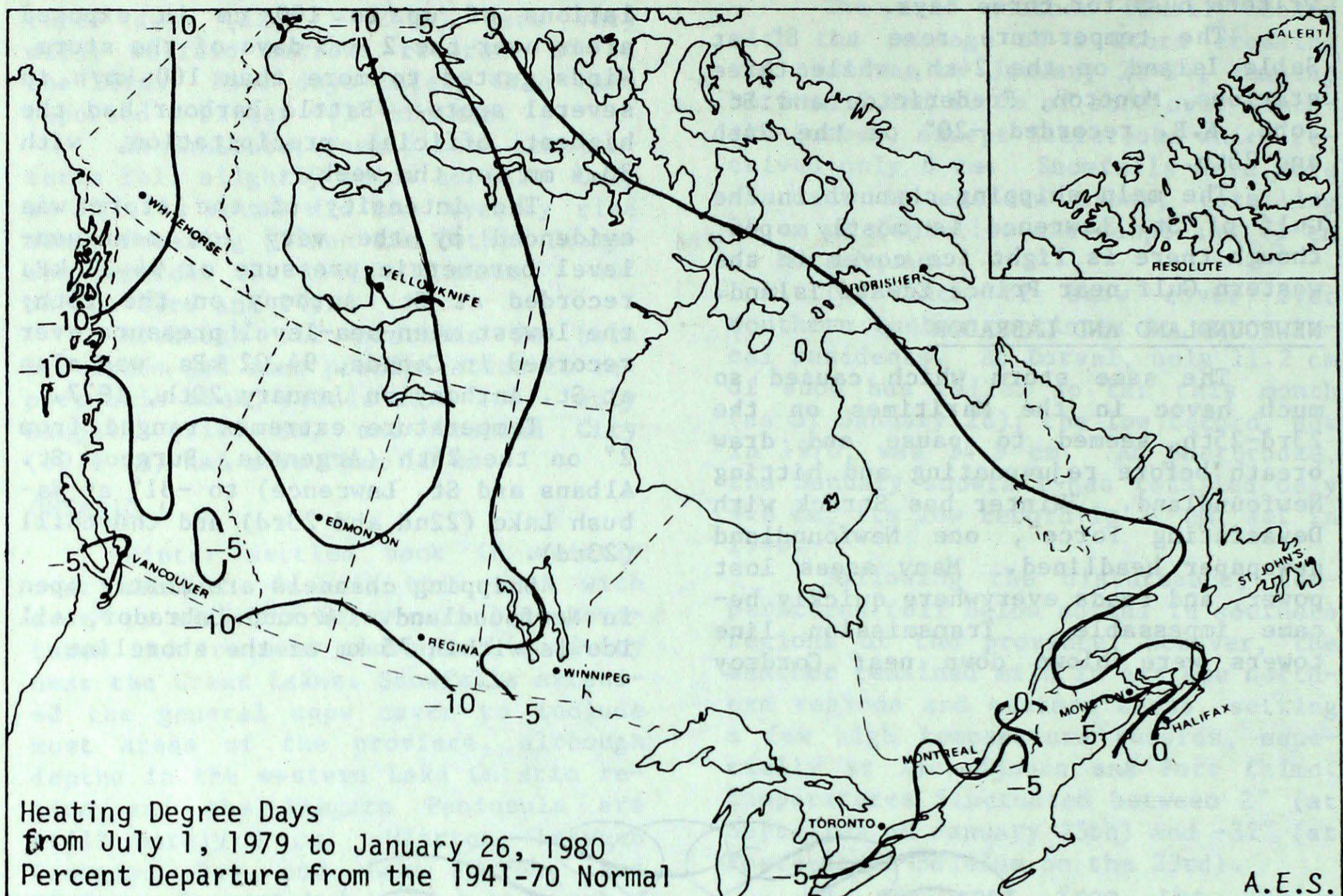
any station in eastern Canada, -58°C, occurred at Iroquois Falls, Ontario.

.....January 24, 1958, the temperature at Alert, N.W.T., rose to the freezing point during an abnormally mild spell in the Canadian Arctic. Maximum temperatures at Alert (0°C), Eureka (-1°C), Isachsen (-4°C) and Resolute (-5°C), were each higher than any temperature ever reported previously during the six months from November to April inclusive.

.....January 27, 1962, during the onset of a Chinook at Pincher Creek, Alberta, the temperature rose from -29°C at midnight to 3°C at 1 a.m.



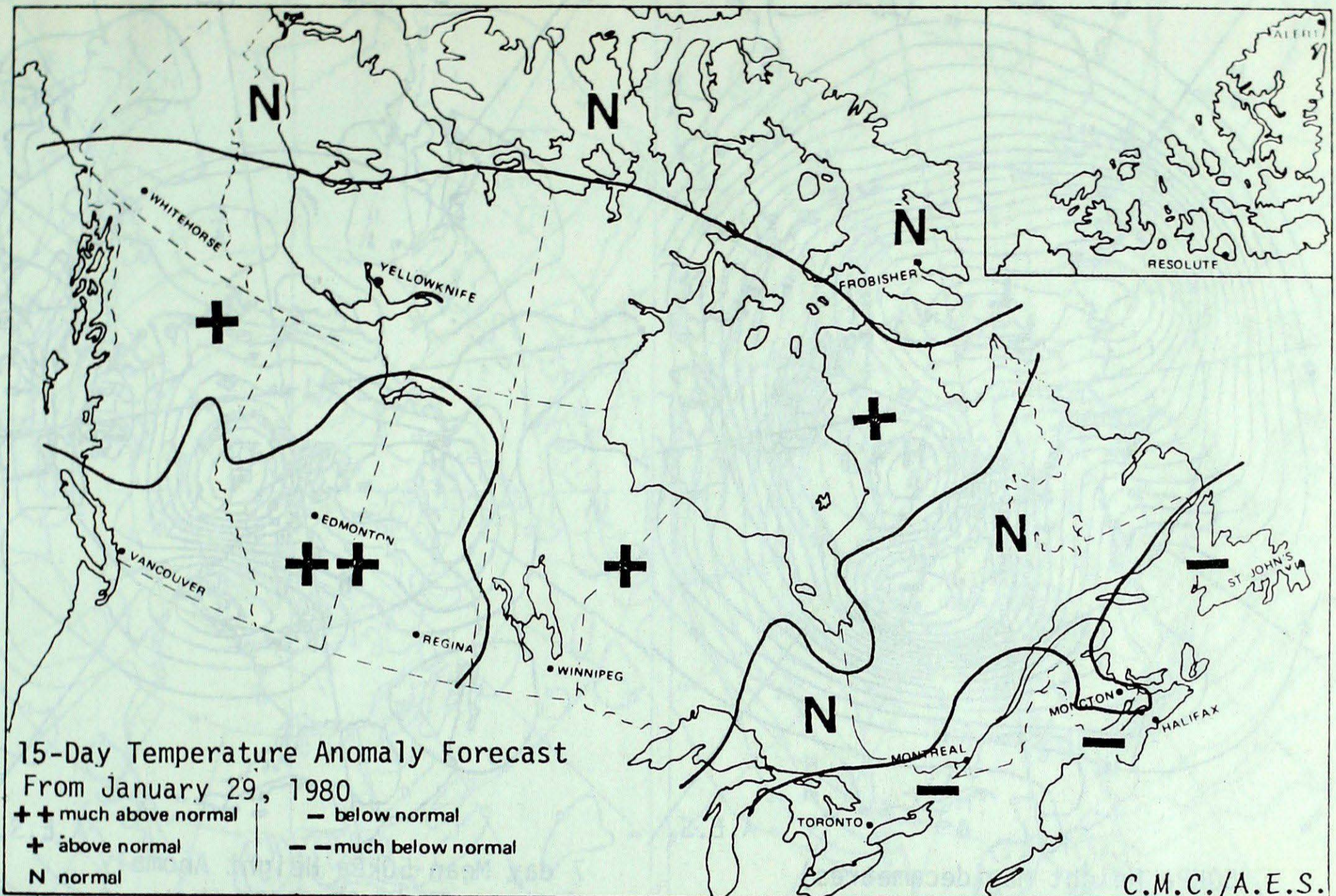
## HEATING DEGREE-DAY SUMMARY TO JANUARY 26, 1980



CITY	MONTHLY CUMULATIVE TOTAL	MONTHLY DIFF. FROM 1941-70 NORMAL	SEASONAL TOTAL	SEASONAL DIFF. FROM 1941-70 NORMAL	SEASONAL PERCENT OF NORMAL
Resolute	1270.0	-37.0	6804.0	168.0	103
Inuvik	1230.5	-30.5	4710.5	-767.5	86
Whitehorse	1017.5	52.5	3731.5	-238.5	94
Vancouver	423.5	23.5	1561.0	-80.0	95
Edmonton	821.5	-32.5	2727.0	-415.0	87
Calgary	783.0	34.0	2672.5	-254.5	91
Regina	869.0	-45.0	2954.0	-283.0	91
Winnipeg	927.0	-9.0	3137.5	-45.5	99
Thunder Bay	783.5	-68.5	2945.5	-108.5	96
Windsor	541.0	-35.0	1793.0	-91.0	95
Toronto	579.0	-51.0	2049.0	-67.0	97
Ottawa	683.5	-70.5	2368.5	-131.5	95
Montreal	662.5	-57.5	2297.5	-60.5	97
Quebec	751.0	-13.0	2678.5	4.5	100
Saint John, N.B.	634.0	-21.0	2269.0	-138.0	94
Halifax	579.0	18.0	1981.0	13.0	101
Charlottetown	638.0	1.0	2212.5	-21.5	99
St. John's, Nfld.	607.0	51.0	2362.5	62.5	103



## 15 DAY TEMPERATURE ANOMALY FORECAST

Forecast Method

Analogue technique based on point prediction at 70 Canadian stations.

Temperature Scale

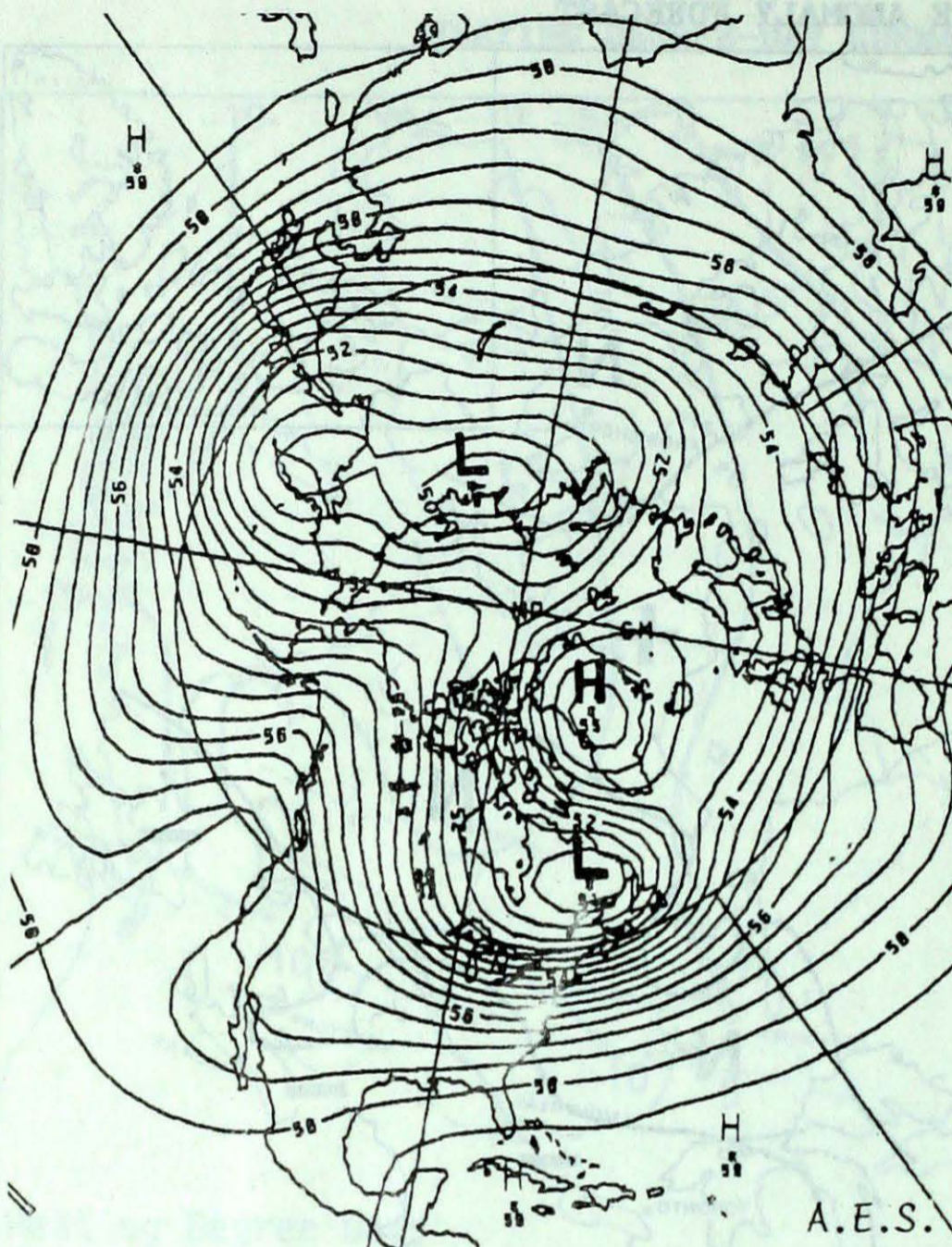
Each temperature class is designed to contain 20% of the historically observed 15 day means pertinent to specific location and time of year:

<u>Station</u>	<u>Current Temperature Anomaly (<math>\Delta T</math>) Forecast</u>
Whitehorse	Above Normal (+1.6°C < $\Delta T$ <+5.4°C)
Victoria	Much Above Normal (+1.8°C < $\Delta T$ )
Vancouver	Much Above Normal (+2.0°C < $\Delta T$ )
Edmonton	Much Above Normal (+4.6°C < $\Delta T$ )
Regina	Much Above Normal (+4.2°C < $\Delta T$ )
Winnipeg	Above Normal (+1.1°C < $\Delta T$ <+3.8°C)
Thunder Bay	Above Normal (+0.9°C < $\Delta T$ <+3.0°C)
Toronto	Below Normal (-2.3°C < $\Delta T$ <-0.7°C)
Ottawa	Below Normal (-2.7°C < $\Delta T$ <-0.8°C)
Montreal	Below Normal (-2.7°C < $\Delta T$ <-0.8°C)
Quebec	Below Normal (-2.9°C < $\Delta T$ <-0.8°C)
Fredericton	Below Normal (-2.9°C < $\Delta T$ <-0.8°C)
Halifax	Below Normal (-2.2°C < $\Delta T$ <-0.7°C)
Charlottetown	Below Normal (-2.6°C < $\Delta T$ <-0.8°C)
St. John's	Below Normal (-2.3°C < $\Delta T$ <-0.7°C)
Goose Bay	Near Normal (-1.3°C < $\Delta T$ <+1.3°C)
Frobisher Bay	Near Normal (-1.5°C < $\Delta T$ <+1.5°C)
Inuvik	Near Normal (-1.3°C < $\Delta T$ <+1.3°C)

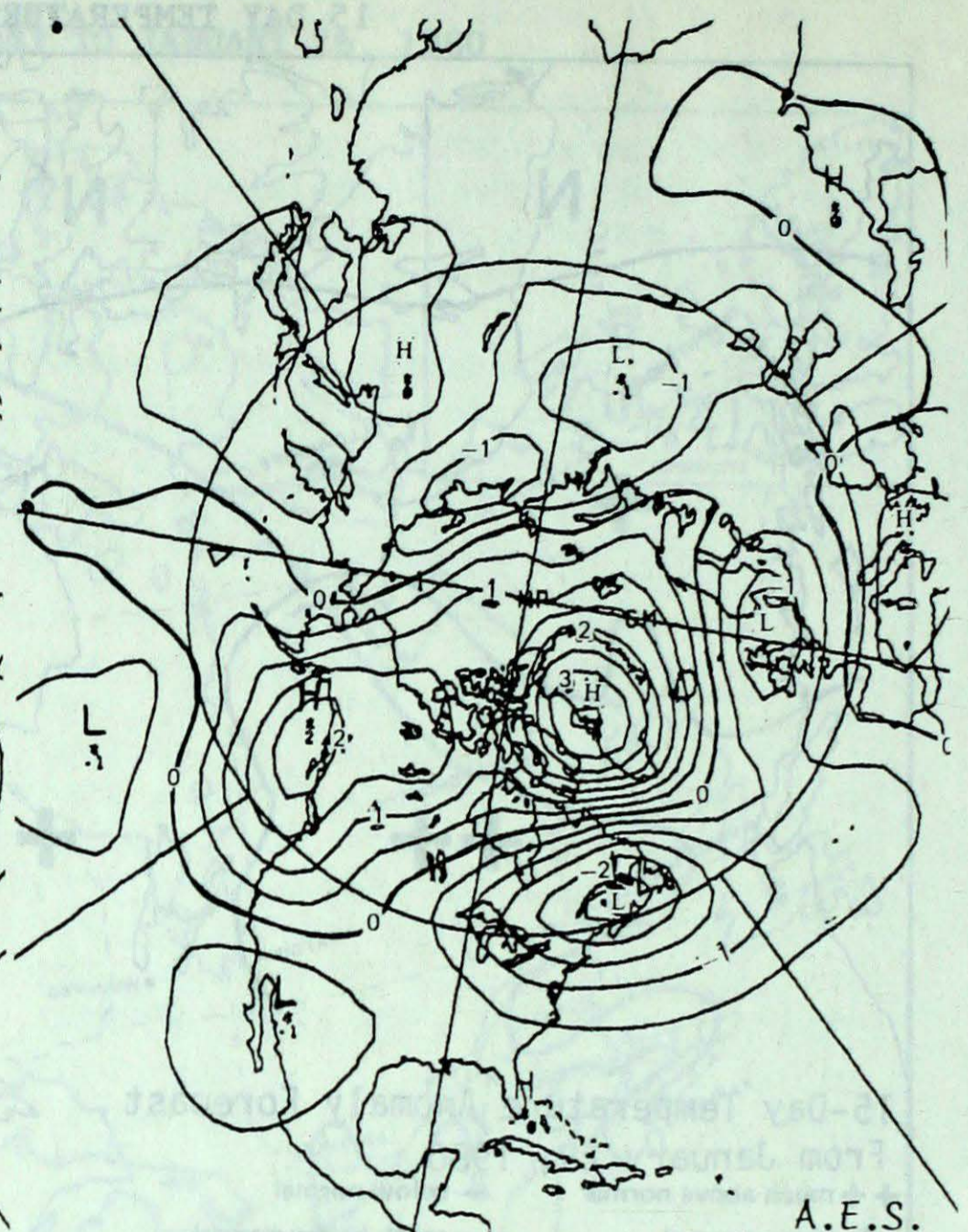
Note: Anomaly denotes departure from the 1949-73 mean.



## Atmospheric Circulation Features



50KPa Height Map(decametres)  
7 day mean January 21 to 27, 1980



7 day Mean 50kPa Height Anomaly  
January 21 to 27, 1980 (5 dam intervals)

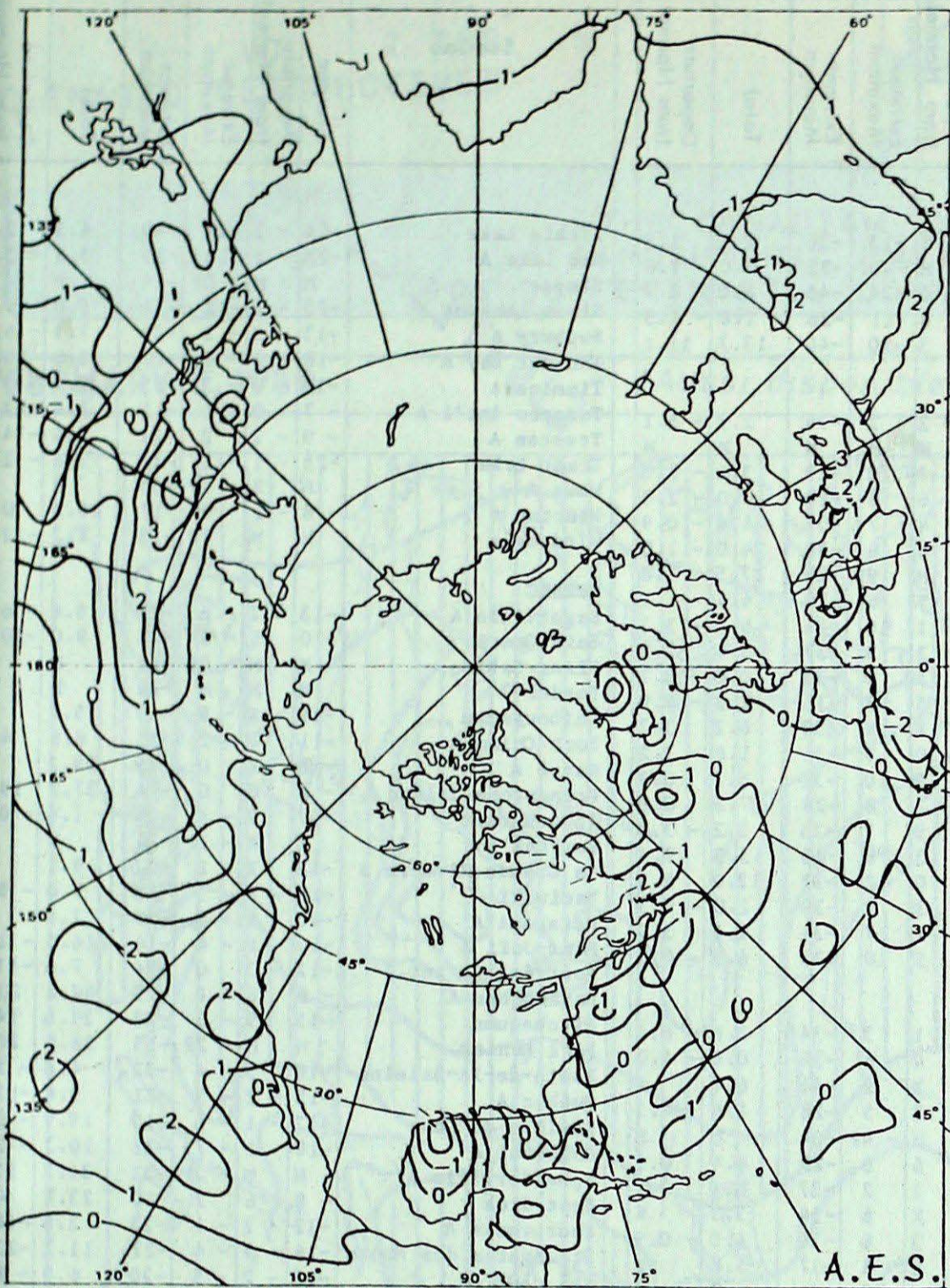
The major upper ridge which had established itself along the Canadian west coast during the previous week, continued to influence and dominate the surface weather pattern over western Canada through the first part of the period. A resultant associated surface high pressure area and a westerly air flow gave generally fair, relatively dry weather with near or above normal temperatures.

Eastern Canada, on the other hand, came under the influence of a cyclonic upper air flow around a deep closed upper vortex in the vicinity of Hudson Bay and Quebec, slowly drifting eastward. With the surface storm track positioned across the Great Lakes and the Atlantic Provinces, a significant low pressure system moved through eastern Canada during the first half of the period. Associated with it was rain, freezing rain and snow, not to mention high winds and near record low surface pressure reading over the Island of Newfoundland.

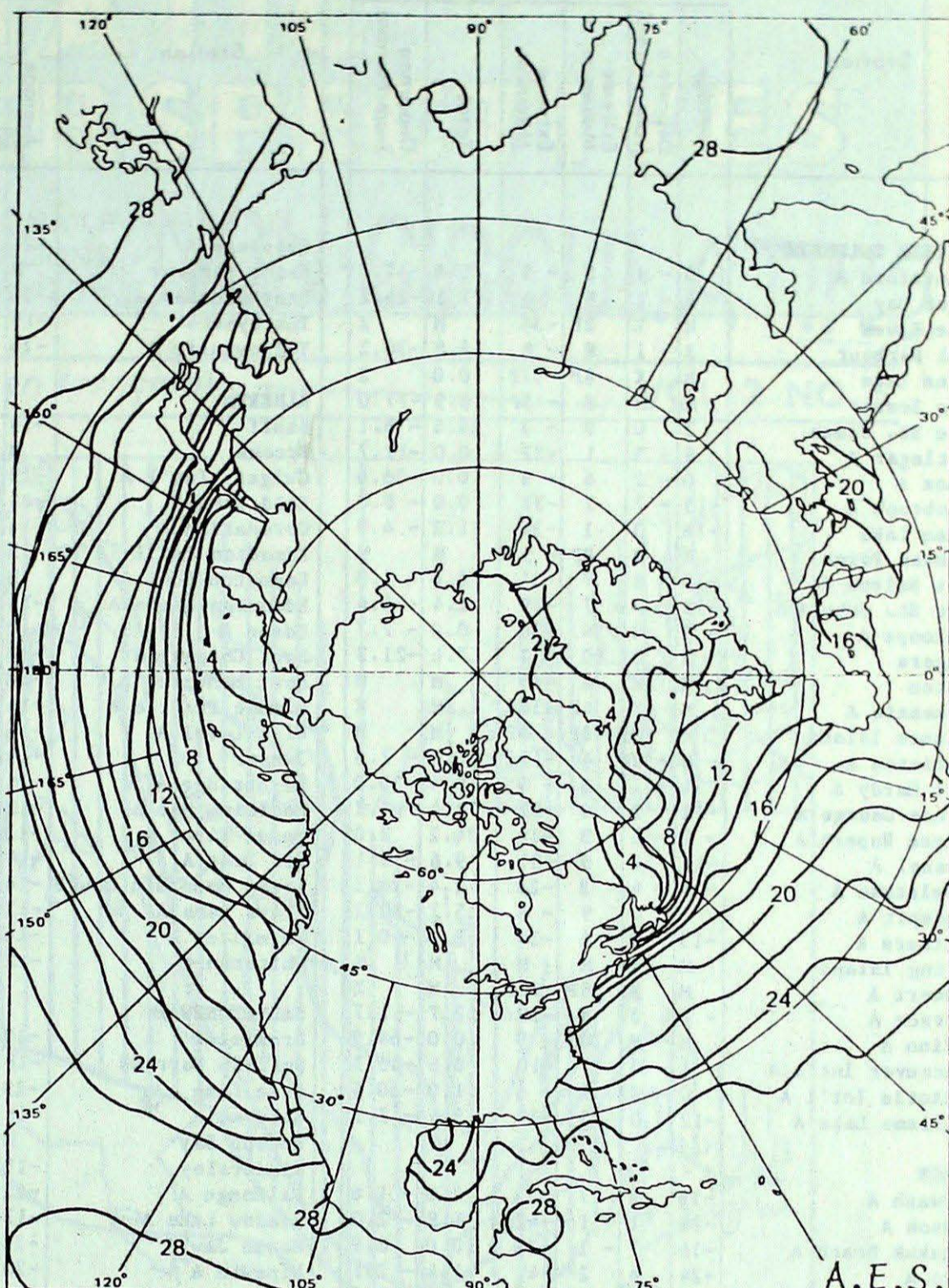
After the mid-period a striking change took place in the upper steering flow across the country. A large, broad, long wave trough slowly deepened and established itself, encompassing most of Canada during the latter half of the period. This caused the major ridge to position itself west of Alaska. As a result, a strong northwesterly air flow, both at the surface and aloft, aligned itself over the western provinces, pushing very cold air southward from the western Arctic. A sharp cold front crossing western Canada ahead of the cold outbreak put an abrupt halt to the near or above normal temperatures. The cold Arctic air continued to penetrate southeastward pushing the surface cyclonic storm track to well south of the border and eventually reinforcing the already cold air present in the rest of eastern Canada.

Andy Radomski





Sea Surface Temperature Anomalies  
from December 16, 1979 to January 15, 1980



Monthly Mean Sea Temperature  
from December 16, 1979 to January 15, 1980

CLIMATIC PERSPECTIVES

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TEMPERATURE AND PRECIPITATION DATA FOR THE WEEK ENDING 0600 G.M.T. JANUARY 29, 1980

Table with 3 main columns for British Columbia, Alberta, and Northwest Territories, each containing station names, temperature (Average, Departure from Normal, Extreme Maximum, Extreme Minimum), and precipitation (Total, Departure from Normal).

P = extreme value based on less than 7 days

X = no normal due to short period

M = not available at press time