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A WEEKLY REVIEW OF CANADIAN CLIMATE

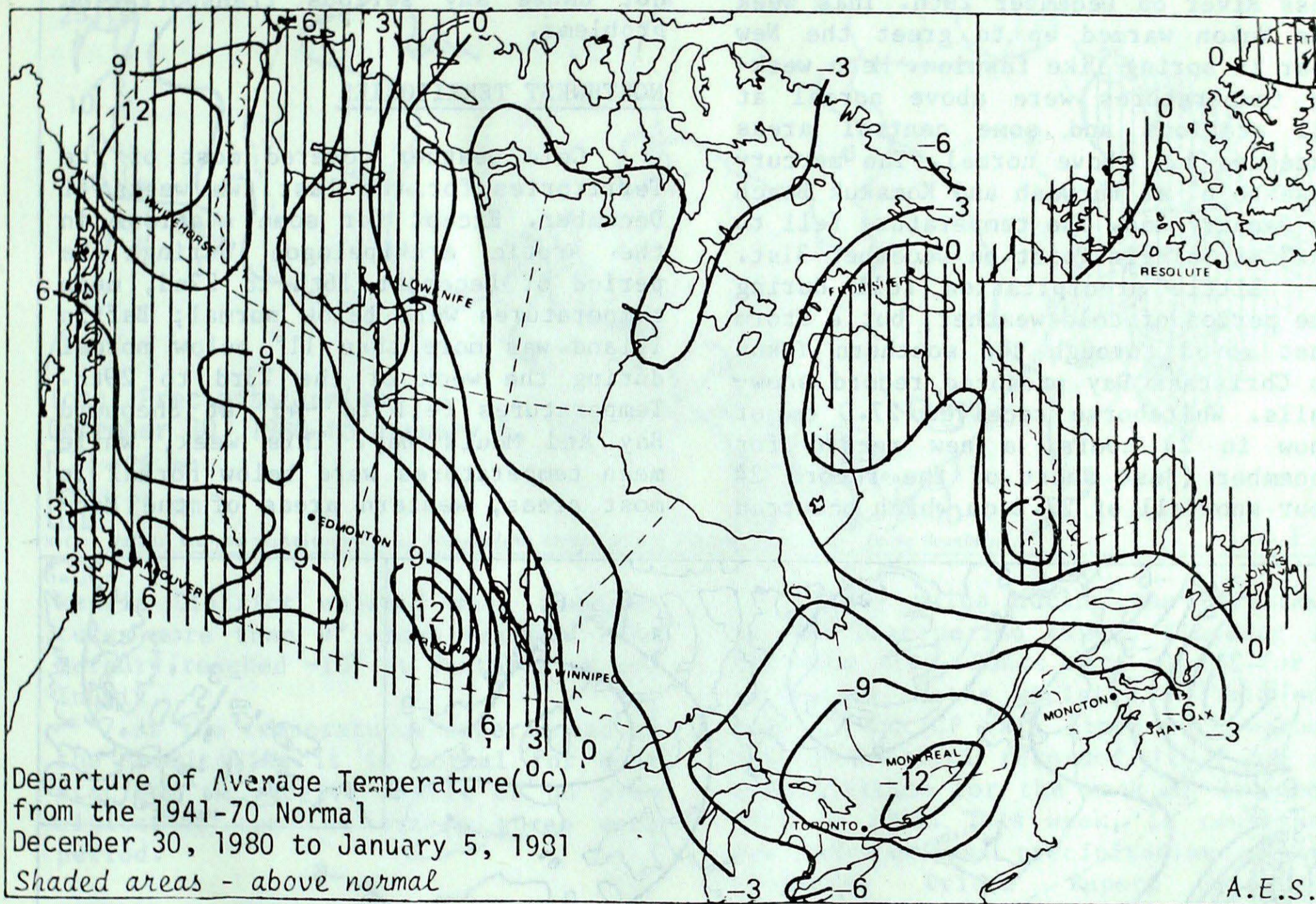
CLIMATIC PERSPECTIVES

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

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WEATHER HIGHLIGHTS FOR THE PERIOD - DECEMBER 16, 1980 TO JANUARY 5, 1981

Very cold in the East, very warm in the West

The temperature regime was characterized by a strong east-west contrast and a pocket of warm air stretching from southern Baffin Island to Newfoundland. Mean temperatures varied from 21° above normal in the Yukon and southern Saskatchewan to 12° below normal in southern Québec. This resulted in numerous high temperature records in the west and an even higher number of low temperature records in the east.

The warm air created problems for the logging industry in B.C. and caused flooding in the lower Fraser Valley. The cold air caused transportation problems and created power outages in Québec and New Brunswick.

The temperature ranged from 18° (Abbotsford and Lethbridge) to a minimum of -55° (Ross River). Prince Rupert received a total of 177 mm of precipitation for the week of December 23rd to 29th.

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

YUKON

The year ended with a large change in temperature. The week through Christmas was bitterly cold throughout the Yukon. Temperatures were less than -50° at some locations and mean temperatures were more than 20° below normal. Several low temperature records were set. The temperature fell to -55° at Ross River on December 29th. This week the Yukon warmed up to greet the New Year in spring like fashion. Mean weekly temperatures were above normal at all stations and some central areas exceeded 12° above normal. The mercury rose to 6° at Burwash and Komakuk Beach on January 2nd. The temperature fell to -42° at Shingle Point on December 31st.

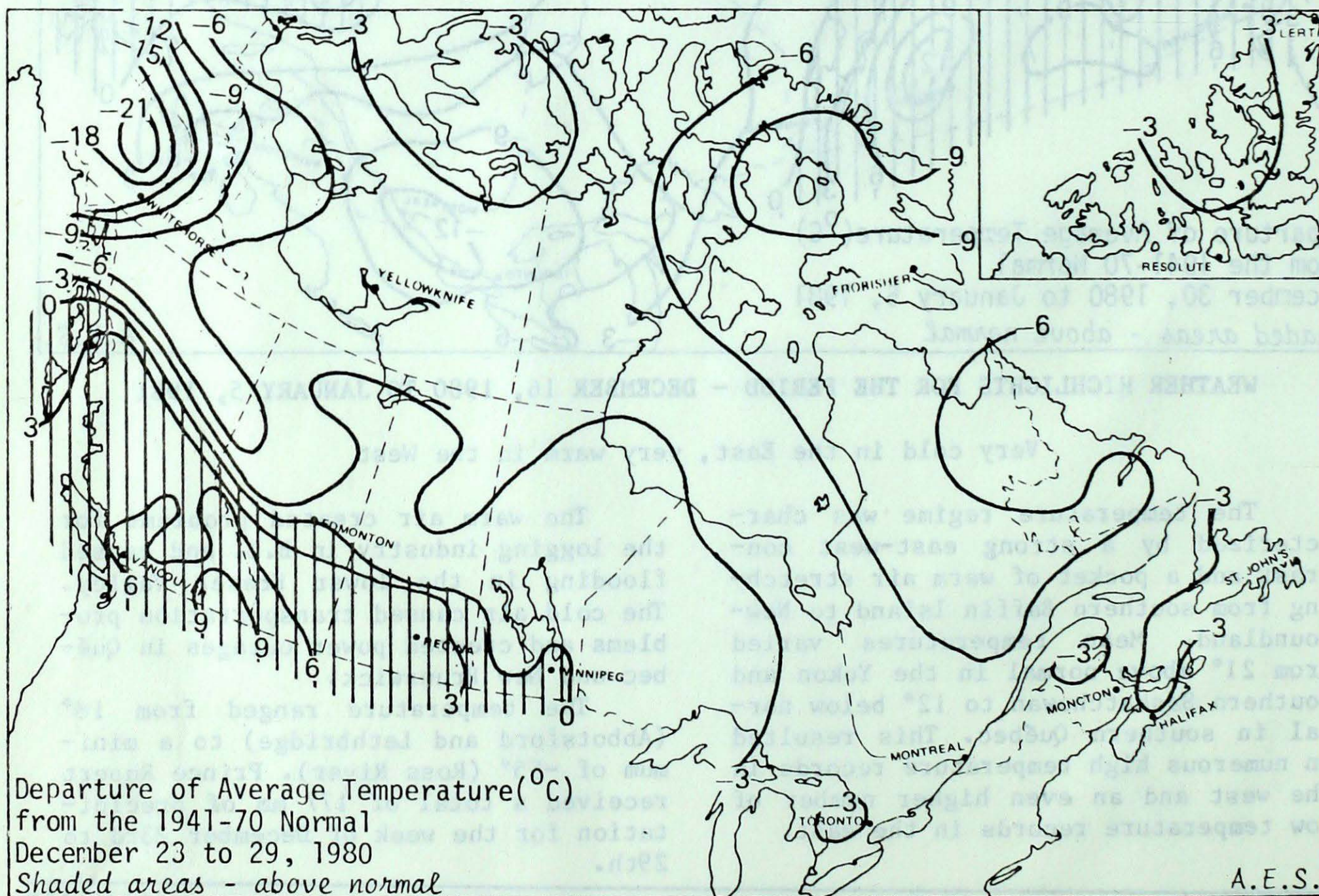
Little precipitation fell during the period of cold weather, but a storm that moved through the southern Yukon on Christmas Day produced record snowfalls. Whitehorse received 27.0 cm of snow in 24 hours, a new record for December (just short of the record 24 hour snowfall of 27.2 cm which occurred

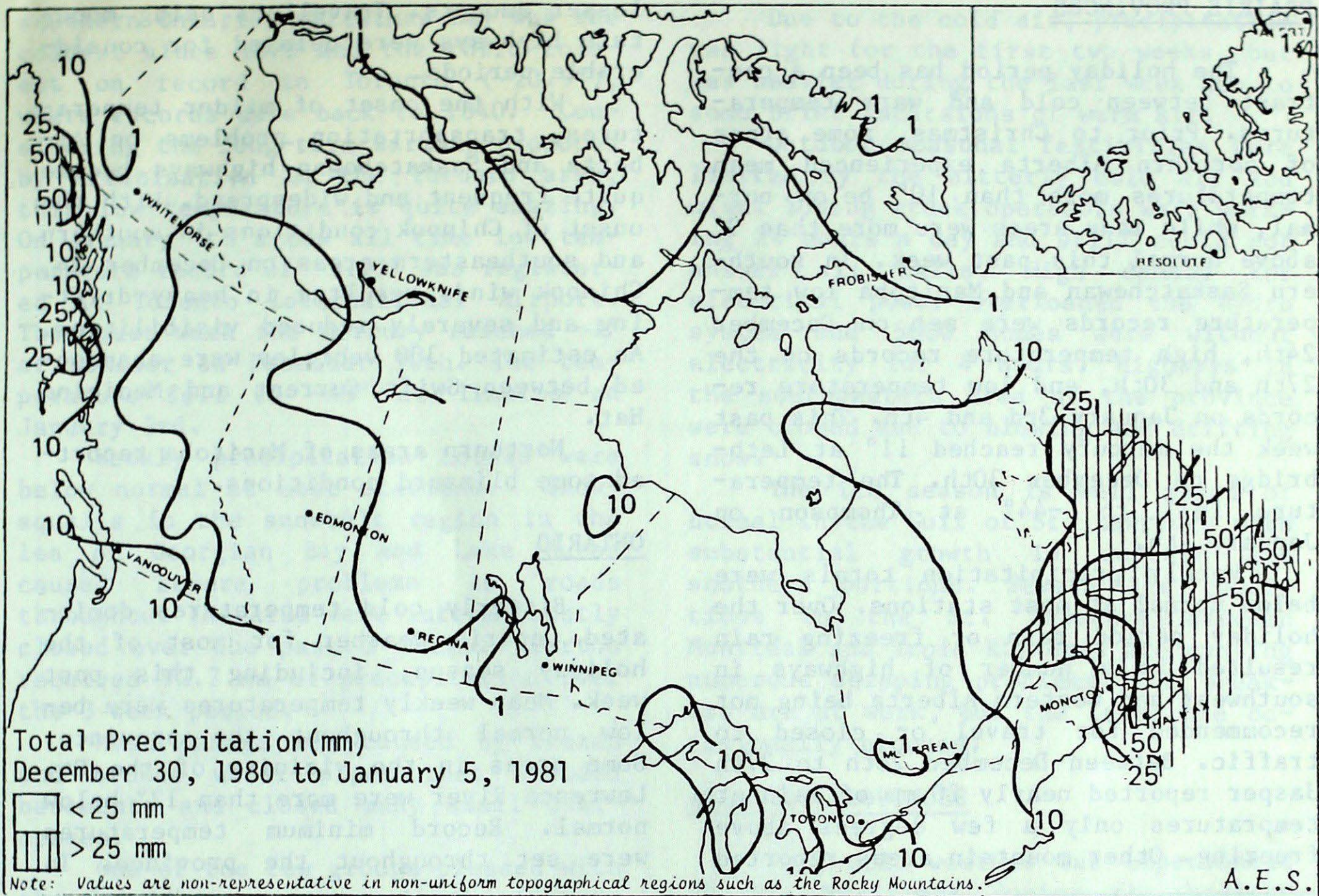
on March 8th, 1967). The arrival of the warm air at the end of December was accompanied by snow (8 cm at Watson Lake) on December 28th and 29th. Rain and freezing rain occurred across southern areas on the 2nd and 3rd of January.

With the exception of one to two day closures of the Alaska Highway and Haines Road, and a 4 day closure of the Dempster Highway, the cold weather did not cause any serious transportation problems.

NORTHWEST TERRITORIES

Cold weather covered most of the Territories for the last two weeks of December. Except for some stations in the Arctic archipelago during the period of December 16th to 22nd, mean temperatures were below normal; Baffin Island was more than 11° below normal during the week of the 23rd to 29th. Temperatures fell to -46° at Shepherd Bay and Mould Bay. This week, while mean temperatures were below normal in most areas, western areas of the Mac-





kenzie District enjoyed mean temperatures more than 9° above normal. The mercury reached -10° at Tuktoyaktuk and Inuvik.

At the temperatures experienced in the Territories it is normal for most stations to receive little or no precipitation for the entire three week period.

BRITISH COLUMBIA

Warm weather reigned over the province during the holiday season. Multitudinous high temperature records have been set since Christmas. This past week, the mean temperature over many areas was more than 6° above normal and some northwestern and Cariboo areas were more than 11° above normal. Previous to Christmas, northern B.C. was in the grip of a record breaking cold airmass. This week the mercury reached 15° at Cape Scott (January 2nd) and fell to -26° at Fort Nelson (January 1st).

Heavy rains during the Christmas to New Year period caused flooding in the Hope area. Roads were closed for 3 to 4 days in the vicinity of Yale and both CN and CP rail lines were washed out. Abbotsford recorded 120.5 mm of precipitation for the week of December 23rd to 29th. This week, in contrast, saw below normal precipitation at all stations. Prince Rupert received 38.0 mm of precipitation.

In southern areas there is no snow on the ground, skiing is very poor and spring flowers are starting to push through the ground. Farmers are worried about frost reaching the roots of fruit trees due to the lack of snow cover. Some avalanches were reported in the Selmo Creston Pass before Christmas.

In central areas logging conditions are marginal as the roads are too soft and ice bridges unreliable. There is very little snow on the ground. Work is preceding in northern areas, but there are complaints due to a softening of the roads.

PRAIRIE PROVINCES

The holiday period has been a contrast between cold and warm temperatures. Prior to Christmas, some areas of northern Alberta experienced mean temperatures more than 10° below normal, while many areas were more than 9° above normal this past week. In southern Saskatchewan and Manitoba low temperature records were set on December 24th, high temperature records on the 27th and 30th, and low temperature records on January 3rd and 4th. This past week the mercury reached 11° at Lethbridge on December 30th. The temperature fell to -44° at Thompson on January 4th.

Weekly precipitation totals were below normal at most stations. Over the holiday period rain or freezing rain resulted in a number of highways in southwest and western Alberta being not recommended for travel or closed to traffic. Between December 26th to 27th Jasper reported nearly 20 mm of rain at temperatures only a few degrees above freezing. Other mountain areas reported

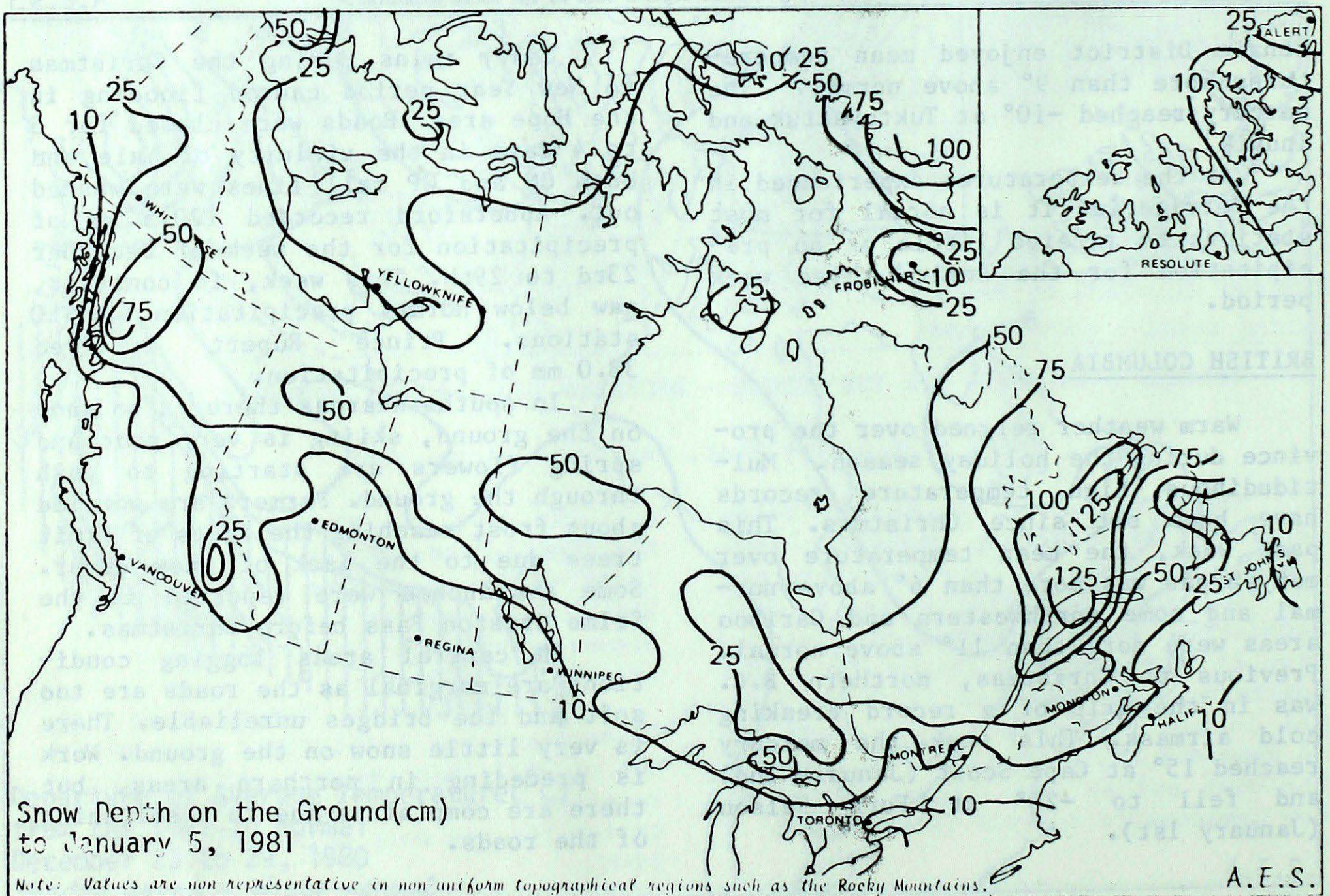
lesser amounts. Travellers using mountain highways were delayed for considerable periods.

With the onset of milder temperatures, transportation problems on Alberta and Saskatchewan highways became quite frequent and widespread. With the onset of Chinook conditions in southern and southeastern areas on December 24, Chinook winds resulted in heavy drifting and severely reduced visibilities. An estimated 300 vehicles were abandoned between Swift Current and Medicine Hat.

Northern areas of Manitoba reported some blizzard conditions.

ONTARIO

Bitterly cold temperatures dominated Ontario weather for most of the holiday season, including this past week. Mean weekly temperatures were below normal throughout the province. Some areas in the vicinity of the St. Lawrence River were more than 12° below normal. Record minimum temperatures were set throughout the province. In



southern Ontario, Christmas Day was the coldest since 1872 and the third coldest on record in Toronto (-23.9°), where records date back to 1840. Considering the long-term warming produced by urbanization in the Toronto area, this low temperature is quite amazing. On January 4th a new all time low temperature record of -31.3° was registered at Toronto International Airport. This past week the mercury reached -1° at Windsor on December 30th. The temperature fell to -43° at Timmins on January 3rd.

Weekly precipitation totals were below normal at most stations. Snowsqualls in the snowbelt region in the lee of Georgian Bay and Lake Huron caused severe problems as roads throughout the area were intermittently closed over the past 3 weeks. Wiarton received 92.7 mm of precipitation over the 3 week period.

Most damage was caused by frozen and broken water pipes that flooded basements and closed many small businesses.

One of the few groups pleased with the frigid temperatures is the fisherman as lakes have frozen early and very thick this winter. Lake Superior is mostly open water with fast ice along the shore. Georgian Bay and Lake Huron are now ice covered and Lake Erie has an extensive ice cover. Lake Ontario is mostly open. Severe ice conditions in Lake St. Clair are causing some flooding up river. The ice breaker Griffin is trying to keep the shipping lane open.

QUÉBEC

Very cold air was the main feature of this holiday season. The mercury fell 30° in 14 hours at Montréal on Christmas eve. This very cold air produced low temperature records for 16 days out of 21 days in Québec. A minimum temperature of -43° was recorded at Val d'Or on January 3rd (and at Matagami) which broke the previous low temperature record set in 1958 by 10° . The mean temperature in southern Québec was more than 12° below normal.

Due to the cold air, precipitation was light for the first two weeks, but was heavier during the last week due to some brief incursions of warm air.

Outdoor seasonal festivities were limited by the bitterly cold air and wind. Towing truck operators were working 24 hours a day and still could not answer all calls. High demand for electrical power overloaded the hydro system and 5000 homes were without electricity for 4 hours. Highways in the southeastern area of the province were closed due to blowing and drifting snow.

The ice season is well ahead of normal in the Gulf of St. Lawrence with substantial growth in western and southern portions. Severe ice conditions in the St. Lawrence between Montréal and Trois Rivières are causing numerous shipping problems. Ice breakers are at work, but the lanes are occasionally blocked.

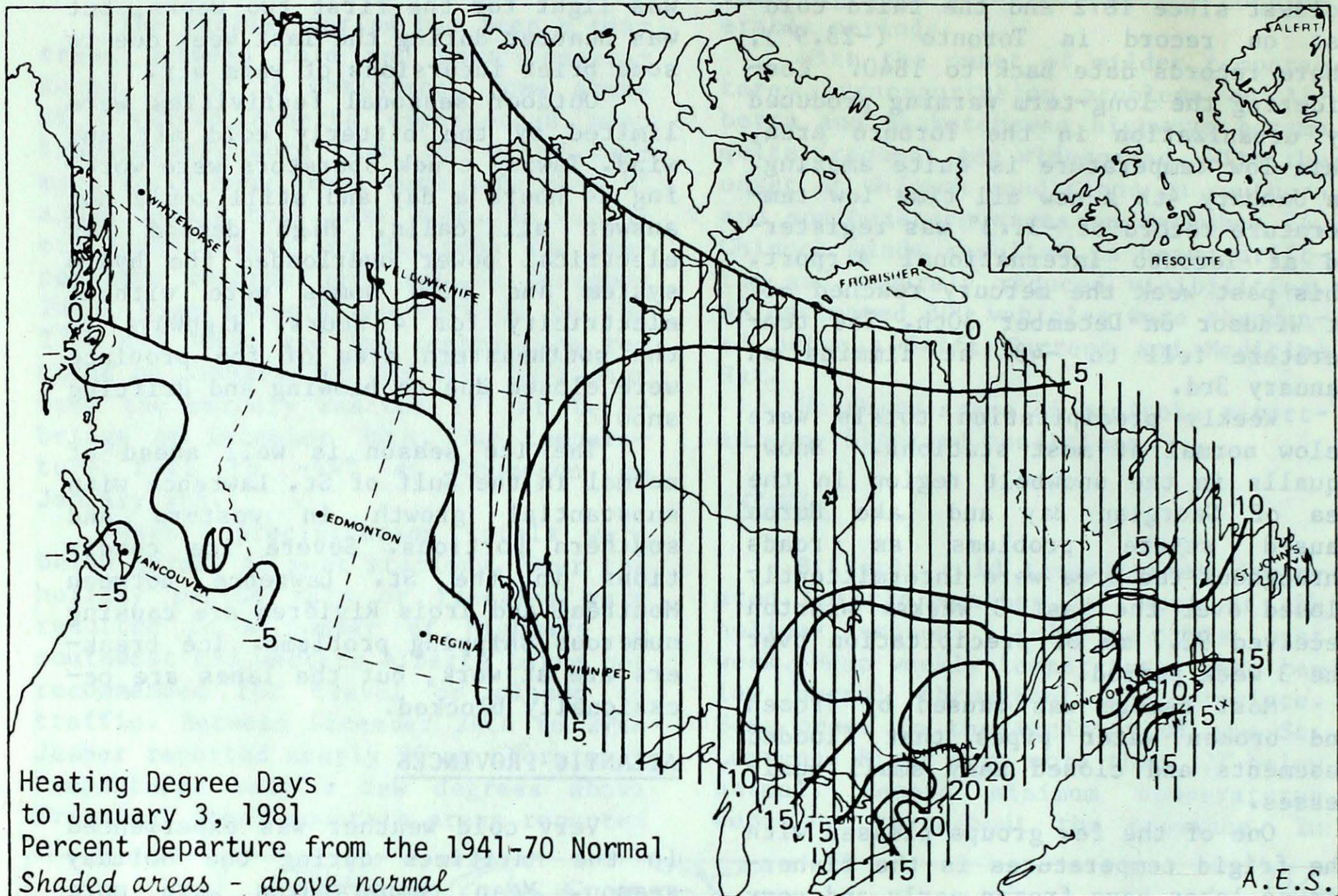
ATLANTIC PROVINCES

Very cold weather was experienced in the Maritimes during the holiday season. Mean temperatures were more than 8° below normal in some areas of southern New Brunswick this week. An almost unending list of low temperature records were set. On January 4th most stations set low maximum temperature records for the month. In contrast, above normal temperatures were enjoyed over the holiday period in Newfoundland and Labrador. St. John's experienced a very warm 12° on Christmas Day. Last week the mercury ranged from 12° (at Argentia on January 2nd) to -34° (at Fredericton on January 4th).

Weekly precipitation totals were above normal at most stations. Many Newfoundland and Labrador stations received more than twice their normal amount. Sydney recorded 76.3 mm of precipitation.

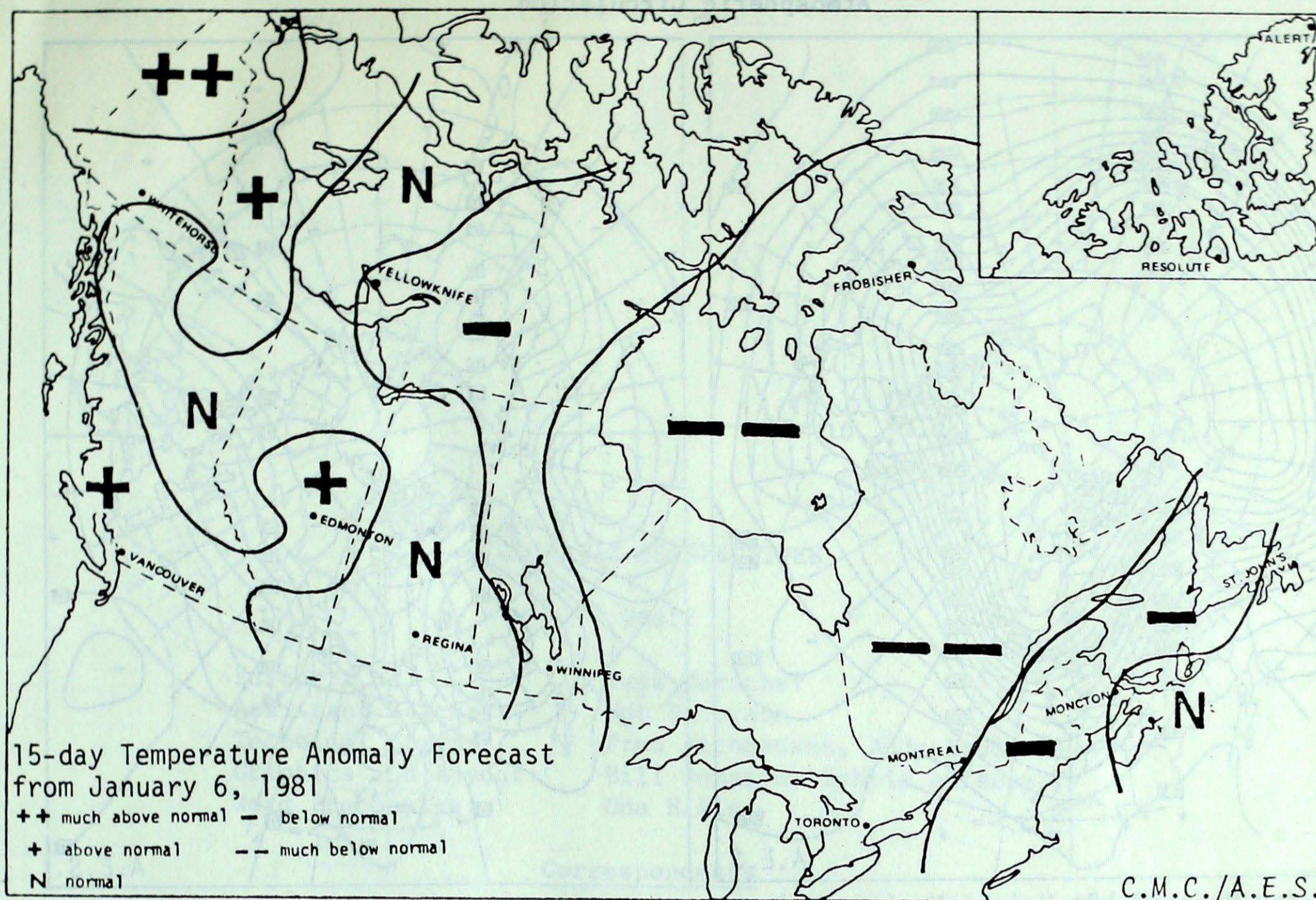
The cold, combined with high winds over the weekend, disrupted rail service and caused numerous breakdowns of the power system in New Brunswick. One man was believed to have died as a result of the cold.

HEATING DEGREE-DAY SUMMARY TO JANUARY 3, 1981



STATION	MONTHLY CUMULATIVE TOTAL	MONTHLY DIFF. FROM 1941-70 NORMAL	SEASONAL TOTAL	SEASONAL DIFF. FROM 1941-70 NORMAL	SEASONAL PERCENT OF NORMAL
Resolute	154.5	7.5	5444.0	-32.0	99
Inuvik	110.0	-31.0	4424.5	66.5	102
Whitehorse	53.0	-58.0	3248.5	132.5	104
Vancouver Int'l A	43.5	-1.5	1238.0	-39.0	97
Edmonton Mun A	80.5	-15.5	2303.5	-80.5	97
Calgary Int'l A	57.0	-27.0	2149.5	-112.5	95
Regina	89.5	-15.5	2337.5	-90.5	96
Winnipeg Int'l A	122.5	17.5	2461.0	109.0	105
Thunder Bay	123.0	28.0	2460.0	163.0	107
Windsor	78.5	12.5	1529.5	155.5	111
Toronto Int'l A	98.5	26.5	1791.5	233.5	115
Ottawa Int'l A	124.5	37.5	2178.5	345.5	119
Montreal Int'l A	123.5	39.5	2159.0	437.0	125
Quebec	121.0	37.0	2381.5	387.5	119
Saint John, N.B.	93.5	21.5	2064.5	240.5	113
Halifax	78.5	15.5	1739.5	269.5	118
Charlottetown	87.0	15.0	1932.5	263.5	116
St. John's, Nfld.	60.5	-0.5	2038.5	233.5	113

15 DAY TEMPERATURE ANOMALY FORECAST

Forecast Method

Analogue technique based on point prediction at 70 Canadian stations.

Temperature Scale

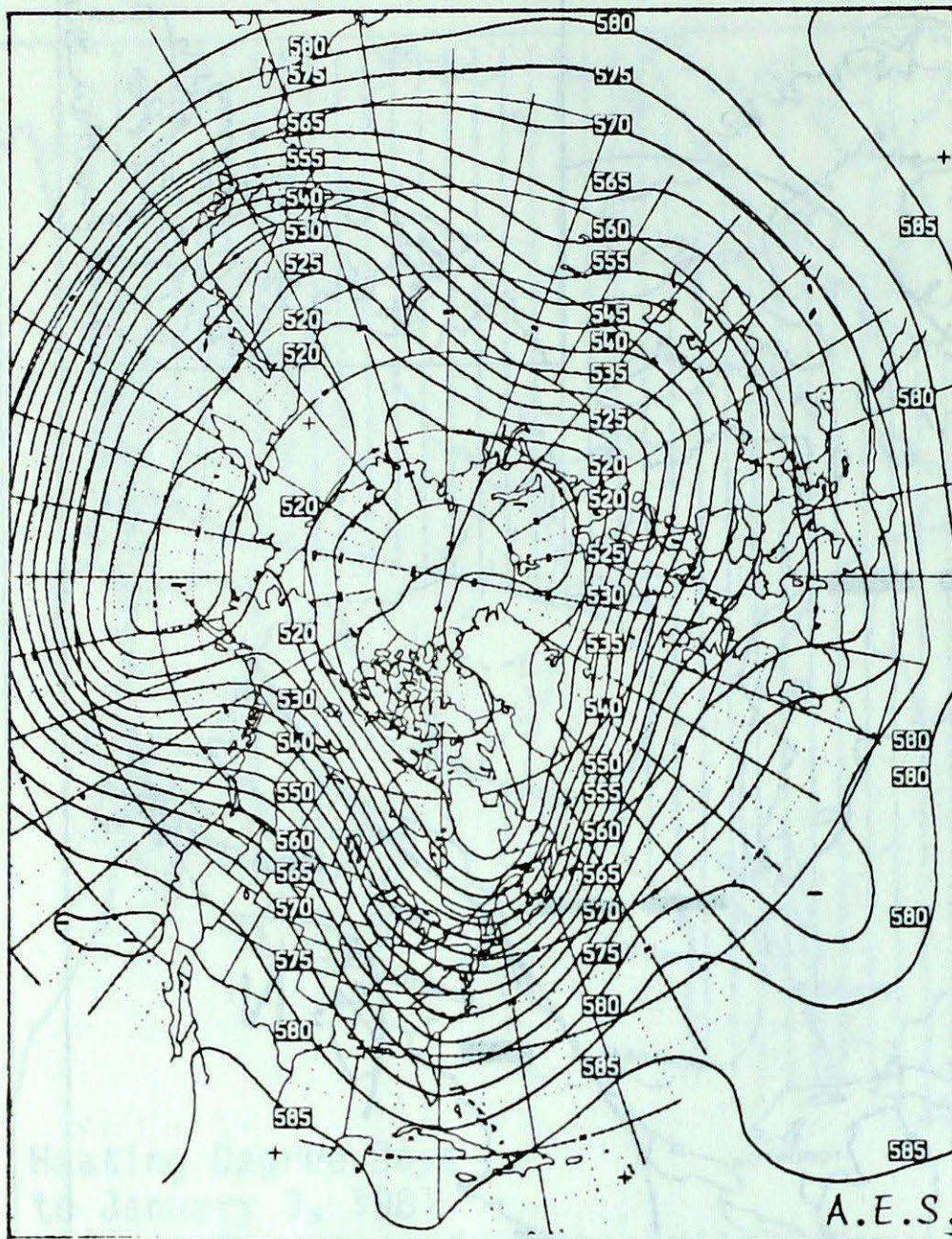
Each temperature class is designed to contain 20% of the historically observed 15 day means pertinent to specific location and time of year:

StationCurrent Temperature Anomaly Forecast

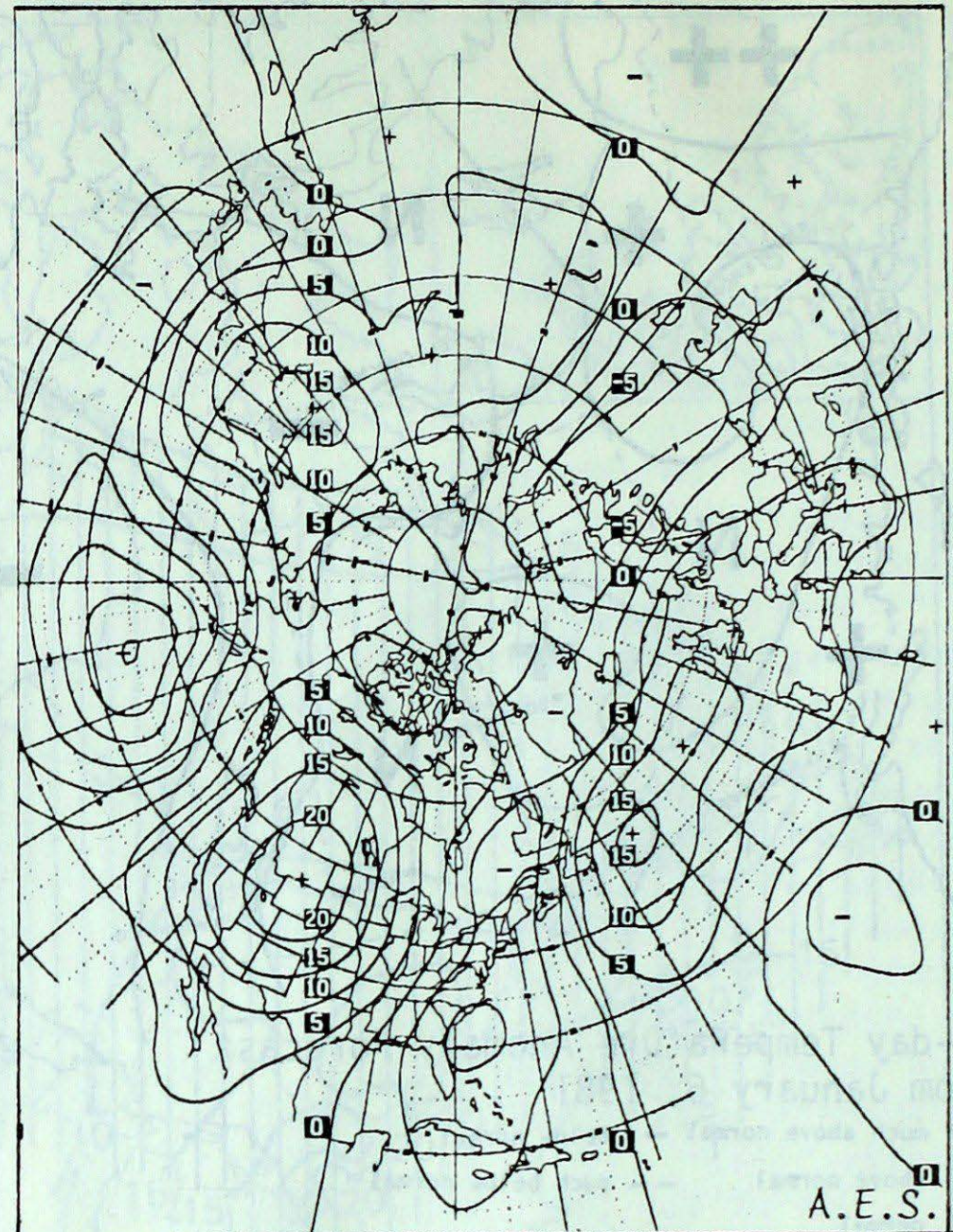
<u>Station</u>	<u>Current Temperature Anomaly Forecast</u>
Whitehorse	Above Normal From 1.8° to 6.1° above Normal
Victoria	Above Normal From 0.6° to 1.9° above Normal
Vancouver	Above Normal From 0.7° to 2.3° above Normal
Edmonton	Above Normal From 1.5° to 5.1° above Normal
Regina	Near Normal Within 1.3° of Normal
Winnipeg	Below Normal From 1.1° to 3.7° below Normal
Thunder Bay	Much Below Normal More than 3.0° below Normal
Toronto	Much Below Normal More than 2.4° below Normal
Ottawa	Much Below Normal More than 2.8° below Normal
Montreal	Much Below Normal More than 2.9° below Normal
Quebec	Much Below Normal More than 2.9° below Normal
Fredericton	Below Normal From 0.9° to 2.9° below Normal
Halifax	Near Normal Within 0.7° of Normal
Charlottetown	Near Normal Within 0.8° of Normal
St. John's	Near Normal Within 0.6° of Normal
Goose Bay	Much Below Normal More than 4.3° below Normal
Frobisher Bay	Much Below Normal More than 4.9° below Normal
Inuvik	Much Above Normal More than 4.4° above Normal

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

Atmospheric Circulation



7-day Mean 50 kPa Height Map(in dam)
December 29, 1980 to January 4, 1981



7-day Mean 50 kPa Height Anomaly
(in 5 dam intervals)December 29, 1980
to January 4, 1981

A mean 50 kPa ridge continued to be a dominant feature over western North America, with height anomalies remaining strongly positive throughout the past 3 week period. A southwesterly circulation pumped mild moist Pacific air inland, and as a result above normal temperatures were a common occurrence in British Columbia, southern Alberta and southern Saskatchewan.

The eastern half of the country was cold due to the influence of a major 50 kPa trough. Negative 50 kPa anomalies were as much as 20 dam below the 30 year normal. A strong northwesterly circulation from the high Arctic continually pushed surges of extremely cold air and associated strong high pressure southeastwards into eastern Canada.

Many new record temperatures were set across the country during the Christmas and New Year period. Very mild conditions in the western provinces broke many maximum temperature re-

ords; likewise numerous new minimum temperature records were set throughout Ontario, Québec and the Atlantic Provinces. Manitoba received the best of both extremes. On January 3, Toronto experienced its coldest temperature in over a hundred years, -31°C ; in contrast, Kelowna, B.C. had an all time December high of 15°C on the 27th.

Precipitation amounts, with the exception of the Pacific and Atlantic coasts, were generally light, but very cold Arctic air crossing the relatively warm open waters of the Great Lakes triggered heavy snow squall activity on the lea shores.

A moist southwesterly on shore flow combined with orographic lift resulted in the heavy precipitation amounts along the British Columbia coastline. At the same time, the Atlantic Provinces received precipitation in the form of rain and snow due to cyclonic disturbances tracking northeastwards off the eastern-sea-board.

CLIMATIC PERSPECTIVES

Staff

Editor: Yves Durocher
Assistant Editor: Bob Paterson
Technical Staff: Fred Richardson, Andy Radomski
Graphics and Layout: Bill Johnson, Debbie Allsopp
Word Processing: Una Ellis

Correspondents

Terry Mullane, (Ice Forecasting Central)
 H.E. Wahl, (Whitehorse)
 Bill Prusak, (Western Region)
 Fred Luciw, (Central Region)
 Brian 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) 667-4711/4906

