Energy, Mines and Resources Canada | Énergie, Mines et Ressources Canada

THE NATIONAL ATLAS OF CANADA 5th EDITION

# CANADA—HEATING DEGREE-DAYS

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Des exemplaires de cette carte sont disponibles en français.



Scale 1:7 500 000 or one centimetre equals 75 kilometres

75 0 75 150 225 300 375 450 kilometres

Lambert Conformal Conic Projection,Standard Parallels 49°N and 77°N.
Modified Polyconic Projection,North of Latitude 80°.

## HEATING DEGREE-DAYS

The heating degree-day concept is based on the systematic accumulation of defined temperature differences which can be related to energy consumption for space heating requirements. A relationship has been demonstrated between outside and optimum inside temperatures. To maintain an optimum inside temperature of 21°C, fuel or energy consumption over a specified period of time will vary in proportion to the difference between 18°C and the outside temperature for the same duration. (The three degree differential is accounted for by heat release from building contents and an inertia effect that smooths the influence of outside temperature fluctuations on inside temperatures). Because of this relationship, 18°C has been accepted in Canada as a base value for heating degree-day calculations; the threshold can, of course, be varied to achieve a different optimum inside temperature. In accordance with the 18°C standard, annual normal heating degree-day values used for this map were obtained by accumulating the differences between 18°C and the mean daily temperature for every day of the year when the mean temperature is below 18°C. *Each degree Celsius below 18°C is considered as one degree-day.* Temperature normals used for these calculations are based on the climatological recording period of 1941-1970.

Although such factors as wind speed, solar radiation, and site exposure affect heat loss, the heating degree-day index, based on temperature alone, has been found to provide a reasonable correlation with energy consumption.

**Annual Normal Degree-Days below 18°C**

3 000 4 000 5 000 6 000 7 000 8 000 9 000 10 000 11 000 12 000 13 000

• Climatological recording station

Note:
Annual heating degree-day accumulations were derived for 1 600 climatological stations from 1941-1970 mean daily temperature normals. Because of the constraints on isarithmic interpolation imposed by the uneven and often sparse distribution of recording stations, the climatological recording station network can be used as an index of isoline reliability. Isolines are most representative in areas of uniform flat terrain. Significant local deviations from the pattern indicated should be expected as terrain irregularity increases. Abrupt changes in climatic characteristics occur in mountainous regions in response to significant variations of elevation, aspect and slope, within short distances. In areas of mountainous terrain, isolines are representative of valley conditions only. A discontinuous line symbol is used over water bodies to indicate approximate values.

This map was prepared in association with the Canadian Climate Centre, Atmospheric Environment Service, Environment Canada. Research by G.E. Bristow, D.W. Phillips and D. Aston, Canadian Climate Centre and S.A. Kelly and D.M. Chapman, Geographical Research Division. Cartography by the Cartography and Toponymy Division.

Sources
Bristow, G.E., Phillips, D.W., and Aston, D. 1979. Annual Degree-Days Below 18°C. Unpublished map. Scale 1: 5 000 000. Downsview, Ontario Environment Canada, Atmospheric Environment Service, Canadian Climate Centre.
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