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

THE NATIONAL ATLAS OF CANADA 5th EDITION

CANADA — FIRST FROST IN AUTUMN

Produced by the Geographical Services Directorate, Surveys and Mapping Branch, Department of Energy, Mines and Resources, Ottawa, Canada. Printed 1981.

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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°.

FIRST FROST IN AUTUMN

Frost is assumed to occur when the minimum daily temperature is 0°C or less. The Atmospheric Environment Service frost data used for this map are based on minimum daily temperatures as observed at a height of approximately 1.5m above the ground. Average dates of occurrence of the first autumn frost at ground level will be somewhat earlier than the dates shown on the map because under conditions of clear skies and light winds (conditions that usually prevail at times of early autumn frost occurrence), minimum temperatures near ground level are always lower than the recorded minimum temperatures. This difference is usually between 3° and 6°C, but can be as great as 14°C.

Local topography has a significant influence on the incidence of frost. Cooler, denser air tends to drain to lower levels and to collect in valleys or depressions particularly in the absence of winds, which results in an earlier occurrence of the first autumn frost in these locations. Alternatively, ground fog may sometimes prevent a lowering of temperatures in valley locations thereby averting the incidence of frost. In autumn, large open water bodies warm the overriding air, thus delaying the first occurrence of frost in adjacent areas.

Average Dates of Occurrence of First Frost in Autumn

Aug. 1 | Sept. 1 | Oct. 1 | Nov. 1

Aug. 15 | Sept. 15 | Oct. 15 | Nov. 15

- Climatological recording station

Note

Average dates of occurrence of the first frost in autumn were derived for approximately 1 200 climatological stations from 1941-1970. minimum daily temperature normals. Because of the constraints on isoline interpolation imposed by the uneven and often sparse distribution of recording stations, the climatological recording station network can be used as a partial 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. Scientific advisor D.W. Phillips, Canadian Climate Centre. Research by G.M. Hemmerick and G.R. Kendall, Canadian Climate Centre and S.A. Kelly, Geographical Research Division. Cartography by the Cartography and Toponymy Division.

Sources

Canada, Department of Transport, Meteorological Branch, 1968. *Climatic Normals, Volume 6: Frost Data/Normales climatiques, Tome 6: Données de Gel*. Toronto.

Hemmerick, G.M., and Kendall, G.R. 1972. *Frost Data 1941-1970*. Downsview, Ontario Environment Canada, Atmospheric Environment Service.

———. 1978. First Frost in Autumn. Unpublished map. Scale 1:5 000 000. Downsview, Ontario. Environment Canada, Atmospheric Environment Service, Canadian Climate Centre.