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THE NATIONAL ATLAS OF CANADA 5th EDITION

CANADA

CLIMATIC REGIONS
THORNTHWAITE CLASSIFICATION
MOISTURE REGIONS

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Copies of this map may be obtained from the Canada Map Office, Energy, Mines and Resources Canada, Ottawa, or your nearest map dealer. Quote MCR 4096.

Des exemplaires de cette carte sont disponibles en français. Précisez MCR 4096F.

Scale 1:7 500 000 or 1 centimetre represents 75 kilometres

75 kilometres 0 75 150 225 300 375 450 kilometres

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

CLIMATIC REGIONS: THORNTHWAITE CLASSIFICATION
MOISTURE REGIONS

Moisture Index — Climatic Type

Moist Climates
- 100 — A Perhumid
- 80 — B_4 Humid
- 60 — B_3 Humid
- 40 — B_2 Humid
- 20 — B_1 Humid
- 0 — C_2 Moist Subhumid

Dry Climates
- -33.3 — C_1 Dry Subhumid
- -66.7 — D Semiarid
- -100 — E Arid

Seasonal Variation of Effective Moisture

Moist Climates
- **r** Little or no water deficiency *(Although not labelled on map, applies to all moist climates not designated by s or s_2)*
- **s** Moderate summer water deficiency
- **s_2** Large summer water deficiency

Dry Climates
- **d** Little or no water surplus *(Although not labelled on map, applies to all dry climates)*

• Climatological Station

THE THORNTHWAITE CLIMATIC CLASSIFICATION

This map sheet reflects a partial application of C.W. Thornthwaite's third climate classification system (1955). The system is a rational approach to the definition of climatic types that recognizes four aspects of climate: a Moisture Index, the Seasonal Variation of Effective Moisture, an Index of Thermal Efficiency and the Summer Concentration of Thermal Efficiency. The first two aspects are shown on this map, while a companion sheet, *Canada — Climatic Regions—Thornthwaite Classification—Thermal Efficiency Regions* represents the latter two aspects. To describe the climatic type of any location, the four factors are combined. For example, Ottawa (B_1 B'_1 r b'_1) is classified as humid, mesothermal with little or no water deficiency and a summer concentration of thermal efficiency between 61.6% and 68.0%. The thermal elements (B'_1 and b'_1) are defined on the companion sheet.

MOISTURE REGIONS

Moisture Index. The moisture regions are determined by a moisture index which is defined as $I_m = I_h - I_a$. The moisture index is based on a humidity index reflecting water surplus and an aridity index reflecting water deficiency. The moist climates shown on the map are represented by positive values, and dry climates by negative values. Each of the climatic types defined by Thornthwaite's moisture index occur in Canada.

Seasonal Variation of Effective Moisture. The seasonal variation of effective moisture, which is expressed by means of the aridity index and the humidity index, indicates the presence or absence of a dry period in a moist climate or a moist period in a dry climate. Of the ten types of seasonal variation of effective moisture in the Thornthwaite system, only four occur in Canada.

Note

Climatic classification was derived for 1250 climatological stations from 1941 to 1970 climatic data. Because of the constraints on climatic region interpolation imposed by uneven and often sparse distribution of recording stations, the climatological recording station network can be used as an index of reliability. *Climatic regions 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.

* I_h = humidity index and I_a = aridity index; I_h = 100 (S/PE) and I_a = 100 (D/PE), where S = water surplus, D = water deficiency and PE = potential evapotranspiration; therefore, I_m = 100 (S–D)/PE.

This map sheet was prepared in association with the Canadian Climate Centre, Atmospheric Environment Service, Environment Canada. Principal research by D.W. Phillips, Canadian Climate Centre; additional research by J.M.M. Frappier and D.E. Richardson, Geographical Services Division, Canada Centre for Mapping, Energy, Mines and Resources Canada.

Cartography by the Geographical Services Division, Canada Centre for Mapping, Energy, Mines and Resources Canada.

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