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Space Weather — Geomagnetic Activity Zones

The magnetic field of the Earth is influenced by the electromagnetic environment of the solar system. The disturbed interplanetary environment changes the conditions of the natural electromagnetic environment of our planet and affects normal operation of space and ground technological infrastructures, such as power grids and pipelines.Geomagnetic activity can be described by the sizes of the disturbances in the Earth magnetic field and how often they occur. Geomagnetic activity depends on the geographic location of the observing point. It is defined by the geometry of the Earth's geomagnetic field and its interaction with both the charged particles produced by the Sun and the solar/interplanetary magnetic field fluctuations. Canadian territory covers three zones of geomagnetic activity: the polar cap (north of Cambridge Bay), the auroral zone (between Cambridge Bay and Meanook) and the subauroral zone (south of Meanook). The highest geomagnetic activity is observed in the auroral zone.

0 150 300 450 600 km

Lambert Conformal Conic Projection. Standard Parallels 49°N and 77°N

Geomagnetic Activity Zones
Percentage annual occurrence above normal level
- 10 - 15%
- 15 - 20%
- 20 - 25%
- 25% or greater
- No Data

Selected Electric Transmission Lines
- Transmission Line

Selected Oil and Gas Pipelines
- Oil Pipeline
- Natural Gas Pipeline

Canadian Magnetic Observatories
- Observatory Location

Boundaries
- International
- Provincial / Territorial
- Canada's Exclusive Economic Zone (EEZ)
- Canada / Kalaallit Nunaat dividing line

Source(s):
Space Weather
Seismology and Geomagnetism, Geological Survey of Canada, 2006.

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