



Atlas of Canada 6th Edition  
(archival version)

## Space Weather — Telluric 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. The geomagnetically induced currents that directly affect vulnerable infrastructure are driven by the geoelectric (telluric) field. Therefore, the most important task in space weather hazard mapping is to identify the areas with different levels of telluric activity. On the map, telluric activity is defined as the annual percentage of the time when variations in the activity is above the normal level of 20 millivolts per kilometre. Elevated telluric activity occurs for a quarter of the year in the auroral zone, whereas it varies from 15 percent (4.5 times per month) down to just a few percent (1 occurrence per two months) in the Prairies. It is interesting to note that most of the big cities in Canada, and therefore much of the infrastructure, are in the least tellurically active zone (less than 10 percent).

0 150 300 450 600 km

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

### Telluric Activity Zones

Percentage annual occurrence  
above normal level

- less than 10%
- 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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