

A digital elevation model (DEM) is a digital representation of elevations as measured at ground level. Such elevations are calculated using a variety of methods, including stereoscopy, digitized contour data, GPS data, radar signal interpretation or other methods for extracting elevation from a given position.

The Canadian Digital Elevation Model (CDEM) forms part of the elevation system designed by Natural Resources Canada (NRCan) to better meet the needs of users of elevation data and related products. CDEMs are mainly based on the elevation contours and hydrographic data of NRCan's Geospatial Data Base at the scale of 1:50,000, or data at various scales provided by provinces and territories.

Users may acquire CDEM data sets for the region of their choice or a predefined area using the data extraction tool found on the Web site geogratis.gc.ca. It is possible, for example, to extract data for a drainage area from the National Hydrographic Network, or for a Landsat image footprint. Moreover, derived products may be generated on demand, e.g. shaded reliefs or slope maps.

Uses

CDEMs serve as the basis for a wide range of land management applications. Using such models facilitates simulating flood conditions to visualize their impact and use the results to plan mitigating infrastructure works. CDEMs are also very useful in telecommunications as a tool for planning tower positions or optimizing road transportation networks.

Finally, the models are used in several other fields, such as environmental or ecological impact assessment, water flow and quality analysis, climate change studies, forest regeneration planning and wildlife habitat studies.

Technical specifications

- Altimetric reference system: Canadian Height Reference System, 1928 (CGVD28).
- Horizontal reference system: 1983 North American Datum (NAD83(CSRS)).
- Choice of geographical coordinates (ϕ , λ) or Lambert conical projection (x , y).
- Base resolution: 0.75 arc seconds (south-north) to 3 arc seconds (west-east) depending on latitude. Resolution may be reduced manually at time of extraction, or automatically as a result of data set size.
- Derived products: digital elevation model, shaded relief, colour relief, color shaded relief, slope and aspect map, and point data.
- Distribution formats: GeoTIFF (as well as ASCII CSV, for point data only).
- NAP-compliant metadata (North American Profile).
- Complete coverage of Canada.