



A digital surface model (DSM) is a digital representation of elevations captured at the top of features such as treetops or building roofs. CDSM elevations are derived from radar interferometry data captured during the Shuttle Radar Topography Mission (SRTM) performed by the space shuttle Endeavour in February 2010.

Original SRTM elevation data at 1 arc second step were reprocessed to improve the product. Gaps were filled, the vertical datum changed, data were filtered for noise and aligned with the grid resolution of 0.75 arc seconds, and water surfaces were levelled.

The CDSM 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. Final CDSM products feature 0.75 arc seconds spacing, i.e. approximately 20 m, harmonized with the Canadian Digital Elevation Model (CDEM) in order to facilitate combined use where needed. CDSM data are uninterrupted, homogeneous, precise because they are derived from a single data source with readings every 30 m. The result has been a significantly improved product over flat, open ground, as compared to CDEM, which is generated from sparse contour lines.

Users may acquire CDSM 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

CDSMs serve as the basis for a wide range of land management applications. Using such models facilitates field work projects or access road construction planning, as well as visualizing selected sites in three dimensions. CDSMs are also very useful in telecommunications as a tool for planning tower position and height.

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 and 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).
- Coverage of Canada south of 60°.