CALGARY 2020 LIDAR DIGITAL ELEVATION MODEL

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Metadata for DEM LIDAR 2012-2020

The DEM is a raster elevation dataset of ground surface topography, generated from aerial LIDAR measurements. The bare-Earth surface is classified by algorithms, which keeps ground, road and water surfaces but excludes other captured above ground features such as buildings, trees and power lines. LIDAR has the capability to capture ground information underneath trees and other vegetation as long as the emitted light beams are able to penetrate between the foliage.

The LIDAR data was captured using a fixed wing aircraft equipped with special aerial LIDAR sensors and high accuracy GNSS/INS positioning systems to gather direct range measurements of ground surface features at approximately 25 points per square meter (that's over 30 billion points across the entire city).

This data is commonly used for many applications such as 3D spatial analysis (slope calculation, cross section creation, volumetric computations), for engineering applications (road design, land development, flood modelling) and 3D terrain visualization, just to name a few.

This DEM contains the maximum extents and most current LIDAR bare Earth data we have from all our aerial LIDAR surveys from 2012 to 2020.

- LIDAR Survey Date: Calgary city wide coverage - August 8-21, 2018
  2020 update areas - October 1-4, 2020
  (areas of significant terrain change such as Tsuut'ina Trail, new roads & new communities)
  Areas beyond the city limits were captured from 2012 to 2020.
  See the coverage map & coverage shapefile for details.

- DEM File format: ArcGrid .ASC (GeoTiff .TIF also available)
- DEM grid spacing: 20 cm (1 m and 2 m also available)
- Point Density: 25 points per square meter (average)
- Airborne Sensor: ALIS-560 Airborne Laser Imaging System (Riegl LMS-Q560)
- Vertical Accuracy: +/- 5 cm at 95% confidence level on flat, hard surfaces (confirmed with 200+ surveyed ground control points)

Note that for areas with no bare-Earth LIDAR returns, the elevations are interpolated from the nearest available bare-Earth LIDAR points. For example, within building footprints, underneath dense vegetation or underneath bridges and overpasses.

The DEM is tiled by Alberta Township System (ATS) Sections. File naming is Section-Township-Range-Meridian. (i.e. SSTTRRM.asc)

The City of Calgary Geospatial Coordinate System

- Name: 3TM NAD83 Alberta 114W
- EPSG Code: 3776

- Projection: Transverse Mercator – 3TM (3 degree zone width)
- Horizontal Datum: NAD83 (Adopted/Original)
- Ellipsoid: GRS80

- Central Meridian: 114°00’00.0” W
- Scale Factor: 0.9999
- Origin Latitude: 0°00’00.0” N
- False Easting: 0 m
- False Northing: 0 m
- Positive Axes: North and East
- Planar Units: Meters

- Vertical Datum: CGVD28
- Geoid Model: GSD95 (ITRF version)
- Elevations: Orthometric (above mean sea level)
- Vertical Units: Meters