OpenTopography

OpenTopography provides cloud-based access to high resolution and global topography datasets with on-demand processing tools and educational resources



Use OpenTopography for...

Easy access to topography data

Download high resolution or global topography data based on area of interest via our user-friendly web interface

Education & training resources

Find webinars, blog posts, video tutorials, and code examples for self-paced learning on a variety of topography-related topics

On-demand processing tools

Produce derivative products like digital elevation models and hillshades with our guided web-based tools running in the cloud

Dataset hosting & usage analytics

Distribute and provide restriction-free access to topography datasets with real-time usage analytics to increase return-on-investment

Core operational support for OpenTopography comes from the National Science Foundation



www.opentopography.org | Contact: info@opentopography.org



USGS 3D Elevation Program (3DEP) and NOAA dataset hosting and on-demand processing

OpenTopography provides restriction-free access to USGS 3DEP and NOAA data along with analysis tools for federal, state, and local agencies and commercial applications. Our on-demand cloud based processing and visualization tools enable organizations to gain valuable insights from 3DEP and NOAA data in an efficient and cost effective manner.

Ease of Use

User-friendly web interfaces allows users to quickly and easily access high resolution topography via Cloud based resources. Browser-based on-demand processing tools are available to visualize lidar point cloud data by attribute (classification, RGB, elevation), compute derivative products (DEMs, hillshades, hydrologic products, contours), and perform topographic differencing, all in the cloud.

Technology

OpenTopography operates out of the San Diego Supercomputer Center's (SDSC) state of the art data center and ensures reliable data access via connections to multiple high-speed national networks over geographically diverse physical paths. OpenTopography has dedicated access to both commodity clusters as well as the latest Supercomputer resources located at SDSC. The platform is continuously evolving. New technology and functionality are added regularly.

Support

End user support is provided by OpenTopography's team of geospatial data experts with extensive experience with lidar and other topography data types.

Community & Training

The OpenTopography platform offers data providers extensive data usage analytics that can help inform metrics on return-on-investment and can help motivate future dataset collections.

OpenTopography offers frequent community workshops at conferences as well as web based training resources and webinars. We can also offer customized workshops tailored to the needs of your organization.



A) Bears Ears Butte Digital Terrain Model draped on Google Earth imagery.
B) Digital Elevation Model of Meteor Crater,
AZ. C) Lidar at the Roosevelt Dam in Arizona colored by classification.
D) Heat-map for Minnesota 3DEP topography indicating areas of high data access.
E) Lidar point cloud colored by elevation over White Sands National Monument.

Contact OpenTopography at info@opentopography.org



OpenTopography offers these on-demand processing tools to easily generate derivative products of topography data:



Digital Elevation Models (DEM): Customize DEM generation using the popular triangulated irregular network (TIN) or a local gridding method to create a raster grid from a point cloud topography dataset.



Contour Lines: Create contour lines from a DEM, with options to improve the contour lines by removing high frequency noise.



Raster Visualizations: Generate topographic hillshades, including color-relief and color hillshade, slope, aspect, and roughness visualizations, and produce additional Google Earth KMZ outputs.



3D Point Cloud Visualization: Visualize color, intensity, or classification of a point cloud on your internet browser. Create height profiles and make measurements.



Hydrology Tools: Analyze the hydrology with TauDEM (Terrain analysis using DEMs) by creating hydrologically conditioned DEMs and calculating flow paths, among other tools.



Canopy Height Model or Normalized Digital Surface Model (nDSM): Calculate the height of trees and other structures above ground.



Vertical Differencing: Measure vertical topographic change from processes including urban growth, flooding, landslides, wildfires, and earthquakes.



3D Differencing: Detect horizontal and vertical change when the landscape shifts during earthquakes and landslides.



Topography provider metrics for hosted datasets

OpenTopography captures and provides access to a suite of real-time dataset use metrics available to data providers

Real-Time Analytics

- Audience insights (number of users/affiliation)
- Dataset metrics (amount of data, frequency of access)
- Processing metrics (algorithms/workflow)





2011–2013 Indiana Statewide Lidar Usage

Data Usage Heatmaps

- Identification of high-value areas
- Prioritization for data recollection



Dataset: Auckland, New Zealand 2013

Contact OpenTopography at info@opentopography.org for information



OpenTopography's team of geospatial experts offers the following training opportunities:

On-site or virtual workshops:

OpenTopography's team offers interactive workshops tailored to your organization's needs. These include a mix of short lectures with both software demos and hands-on exercises.

- Lidar topics: Lidar technology and data, tools for processing and visualizing data using LAStools, GDAL, QGIS, Potree, and topographic differencing
- Structure-from-motion (SfM): Introduction to SfM, data processing with sample datasets, survey design, and FAA regulations
- Other topics by request. Detecting landslides, estimating snow depth, hydrology analyses, and mapping paleo-shorelines
- Certificate of completion given to participants

Web-based training for self-paced learning:

OpenTopography has developed educational materials on the following topics:

- Data visualization
- Vertical and 3D topographic differencing
- Jupyter notebooks to process and display global topography
- Videos with software demos for QGIS, ArcMap, and CloudCompare
- Advanced topics from previous workshops







Contact OpenTopography at info@opentopography.org to inquire about training opportunities



Host sUAS (drone) datasets with OpenTopography

Why host on OpenTopography?

- Ease of data access increases data reuse
- Data is easy to discover: Federated by data.gov and easily searchable with major search engines
- All datasets receive a digital object identifier (DOI)
- Monitor dataset usage

Services provided on datasets:

- Access and download point cloud and raster datasets
- On-demand processing: Point cloud selection & filtering, DEM generation, and 3D point cloud visualization

Dataset submissions:

- Subscription or individual dataset options
- Optional branded skin for your organization



Tecolote volcano, Mexico



Painted Canyon, California



Lost River Fault, Idaho

Contact OpenTopography at info@opentopography.org for a price quote



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Bronze

- Access and download 3DEP/NOAA point cloud and 1 m raster datasets
- On-demand processing tools: Point cloud selection & filtering, DEM generation, 3D point cloud visualization, contours, and hydrology tools
- Logo added to data page to credit the provider's organization
- Providers have access to detailed real time data usage analytics and reports
- Fundamental Science Practices (FSP) acceptable digital repository for USGS scientific publications and data
- End-user support from OpenTopography's team of geospatial data experts

Silver

- All Bronze options
- Up to 3x faster processing speeds than the Bronze option
- On-demand topographic differencing
- Access to new technology and functionalities as they become available

Gold

- All Silver options
- Dedicated computer resources to complete processing requests much faster
- Access to the OpenTopography team for feature requests