

**Guide:** Polar Elevation Resources

**URL:** <https://www.pgc.umn.edu/guides/misc/polar-elevation-resources/>

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*PGC maintains a list of external (non-PGC) polar elevation data resources.*

## Overview

While PGC provides distinct sets of polar elevation data, stereo-derived DEMs including ArcticDEM and REMA, there are many other elevation resources available.

The list below is non-exhaustive, but is a curated list of repositories and data sets that PGC uses and recommends. PGC does not provide support for using any of these datasets.

If you are a polar elevation provider and would like to add your organization to this list, we would love to add you! Just send us a message with details.

## Elevation Data

### opentopography

OpenTopography facilitates efficient access to topography data, tools, and resources to advance our understanding of the Earth's surface, vegetation, and built environment. All NSF-funded high resolution topography datasets, regional and global (10-90 m resolution) and community contributed datasets (small to moderate sized datasets) hosted by OpenTopography are open and free for public access.

Portal URL: <https://portal.opentopography.org/datasets>

### CryoSat Ice and Ocean Data

Polar observation altimetry satellite to determine variations in Earth's continental ice sheets and polar sea ice. Maintained by the European Space Agency (ESA).

Portal URL: <https://earth.esa.int/>

### NASA Operation IceBridge

NASA's Operation IceBridge was the largest airborne survey of polar regions in history. Data products describe annual changes in ice surface elevation, topography of bedrock under ice sheets, glacier and ice shelf grounding lines, snow and ice thickness, sea ice distribution, sea ice freeboard, ice temperature, and meteorological observations.

Portal URL: <https://nsidc.org/data/icebridge/data>

### Ice, Cloud, and land Elevation Satellite / Geoscience Laser Altimeter System (ICESat / GLAS) Data

Elevation data over glaciers, ice sheets, and coastal areas. Maintained by the NASA Distributed Active Archive Center (DAAC) at National Snow and Ice Data Center (NSIDC).

Portal URL: <https://nsidc.org/data/icesat/>

### **Ice, Cloud, and land Elevation Satellite-2 (ICESat-2) Data**

Continuing first ICESat mission (from 2003-2009) to obtain elevation data over glaciers, ice sheets, and topography around the globe. Maintained by the NASA Distributed Active Archive Center (DAAC) at National Snow and Ice Data Center (NSIDC).

Portal URL: <https://nsidc.org/data/icesat-2/>

### **Alaska Elevation Portal**

Various elevation datasets over Alaska including LiDAR, hillshades, DEM, DSM, DTM, point cloud and more. Maintained by the Alaska Division of Geological and Geophysical Surveys.

Portal URL: <https://elevation.alaska.gov/>

### **Interferometric Synthetic Aperture Radar (IFSAR) - Alaska**

Elevation products generated from Interferometric Synthetic Aperture Radar (IFSAR) data in 2010-2012 for Alaska include Digital Surface Models (DSM) and Digital Terrain Models (DTM). Maintained by the USGS Earth Resources Observation and Science (EROS) Center.

Portal

URL:

<https://www.usgs.gov/centers/eros/science/usgs-eros-archive-digital-elevation-interferometric-synthetic-aperture-radar>

### **Canadian High resolution digital elevation model mosaic (hrdem mosaic)**

The High Resolution Digital Elevation Model (HRDEM) product is a hybrid product derived from airborne LiDAR data (mainly in the south) and from satellite images in the north (PGC's ArcticDEM).

Portal URL: <https://datacube.services.geo.ca/en/viewer/elevation/index.html>

### **Greenland Ice Mapping Project Digital Elevation Model (GIMP)**

Enhanced resolution digital elevation model for the Greenland Ice Sheet by combining ASTER and SPOT 5 DEMs over ice sheet periphery and margin with AVHRR photogrammetry for interior and far north. Data was calibrated to mean elevations from the Geoscience Laser Altimeter System (GLAS) that flew on the Ice, Cloud, and land Elevation (ICESat) satellite. Maintained by the NASA Distributed Active Archive Center (DAAC) at National Snow and Ice Data Center (NSIDC).

Portal URL: <https://nsidc.org/data/measures/gimp>

### **RADARSAT Antarctic Mapping Project (RAMP) Digital Elevation Model**

Complete topographic data coverage of all of Antarctica derived from satellite radar altimetry, airborne radar surveys, Antarctic Digital Database (Version 2), and large-scale topographic maps from USGS and the Australian Antarctic Division. Maintained by the NASA National Snow and Ice Data Center (NSIDC).

Portal URL: <https://nsidc.org/data/NSIDC-0082/versions/2>

# **Cryospheric Elevation Data (Non-Polar)**

## **High Mountain Asia Digital Elevation Model**

Optically derived digital elevation models created using the Surface Extraction from TIN-based Searchspace Minimization (SETSM) software. Maintained by the NASA Distributed Active Archive Center (DAAC) at National Snow and Ice Data Center (NSIDC).

Portal URL: <https://nsidc.org/data/highmountainasia/>

## **Shuttle Radar Topography Mission (SRTM)**

Mid-latitude coverage, all land areas between 60° north and 56° south, using radar interferometry technique. Maintained by the USGS EROS Data Center.

Portal URL: <https://www.usgs.gov/centers/eros/science/usgs-eros-archive-digital-elevation-srtm-mission>

## **TanDEM-X Digital Elevation Model**

The TanDEM-X DEM represents a digital surface model (not bare earth) and covers all of Earth's land surfaces, from pole to pole. It was generated from two almost identical satellites flying in close formation. TanDEM-X is free of charge but exclusively granted for scientific use. Commercial users must purchase a separate license. Maintained by Earth Observation Center (EOC) of the German Aerospace Center (DLR).

Portal URL: <https://geoservice.dlr.de/web/dataguide/tdm90/>