Common Questions

Why is the data in a Polar Stereographic map projection?
The state of Alaska will be the first region of ArcticDEM data released, although data for the entire Arctic will be released incrementally through 2017. National Snow and Ice Data Center Polar Stereographic North was selected by the ArcticDEM production team because it represents the most suitable metric projection that can be applied to the northern hemisphere north of 60°N latitude without the need for zones. Reprojections and datum transformations can be performed in nearly all contemporary GIS software programs.

Does ArcticDEM have copyright restrictions?
There is no license for the ArcticDEM data and it can be used and distributed freely.

What acknowledgements do I need to include in derived products and products that use ArcticDEM?
Please include “DEM(s) were created from DigitalGlobe, Inc., imagery and funded under National Science Foundation awards 1043681, 1559691, and 1542736.”

Is SETSM software open source and available for download?
SETSM is being prepared for release to the public. Please check back for more information.

What is the difference between the ArcticDEM mosaic and strip files?
The DEM strips are extracted from DigitalGlobe, Inc., WorldView-1, WorldView-2 and WorldView-3 imagery. Each pair was acquired in a single orbit with a specific date and time.

The mosaic files are compiled from the statistically-determined, best-quality DEM strips. The largest, most complete (least void) strips are put on top. Additional DEM strips are added below until the mosaic tile is complete or data availability is exhausted. The mosaic files are at 2 meter post spacing. Note that this is just one way to assemble a mosaic; we expect that users will assemble mosaics that fit their specialized requirements.

One important difference between the strips and the mosaic is that strips with excessive voiding or quality issues were excluded from the mosaic. The DEM strips that were excluded are still available for download as they can still be valuable for change detection or to fill holes in an end-user assembled product.

How are ground control points used to improve the data?
IceSAT altimetry data points are used to improve the vertical accuracy of both the DEM strips and mosaic files. IceSAT data points are filtered to exclude points in areas of high relief and over hydrographic features. Additional filtering is applied to remove altimetry points collected outside the temporal window of the source imagery acquisition date.

An \textit{xyz} translation is calculated for each strip and the offset is added to the metadata file. The individual DEM strips are not translated before distribution. Users can apply their own corrections to the strip if they do not agree with the one originally provided.

Where available, additional control information such as LiDAR or surveyed GPS points have been applied.
Why are there holes/voids in the data?
The DEMs are extracted from optical imagery collected from orbit. Atmospheric obstructions and environmental conditions such as clouds, fog, shadows, and dust can prevent high quality elevation data from being obtained. Open water, swaying trees, and homogeneous terrain can also cause voids or unpredictable results.

If you are removing bad data then why are there still blunders and artifacts?
The filtering of blunders and omission of data due to quality considerations is a balancing act. If too little is data is filtered, poor data will remain in the DEM. If data filtering and removal is too aggressive, quality data is lost.

When will the Arctic dataset be updated?
Updates are subject to additional funding. See the main ArcticDEM page for details.
Join the PGC Elevation Updates mailing list to receive release and other updates.

Why isn’t the data clipped to the coastline?
Each one of the 2 meter posting DEM strips was collected over a number of years and has a date and time stamp. At this resolution coastlines, rivers, lakes, and many other types of features can change. If the data is clipped to a low resolution coastline or a coastline from a particular year, usable, relevant data may be lost.

Why are lakes, rivers, and oceans portrayed inconsistently within ArcticDEM data (some as data voids, some flattened)?
Due to the seasonal variation in source imagery acquisition, some waterbodies were frozen while others were open. Stereo auto-correlation becomes problematic over open water due to the changing surface conditions, so data voids in areas of open water can be expected. Water bodies that are frozen will often exist as data within the DEM files, depicted as relatively flat surfaces with varied degree of texture.

What factors must I be aware of if the imagery was collected over multiple years and all seasons?
Any factor you would consider when looking at high-resolution satellite imagery or air photography should be considered in ArcticDEM data. These include snow cover, sea ice in coastal areas, and vegetation leaf-on/off condition.

Is the source satellite imagery used to create the DEMs included?
Source imagery is not provided due to licensing restrictions. Non-core PGC users interested in licensing the commercial imagery should contact DigitalGlobe, Inc.

Why is there a discrepancy between tiles downloaded from the Esri ArcticDEM Explorer/Web Service and the PGC website?
The DEMs provided by PGC are relative to the WGS84 ellipsoid, whereas the Esri services have transformed those values to be in geoidal heights (EGM08).

License and Usage
ArcticDEM data is an unlicensed product and may be used, distributed, and modified without permission.

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Citation
Along with acknowledgement to PGC, you should cite ArcticDEM as follows:


Contributors
The ArcticDEM project thanks its contributors and partners:

- Polar Geospatial Center, University of Minnesota
- The Ohio State University
- Cornell University
- University of Illinois at Urbana-Champaign
- National Science Foundation
- National Geospatial-Intelligence Agency (NGA)
- Esri

Contact
Questions, comments and corrections regarding ArcticDEM can be directed to the Polar Geospatial Center.

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