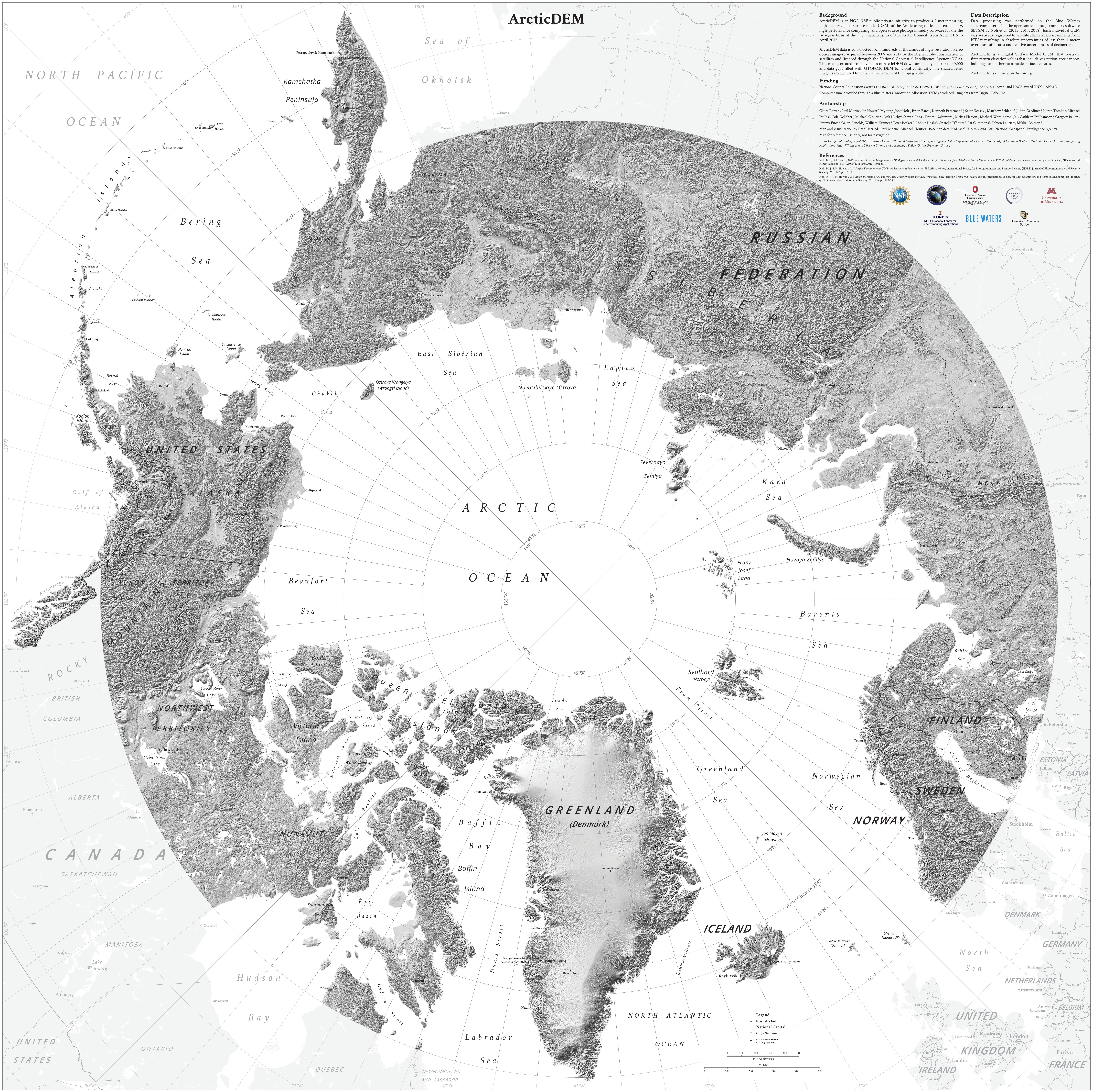
ArcticDEM



Background

ArcticDEM is an NGA-NSF public-private initiative to produce a 2 meter posting, high-quality digital surface model (DSM) of the Arctic using optical stereo imagery, high-performance computing, and open source photogrammetry software for the the two-year term of the U.S. chairmanship of the Arctic Council, from April 2015 to April 2017.

ArcticDEM data is constructed from hundreds of thousands of high-resolution stereo optical imagery acquired between 2009 and 2017 by the DigitalGlobe constellation of satellites and licensed through the National Geospatial-Intelligence Agency (NGA). This map is created from a version of ArcticDEM downsampled by a factor of 40,000 and data gaps filled with GTOPO30 DEM for visual continuity. The shaded relief image is exaggerated to enhance the texture of the topography.

Data Description

Data processing was performed on the Blue Waters supercomputer using the open source photogrammetry software SETSM by Noh et al. (2015, 2017, 2018). Each individual DEM was vertically registered to satellite altimetry measurements from ICESat resulting in absolute uncertainties of less than 1 meter over most of its area and relative uncertainties of decimeters.

ArcticDEM is a Digital Surface Model (DSM) that portrays first-return elevation values that include vegetation, tree canopy, buildings, and other man-made surface features.

ArcticDEM is online at *arcticdem.org*

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Authorship

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Map and visualization by Brad Herried[1], Paul Morin[1], Michael Cloutier[1]. Basemap data *Made with Natural Earth,* Esri, National Geospatial–Intelligence Agency.

Map for reference use only, not for navigation.

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