

Foundations for Land Management

FY 2016 President's Proposed Budget

Total requested is + \$X,000,000

3DEP

Outdated and inconsistent elevation data cost lives and hinder prosperity across the U.S. Current and accurate 3D elevation data are essential to help communities cope with natural hazards, support infrastructure, ensure agricultural success, strengthen environmental decision making and bolster national security.

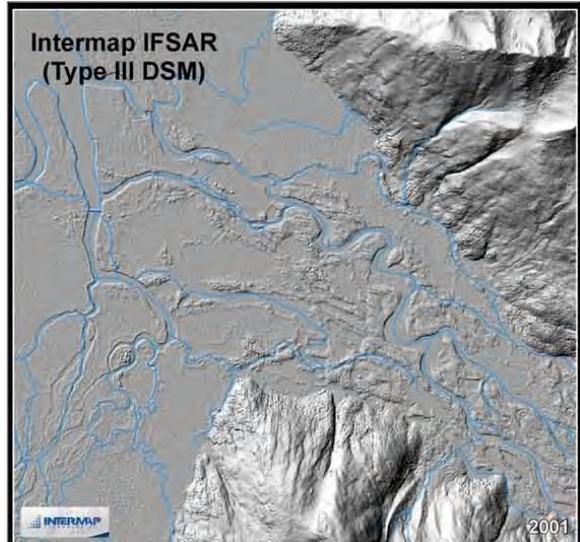
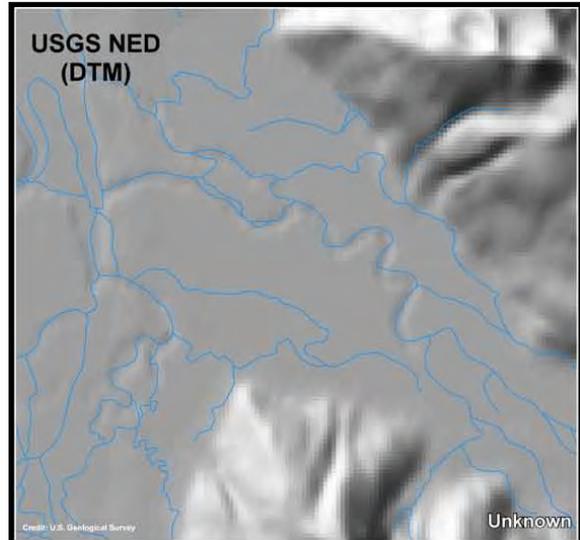
High-quality lidar (light detection and ranging) data enables previously unmapped features to be identified and analyzed, such as landslide areas, fault lines, and impact craters and scars. High-quality lidar data enable more accurate decision making, such as identification and management of flood risk, water resource planning, mitigation of coastal erosion and storm surge impacts, identification of tsunami evacuation routes, development of energy projects, streamlining of permitting processes, management of infrastructure and construction, more accurate and cost effective application of chemicals in farming, support of aviation safety and vehicle navigation.

The value of lidar data was never more apparent than when the devastating landslide occurred in Oso, Washington, catastrophic floods raged through Colorado's Front Range, and Hurricane Sandy slammed into the Atlantic coast. Elevation models created from lidar data were used to determine the extent of damage and are helping today to support ongoing recovery activities in all three of these areas.

3DEP presents a unique opportunity to collaborate between all levels of government, leverage the services and expertise of private sector mapping firms that acquire the data, and create jobs as new data availability spurs innovation and analysis for years to come.

The primary goal of 3DEP is to collaborate with partners to systematically acquire 3D elevation data over the conterminous United States, Hawaii, Puerto Rico, District of Columbia, and U.S. territories. It is based on results of the National Enhanced Elevation Assessment that documented over 600 business uses across 34 Federal agencies, all 50 States, selected local government and Tribal offices, and private and nonprofit organizations.

Each year, a fully funded multi-agency 3DEP would provide more than \$690 million in new benefits to government, the private sector, and citizens. A total investment of \$146 million per year, including Federal and state funding, would be required to achieve the goal of nationwide cover within eight years. The USGS is seeking to increase funding and build partnerships with other Federal, State, local, and tribal entities that require the data for a broad range of applications.



Example of enhanced elevation data

These data also directly contribute to the Secretary of Interior priorities for Landscape Scale Understanding, improving the lives of Native Americans, WaterSMART, and America's Great Outdoors.

Alaska Mapping and Map Modernization

The mapping of Alaska is part of the final chapter in the history of our geographical knowledge of the North American continent. Unlike the great 19th century surveys of the west, this new mapping program, called the [Alaska Mapping Initiative](#), is being carried forward into the digital era by numerous Federal and State programs and partnerships. This effort will ensure the availability of updated high-resolution topographic maps in Alaska, and the geospatial components needed to create these maps. High-resolution ifsar elevation data, updated National Hydrography Dataset information, satellite imagery, and other base geospatial information are key building blocks needed to modernize Alaska maps.

Due to climatic aspects, ifsar (Interferometric Synthetic Aperture Radar) data is used instead of lidar (light detection and ranging) data to cover the state. The planned funding increase would enable the USGS to collect more than 6,100 square miles of new ifsar elevation data over Alaska each year, with the expectations to leverage funds from other State and Federal sources resulting in combined coverage of more than 18,300 square miles annually.

For a number of reasons, mapping in Alaska has not kept pace with the rest of the nation. In fact, only recently has coverage of high-resolution ifsar elevation data surpassed the 50% level. Prior to this effort, topographical maps for much of Alaska were fifty years out of date and not produced to current standards, which rely largely on high resolution digital imagery and elevation data. As a consequence, essential public needs cannot be adequately met, among them transportation planning and safety, urban and regional planning, economic development, natural resource management, conservation and scientific research.

The requested funding increase would allow for new tools and procedures to integrate elevation data with surface water information, transportation, boundaries and man-made structures, thus providing easier map access and downloading capabilities along with improved web services.

Sustainable Land Imaging and Landsat Data Continuity

The successful launch of the Landsat 8 satellite in 2013 enables the continuation of the 42-year Landsat record and its tremendous benefits to the U.S. and global economies. Following extensive study, the Administration has established a plan for a long-term Sustainable Land Imaging program that would extend the four-decade long Landsat series of measurements of the Earth's land surfaces for another two decades. The plan includes three simultaneous activities. The first is the initiation of a new U.S.-built small satellite with a thermal infrared sensor (Thermal-Infrared Free Flyer) that would launch as soon as 2019 and would fly in formation with either a European Sentinel-2 satellite or Landsat 8. The second activity would be the initiation of Landsat 9, as a rebuild of Landsat 8, with a target launch date no later than 2023. The third activity is an ongoing investment in technology development and systems innovation to reduce risk in next generation missions, including Landsat 10. The USGS will continue its successful partnership with NASA in 2016 and beyond, to build capacity to develop and operate new land imaging satellites and collect, archive, process and distribute the data for these missions. In 2016, the USGS is requesting funding for the building of the Thermal-Infrared Free Flyer and Landsat 9 ground systems as well as the maintenance and operation of the current ground systems and satellite operations.



[Landsat 8 imagery showing ice cover on Lake Superior, February through April, 2014](#)