3D Elevation Program (3DEP)

Covering the Nation in 3D Elevation Data

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+ 3D Elevation Program (3DEP)

Overview

- The Value of 3DEP and Partnerships

- Tracking the Nation’s Progress
  - Where has data been collected?
  - Where do people want to collect data?
  - What has been spent on data?

- Get Data, Get Involved
  - Your 3DEP Acquisition Checklist to success
    - Verify | Socialize | Coordinate | Share
  - Share applications and encourage innovation

The 3D Elevation Program Initiative—A Call for Action

Circular 1399
U.S. Department of the Interior
U.S. Geological Survey
The Value of 3DEP and Partnerships

Quality data enables applications
3D Elevation Program (3DEP)

- Applies ground-breaking lidar technology to acquire and distribute three-dimensional data of bare earth, vegetation and structures at centimeter-level accuracy
- Increases the quality level of lidar being acquired to enable more accurate understanding, modeling, and prediction
- Goal to acquire national coverage in 8 years to serve a broad range of critical applications
+ 3DEP Data Quality

Improves and Enables Applications

10 meter resolution

1 meter resolution
What is the 3D Elevation Program?

The Value of a Coordinated National Program

- Address the mission-critical requirements for
  - 34 Federal agencies + 50 states and other organizations
  - Documented in the National Enhanced Elevation Assessment
- Return on investment 5:1 through applications that span the economy
  - Designed to conservatively provide new benefits of $690M/year
  - Potential to generate $13 billion/year in new benefits
- Leverage the capability and capacity of private industry mapping firms
- Achieve a 25% cost efficiency gain by collecting data in larger projects
- Completely refresh national elevation data holdings with new lidar and IfSAR elevation data products and services
3D Elevation Program (3DEP) Mission Critical Applications

- Alternative Energy
- Geologic Hazards
- Flood Risk Management
- Aviation Safety
- Infrastructure Management
- Precision Forestry
- Archaeology
+ 3DEP Products and Services

The National Map

3D Elevation Program = New Data Products

nationalmap.gov/3DEP  Click on Get Data
3DEP 2012-2015
READY for a National, 8-year program

- Published plan for action based on extensive stakeholder input

- Issued the first Broad Agency Announcement in 2014, to solicit partnerships; second round in progress

- Consolidated and modernized IT systems, ready for first phase of cloud implementation

- Contracts (GPSC3) being established to address increased data volume

- Revised the base lidar specification to 3DEP quality levels
Tracking the Nation’s Progress toward 3DEP Quality Data Coverage
Where has lidar data been collected?

U.S. Interagency Elevation Inventory

- **Interagency Collaboration**
  - USGS leads the topographic component by leveraging on-the-landscape knowledge of the USGS National Map liaison network
  - NOAA (Bathy-Lead), FEMA, USACE, USFS, NRCS, NPS

- **Improves understanding of the nation’s lidar landscape**

- **Active updates are critical to assessing progress toward 3DEP goals**

[www.coast.noaa.gov/inventory](http://www.coast.noaa.gov/inventory)
U.S. Interagency Elevation Inventory

Data Acquired through FY 2015*

- 13.9% of Lower 49 Meets 3DEP quality (2008-2015 only)
- 63.6% of AK Meets 3DEP quality (QL5 – ifsar)

*As of October 2015. All lidar quality levels, by Fiscal Year (ifsar Alaska). Some repeat coverage is due primarily to replacing older or less accurate data, change detection studies, or to overlap along the edges of adjacent acquisitions.
Where organizations need data.

Analysis Tool: Interagency Areas of Interest – Seasketch

Seasketch - http://seasket.ch/hwpR3E-MxO
FY15 3DEP Lidar Acquisition Summary

### 3DEP Lidar Data Contracted in FY15

<table>
<thead>
<tr>
<th>3DEP Funds $M</th>
<th>Partner Funds $M</th>
<th>Total $M</th>
<th>Sq Miles</th>
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<td>USGS</td>
<td>FEMA</td>
<td>NRCS</td>
<td>Other Feds</td>
</tr>
<tr>
<td>$7.2</td>
<td>$11.2</td>
<td>$7.1</td>
<td>$2.5</td>
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<tr>
<td>$25.5</td>
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</table>
FY15 3DEP Summary – Alaska IfSAR

- BLM, FWS, NPS, USFS and USGS partnered with State of Alaska
- Funding contributed over $7.4M
- 69,000 square miles acquired raising the State's total coverage to 63.4%
- Goal is to reach 70% coverage in FY16
FY16 3DEP Partnerships

As of May 15, 2016 – Process is ongoing

<table>
<thead>
<tr>
<th># of awards</th>
<th>Sq. mi.</th>
<th>3DEP USGS, FEMA HQ, NRCS NGCE $M</th>
<th>Other Partners $M</th>
<th>Total Cost $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>143,405</td>
<td>$11.5</td>
<td>$21.6</td>
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</tbody>
</table>

Other Partners

Total Cost

3DEP: National Elevation Data Program

3DEP Specifications:
- Quality level 2 or better (in elevation accuracy)
- Publicly available
- In progress as of May 2016

Data that Meet 3DEP Specifications:
- Data Association with Data Spectacular
- Data Acquisition with Data Spectacular
- In Progress with Data Spectacular

Data that Do NOT Meet 3DEP Specification
- Other Data
3DEP Unified Plan

3DEP Data Acquisition Funding

USGS and All Partners
FY15 vs Estimated Funding for 8 year Program

GAP in estimated annual funding needed for 8 year program

$42 M

$21 M

$11 M

$7 M

USGS

Other Federal Agencies

Other Partners (Non-Federal)
Get Data, Get Involved

- Your 3DEP Acquisition Checklist to success
- Verify | Socialize | Coordinate | Share
- Share applications and encourage innovation
Step 1: Check if data already exist

The US Interagency Elevation Inventory - https://coast.noaa.gov/inventory/
Step 2: Coordinate with others
Share your Area of Interest on Seasketch

- Visit [cms.geoplatform.gov/elevation/3DEP/View3DEPAOI](https://cms.geoplatform.gov/elevation/3DEP/View3DEPAOI)
- Submit your area of interest

Federal Agency Process:

- Contact your agency’s 3DEP Working Group Member
  - For instructions on how to add your area of interest to your agency’s consolidated requirements
  - Receive guidance on your agency’s acquisition process
  - Enlist your agency working group member to socialize the project at the national level in the 3DEP Working Group

If you do not know who your 3DEP WG member is contact 3DEP@usgs.gov
Step 3: Socialize your project and seek partners at the local level

- Contact your USGS National Map Liaison to learn about upcoming coordination meetings and other resources. A list of liaisons is available at liaisons.usgs.gov/geospatial/

- Use the Seasketch site to find potential partners within or adjacent to your area of interest (cms.geoplatform.gov/elevation/3DEP/)

- Participate in 3DEP Meetings and Workshops

- If you have funding you would like to invest in data acquisition, contact potential partners and define a joint project to leverage funding
Step 4: Plan for Data Acquisition

- Submit a proposal to receive 3DEP funding for your project
- Use the USGS Geospatial Products and Services Contracts (GPSC) to acquire data with the funding you and your partners currently have available
- Contribute data that meet 3DEP Specifications to the national 3DEP holdings
- Federal Agencies should work with their 3DEP Working Group member to explore all 3DEP acquisition options available within their agency.
- Questions or assistance on any of the above? Ask 3DEP: 3DEP@usgs.gov
Importance of Data Acquisition Coordination
C.3 Final Data Delivery

Data Delivery Specifications

Data shall adhere to USGS Base Lidar Specifications V1.2
3DEP Standards

Data must meet 3DEP standards to be ingested into the National Map

- Was everything delivered?
- Metadata Review

- Automated Checks
  - LAS files meet ASPRS file format requirements
  - Vertical Accuracy Assessment
  - Metadata are FGDC Compliant
  - Breaklines

- Visual Checks
  - LAS files are appropriately classified
  - LAS files are geometrically correct
  - Does DEM meet USGS Lidar Base Specifications and/or project requirements
3DEP Data Acquisition

Broad Agency Announcement (BAA)

- Detailed info on how to partner with the USGS & other Federal agencies to acquire 3DEP quality data
- Systematic, transparent process for non-Federal agencies to partner with Federal agencies – anyone is eligible to submit proposals
- Announced at Fed Biz Opps and Grants.gov
- Two Project Proposal options:
  - Contribute funds to acquire data using the USGS Geospatial Products and Services Contracts
  - Request 3DEP funds to acquire data using the partner’s contract
- Augmented with additional Federal investments throughout the year
- Overall process managed by the interagency 3DEP Working Group
3DEP FY17 BAA Timeline

- Federal Agencies Submit Areas of Interest

- BAA Released

- Other Stakeholders Submit Areas of Interest

- National Public Webinars

- Stakeholders Submit Proposals

- State/Regional Public Meetings/Workshops

- Federal 3DEP Partners Review Proposals

- Selections Announced

- BAA Contract and Grant Administration

- BAA Project Execution
Become a part of 3DEP

- Coordinate: Share your lidar requirements
- Partner: Through 3DEP for new acquisitions
- Promote: Participation to increase economies of scale
- Contribute: Ensure lidar data investments meet 3DEP specifications and contribute to 3DEP holdings
- Engage: Provide input to help refine and evolve the process to meet your needs
- Showcase: Share your lidar applications
Know before you go

- Resources available on nationalmap.gov/3DEP
- Ask questions - 3DEP@usgs.gov
- Please take handouts and share
- Share applications via Contact Us on 3DEP Website
- Visit the USGS booth

Thank you!