

# NGDA Dataset Report

**Official NGDA Title:** 1 meter Digital Elevation Models (DEMs) - USGS National Map

**Metadata Record Title:** 1 Meter Digital Elevation Models (DEMs) - USGS National Map

**A-16 NGDA Theme:** Elevation

## Executive NGDA Theme Champion(s):

**Name:** Jerry Johnston

**Agency:** DOI

**Email:** jerry\_johnston@ios.doi.gov

**Name:** Gerd Glang

**Agency:** DOC-NOAA

**Email:** gerd.glang@noaa.gov

## Theme Lead(s):

**Name:** Diane Eldridge

**Agency:** USGS

**Email:** deldridge@usgs.gov

**Name:** Ashley Chappell

**Agency:** NOAA

**Email:** ashley.chappell@noaa.gov

## Dataset Manager(s):

**Name:** Jason Stoker

**Agency:** USGS

**Email:** jstoker@usgs.gov

## Metadata:

**Registration Status:** Complete

**Registered on**

**GeoPlatform Link\*:** <https://www.geoplatform.gov/node/243/988723e5-b093-4520-9ea3-cbfea7769bae>

**Data.gov Metadata Link\*:** <http://catalog.data.gov/harvest/object/71175bdc-f65e-413a-801b-9cf990647584/html>

\*If the metadata has been updated and reharvested after publication of this report, the link may no longer be valid. The dataset may be searched for manually in Data.gov or GeoPlatform.gov.

# NGDA Lifecycle Maturity Assessment (LMA) Report

## Time Frame:

Baseline assessment responses include dataset activities from January 2015 to now

## LMA Submission:

**Status:** Complete

**Date:** 10/21/2015

**Extension Requested:** No

## LMA Reviewer(s):

**Supervisor:** Did not review

**Theme Lead:** Diane Eldridge

**Executive Champion:** Did not review

**SAOGI\*:** Did not review

**Other:** Did not review

## LMA Verifier:

**Name:** Diane Eldridge

**Email:** [deldridge@usgs.gov](mailto:deldridge@usgs.gov)

## Attachments:

To get access to any attachments referenced in the report, email the LMA Help Desk at [NGDA\\_LMA\\_help@fgdc.gov](mailto:NGDA_LMA_help@fgdc.gov). Please use the subject "Dataset Report Attachment(s)" and indicate the associated official NGDA title.

\*Senior Agency Official for Geospatial Information (SAOGI)

## Lifecycle Maturity Assessment (LMA) Summary

### Overall Maturity:

**Mature; Consistent**

General Questions: 81%

**Mature; Consistent**

Stage 4 - Access: 100%

**Optimized; Established**

Stage 1 - Define/Plan: 100%

**Optimized; Established**

Stage 5 - Maintain: 82%

**Mature; Consistent**

Stage 2 - Inventory/Evaluate: 100%

**Optimized; Established**

Stage 6 - Use/Evaluate: 100%

**Optimized; Established**

Stage 3 - Obtain: 67%

**Managed; Predictable**

Stage 7 - Archive: 66%

**Managed; Predictable**

### NGDA Dataset Maturity Definitions:

How To Calculate Maturity: [https://www.geoplatform.gov/sites/default/files/How\\_to\\_Calculate\\_Maturity.pdf](https://www.geoplatform.gov/sites/default/files/How_to_Calculate_Maturity.pdf)

Maturity	Maturity Characteristics for All Lifecycle Stages
Optimized; Established Rank = 5	Dataset meets virtually all business needs of all users. The dataset is considered authoritative by owners and secondary users. It is curated across all stages of the approved lifecycle. Future needs are defined on a regular basis and resources for addressing both current and future business requirements are available.
Mature; Consistent Rank = 4	Dataset meets all the business needs of the primary owner and most of the secondary users. The dataset is curated and used as authoritative by the primary owner. Dataset is used widely by secondary users actively engaged in sustaining the dataset. Future needs are identified and steps are planned to address these. All stages are supported and reviewed on a recurring basis. The dataset is well managed in relation to the approved lifecycle.
Managed; Predictable Rank = 3	Dataset meets a significant number of the business needs of the primary owner and is widely used as an authoritative resource by secondary users. Benchmark activities are occurring in at least four of the approved lifecycle stages. Management practices in relation to the approved lifecycle is moderate but consistent. Dataset is integrating changing business requirements in lifecycle stages impacting overall maturity.
Transition; Transformation Rank = 2	Dataset meets business needs of the primary owner and has moderate use by secondary users. Benchmark activities are occurring in at least three stages. Efforts to integrate funding, include partners, and obtain data are not supported in a sustained manner. Management practices in relation to the stages of the approved lifecycle is limited.
Planned; Initial Development Rank = 1	Dataset limited in meeting business needs of the primary owner. Benchmark activities in the approved lifecycle are just starting to consider secondary uses, partnerships are forming to support additional dataset uses. Dataset development is in a very early stage. Minimal or limited management against the benchmarks in the approved lifecycle.
No Activity Rank = no activity	Dataset meets project or local business needs of the primary owner, secondary or additional uses or users were not considered, not recognized as an authoritative data or is part of a similar dataset. Not managed to any of the benchmarks in the approved lifecycle.

## General Questions for All Stages

1) Is there a recurring process to obtain funding for all lifecycle stages of this dataset?

**Answer:** Funding support exists but is not adequate to meet known requirements, most lifecycle stages are supported.

**Justification Comment:**

**Attachment(s):** 0

To meet the recommended eight year collection cycle to satisfy the defined requirements in the 3DEP 'Call to Action' <http://pubs.usgs.gov/circ/1399/pdf/circ1399.pdf>, an estimated \$146 million a year is needed to collect lidar for the entire CONUS. Today, about \$50 million is invested annually in lidar and ifsar data by all public agencies.

Funding requests for data acquisition are updated and submitted annually via the Broad Agency Announcement: <http://nationalmap.gov/3DEP/BAARReferenceMaterials.html> In addition, linkages to these acquisition plans are published to the Geospatial Platform Marketplace.

Coordinating with supporting offices including, but not limited to, information technology, records management, data centers, including archiving and ultimate disposition, etc. Funding support for lifecycle management is part of the annual budgeting process for the National Geospatial Program.

2) Is there a process in place to ensure that open government and transparency guidelines are followed in all lifecycle stages for this dataset?

**Answer:** Process is published as appropriate with respect to sensitivity requirements, process is transparent, published appropriately.

**Justification Comment:**

**Attachment(s):** 0

Opportunities for public participation and collaboration are delivered via Broad Agency Announcements (BAA) announcements in the Federal Register <http://nationalmap.gov/3DEP/BAARReferenceMaterials.html> In addition, linkages to these acquisition plans are published to the Geospatial Platform Marketplace.

Data are all Unclassified and open to the public

3) Are there processes and tools in place so that staff are sufficiently knowledgeable to ensure a continuity of the dataset for all stages of the lifecycle, especially during staffing transitions?

**Answer:** Processes and tools to ensure dataset continuity are defined and beginning to be implemented.

**Justification Comment:**

**Attachment(s):** 0

NGP internal requirement exists for long-term archive (LTA) of all original source project data, including primary contract deliverables and project metadata. This requirement is currently being met through an offsite climate-controlled location, but, relocation to a more specialized, permanent LTA facility is being explored.

Continuity of operations as they pertain to the dataset have been assessed; tools and strategies for knowledge transfer have been implemented

- Operational continuity for quality assessment, data processing, product generation, inventory, and distribution is accommodated through parallel or fail-over capabilities between the Denver, CO and Rolla, MO NGTOC facilities. IT and operational staff at both facilities collaborate to ensure transfer of product, process, and infrastructure knowledge necessary to sustain program operation.

- Product requirements and specifications are documented through internal product, process, or software documentation or through publication of product standards and specifications. Internal documents consist of acquisition agreements and contract task orders, quality control guidelines and

procedure documents, product generation procedures, and documented policies and decisions. Standard test plans for QC and production software releases are under development. Standards, guidelines, policies and procedure documents are available here:

o3DEP Product definitions - [http://nationalmap.gov/3DEP/3dep\\_prodserv.html](http://nationalmap.gov/3DEP/3dep_prodserv.html)

oUSGS Lidar Base Specification -

<http://www.usgs.gov/newsroom/article.asp?ID=4064&from=rss#.VfBqUvIVhBc>

oStandards, Specifications and Standard Operating Procedures -

<https://sites.google.com/a/usgs.gov/ngtoc-home/ngtoc-standards-specifications-and-standard-operating-procedures>

Staff roles, responsibilities, education and experience are in line with agency standards, guidelines, and policies to ensure dataset continuity

•Operations and IT staff are trained on product, process, storage, archive, fail-over and distribution requirements, standards, policies and guidelines. Operations, IT, and research and development staff are in constant communication to ensure operational requirements are met, operational issues are resolved quickly, and anticipated program changes are planned for.

Staff are appropriately trained through professional development opportunities for education, networking, and sharing with the goal to ensure dataset continuity

IT staff keep up to date on technology required for the program through personal training and consultation with equipment and software contractors and experts and through collaboration with software system developers and operations experts.

Operations staff are trained in product requirements, QC and production processes, and new technologies affecting source data characteristics and QC and production software.

Dataset continuity knowledge is transferred during staff transitions

Knowledge required for program continuity is provided to new staff through formal training and informal collaboration among operations, IT, and R&D staff.

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## STAGE 1 - Define/Plan

4) Are user and business requirements defined and formalized?

**Answer:** A recurring process is in place, including defining new partner and stakeholder business needs as they arise, and is fully implemented.

**Justification Comment:**

**Attachment(s):** 0

User and agency requirements were identified in the National Enhanced Elevation Assessment (NEEA) <http://pubs.usgs.gov/fs/2012/3088/>

User and agency requirements are constantly being updated and identified by National Map Liaisons <http://liaisons.usgs.gov/geospatial/>

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5) How are partners/stakeholders involved in the requirements collection process?

**Answer:** A recurring process is in place, including defining new partner and stakeholder business needs as they arise, and is fully implemented.

**Justification Comment:**

**Attachment(s):** 0

Partners and stakeholders are annually encouraged to submit their requirements via the BAA proposal process: <http://nationalmap.gov/3DEP/BAARreferenceMaterials.html>

These requirements are consolidated via the geospatial platform.

<http://www.geoplatform.gov/elevation/3DEP>

NGP Liaisons are actively engaged in building and interacting with defined Communities of Use to gather requirements.

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6) Is there a quality assurance process for the dataset?

**Answer:** Quality assurance published as appropriate with respect sensitivity requirements.

**Justification Comment:**

**Attachment(s):** 0

Data collected via the Geospatial Product and Services Contract (GPSC) are checked for compliance to quality specifications and specific contract requirements by dedicated QC staff before the funds are let. Any partnership or contributed data that come in to NGTOC for inclusion into 3DEP are also checked by the QC staff for compliance to applicable standards and specifications. Quality checks are performed consistently among all QC staff according to proven methods. Data are not made part of the 3DEP database or distributed as 3DEP products unless they pass quality control and quality assurance procedures. Internal USGS production systems have been rigorously tested to produce products meeting intended specifications and final products are thoroughly evaluated for completeness and compliance to product standards. Distributable products are tagged with “produced to meet” or “tested” vertical accuracy values.

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7) Is there a process to evaluate the sensitivity, privacy, and confidentiality of this dataset?

**Answer:** Sensitivity, privacy, and confidentiality evaluations fully implemented, reviewed and updated on a recurring basis.

**Justification Comment:**

**Attachment(s):** 0

3DEP production and product distribution is for unclassified public domain data only. Sensitivity of data handling and publication for restricted data, such as over tribal or military areas, is approached on a case-by-case basis and is typically determined by key partners or data providers and defined in initial agreements prior to data acquisition by the USGS. Instructions for handling of sensitive data are tracked in the NGP Project Tracking System (PTS). Data having restrictions from publication may undergo quality control inspection and may be further processed to agreed-upon non-sensitive products, but are not entered into the 3DEP database in order to prevent it from being published or accessed by unauthorized users.

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8) Are defined data standards used in collecting, processing, and/or rendering the data?

**Answer:** Standards fully implemented documented and published as appropriate.

**Justification Comment:**

**Attachment(s):** 0

Products of the 3D Elevation Program are built upon the most current applicable standards for geospatial data. In particular, the foundation for the 3DEP standard DEMs is an assembly of digital elevation models that conform to USGS National Geospatial Program standards. Standard DEM updates generated from new lidar acquisition projects meet, at minimum, specifications defined in the USGS Lidar Base Specification (<http://pubs.usgs.gov/tm/11b4/>).

3DEP products are documented using the Federal Geographic Data Committee (FGDC) content standard for geospatial metadata. Standards and specifications discussed in question 3 define requirements for 3DEP source and distributable products. Published standards for several 3DEP distributable products are in work. 3DEP products are searchable collections through the Data.gov Open Government Initiative. Elevation products are provided in formats that are fully compliant with Executive Order 12906, OMB Circular A-16, OMB Circular A130, and OMB Circular A-119.

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## STAGE 2 - Inventory/Evaluate

9) Is there a process for determining if data necessary to meet requirements already exist from other sources (either within or outside the agency) before collecting or acquiring new data?

**Answer:** Process for determining appropriate data is being reused fully implemented, reviewed, and

updated on a regular basis.

**Justification Comment:**

**Attachment(s):** 0

Avoiding duplication is discussed on monthly 3DEP calls. An annual inventory of all public available elevation data are conducted and consolidated in the US Interagency Elevation Inventory:  
<https://coast.noaa.gov/inventory/>

All datasets and plans are published to [data.gov](http://data.gov) and [geospatialplatform.gov](http://geospatialplatform.gov) to assist in open discovery and avoidance of duplication.

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### STAGE 3 - Obtain

**10)** Is there a process for obtaining data in relation to this dataset?

**Answer:** Process is fully implemented, reviewed and updated on a regular basis.

**Justification Comment:**

**Attachment(s):** 0

Data acquisition is performed annually as it relates to the BAA:  
<http://nationalmap.gov/3DEP/BAARReferenceMaterials.html>

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**11)** Is the metadata in a FGDC endorsed geospatial metadata standard?

**Answer:** Metadata is available in a format endorsed by the FGDC, it fully describes the dataset and provides all the information required to make the dataset discoverable, accessible, and usable.

**Justification Comment:**

**Attachment(s):** 0

3DEP products conform to the Federal Geographic Data Committee's content standard for digital geospatial metadata (<http://www.fgdc.gov/metadata/csdgm/>). Textual metadata is provided in XML format for each downloadable DEM product and source dataset. The XML files are readable in any standard web browser. The textual metadata is provided with the product bundles (.zip), which are downloadable through the following platforms:

The National Map Viewer and Download Platform (<http://viewer.nationalmap.gov/basic/>)

The new National Map Download Client and API - <http://viewer.nationalmap.gov/basic/>

USGS ScienceBase ([www.sciencebase.gov/catalog/](http://www.sciencebase.gov/catalog/))

Geospatial Platform ([www.geoplatform.gov/](http://www.geoplatform.gov/))

Data.gov ([www.data.gov](http://www.data.gov))

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**12)** How complete is the geographic coverage as defined in the requirements for the dataset?

**Part 1 Answer:** Business requirement targets identified for completing geographic coverage. Cyclic updates for refreshing dataset in early phases.

**Part 2 Answer:** Dataset is presently less than 25% complete based on current requirement.

**Justification Comment:**

**Attachment(s):** 0

Data acquisition targets and long term goals are documented in the "Call to Action":  
<http://pubs.usgs.gov/circ/1399/>

There is an 8-year collection goal for 3DEP. Business requirements for data collection are captured via the BAA process. <http://nationalmap.gov/3DEP/BAARReferenceMaterials.html>

Currently the focus is on a single, once over lidar point cloud collection for CONUS; however we plan to revisit the concept of cyclical updates as we near the end stages of our first once-over collection

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### STAGE 4 - Access

**13)** Do you have a process for providing users access to the data in an open digital machine readable format?

**Answer:** User access process is fully implemented, data is available, process is reviewed and updated on a recurring basis.

**Justification Comment:****Attachment(s):** 0

Access to data is available via:

The National Map Viewer and Download Platform (<http://viewer.nationalmap.gov/basic/>)

USGS ScienceBase ([www.sciencebase.gov/catalog/](http://www.sciencebase.gov/catalog/))

Geospatial Platform ([www.geoplatform.gov/](http://www.geoplatform.gov/))

Data.gov ([www.data.gov](http://www.data.gov/))

The new National Map Download Client and API - <http://viewer.nationalmap.gov/basic/>

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**STAGE 5 - Maintain**

**14)** Is there a maintenance process for updating and storing the dataset?

**Answer:** Dataset maintenance process is fully implemented and processes are reviewed and periodically updated.

**Justification Comment:****Attachment(s):** 0

Software maintenance and enhancement is performed throughout the year and requirements are revisited on a monthly basis via Agile working groups that include representation from 1) primary National Geospatial Program stakeholders representing the needs of customers and internal program priorities, 2) software developers and applied research personnel, IT, and Operations personnel.

Equipment, data storage, and other infrastructure requirements are planned annually based on expected data volumes for the year and are adjusted within the year as issues arise.

Product update is performed through a variety of external and internal forums and cooperative agreements on an annual basis as defined elsewhere in this Lifecycle Assessment. Update procedures are documented within data flow diagrams, and decision trees at this NGP internal link: <https://sites.google.com/a/usgs.gov/ngtoc-home/ngtoc-standards-specifications-and-standard-operating-procedures>, and through other internal QC and product generation system software.

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**15)** Is there an error correction process as part of dataset maintenance?

**Answer:** Error correction process established.

**Justification Comment:****Attachment(s):** 0

Errors in existing 3DEP products, identified internally or by users, are logged, investigated, and corrected as deemed appropriate. Users are not notified when updates/corrections are made, as we do not keep track of all the users who download data and what ROIs they downloaded. All updates/changes are noted in the metadata, both spatial and textual. A 'known issues' web page for general user access is under consideration.

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**STAGE 6 - Use/Evaluate**

**16)** Is there a process to determine if the dataset meets user needs?

**Answer:** Process is fully implemented and repeated on a recurring basis.

**Justification Comment:****Attachment(s):** 0

3DEP is producing annual reports on what was accomplished that FY, and how we are meeting user requirements. NGP user engagement personnel and technical specialists interact regularly with key communities of use to gather feedback and requirements. User surveys are provided to the broader user community on a periodic basis.

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**17)** Is there a process to provide users information on how to access and properly use the dataset?

**Answer:** Process is fully implemented supporting access and proper use, process is reviewed on a recurring basis.

**Justification Comment:****Attachment(s):** 0

Users may learn how to access the data via the 3DEP web page and 3DEP product and service FAQs:  
[http://nationalmap.gov/3DEP/3dep\\_prodserv.html](http://nationalmap.gov/3DEP/3dep_prodserv.html)  
<http://www.usgs.gov/faq/categories/9865>

How-tos and help as they related to using data are documented in the National Map Viewer:  
<http://viewer.nationalmap.gov/basic/?basemap=b1&category=ned,nedsrc&title=3DEP%20View>

Appropriate use of the data is also documented in FGDC metadata that accompanies the dataset.

**18) Are the business processes and management practices assessed to meet changing technology?**

**Answer:** Assessment process is fully implemented for taking advantage of changing technology, process is reviewed on a recurring basis.

**Justification Comment:**

**Attachment(s):** 0

Emerging technology is evaluated and advanced by the USGS Center of Excellence for Geospatial Information Science (CEGIS), and via the interagency Emerging 3D Working Group (E3D-WG), the technical sub-group of the 3DEP Working Group. New technology is evaluated by the National Geospatial Technological Operations Center's Innovation Office, and incorporated into 3DEP products and production/distribution capability to improve product value, or to improve production efficiency and quality.

New technology and system design implementation are also reviewed by a System Design Board to help ensure cost effective enterprise implementations.

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## STAGE 7 - Archive

**19) Is there an archiving process for the dataset?**

**Answer:** Archival and/or processes are in early implementation.

**Justification Comment:**

**Attachment(s):** 0

Datasets have been assessed for records management requirements and long-term value. NGP internal requirement exists for long-term archive (LTA) of all original source project data, including primary contract deliverables and project metadata. This requirement is currently being met through an offsite climate-controlled location, but, relocation to a more specialized, permanent LTA facility is being explored.

Publication of new 3DEP products began in 2015. The need to archive any of these products on a periodic basis is not presently a requirement, but, is under consideration. Products are published and searchable through the following links:

The National Map Viewer and Download Platform

(<http://viewer.nationalmap.gov/basic/?basemap=b1&category=ned,nedsrc&title=3DEP%20View>)

USGS ScienceBase ([www.sciencebase.gov/catalog/](http://www.sciencebase.gov/catalog/))

Geospatial Platform ([www.geoplatform.gov/](http://www.geoplatform.gov/))

Data.gov ([www.data.gov](http://www.data.gov))

The new National Map Download Client and API - <http://viewer.nationalmap.gov/basic/>