



**2023 Lead Covered Agency
NGDA Theme Annual Performance Report
and Self-Assessment**
for
Elevation Theme

**Geospatial Data Act of 2018
Section USC 43 Sec 2805(b)(3) Requirements**

January 19, 2024



Table of Contents

Table of Contents.....	i
Introduction	1
Executive Summary.....	1
Official Theme Related Information	2
NGDA Theme Points of Contact.....	2
NGDA Theme Datasets.....	3
Meeting General Responsibilities – USC 43 Sec 2805(b)(2).....	4
Managing Theme-Related Content on GeoPlatform	4
Elevation Theme Progress Toward Meeting Requirements	5
Background	5
A. Geospatial Data Standards	5
B. Nationwide Population of the Data Theme	6
C. Establish Goals That Support the NSDI Strategic Plan	7
D. Addressing User Needs.....	8
FGDC Portfolio-Level Progress Toward Meeting GDA NGDA Data Theme Requirements	9
Background	9
A. Geospatial Data Standards	9
B. Nationwide Population of NGDA Datasets	9
C. Establish Goals That Support the NSDI Strategic Plan	10
D. Addressing User Needs.....	10
Appendix A: Survey Picklist.....	11
Appendix B: Brief Summary	12
Endnotes	15

Introduction

The Geospatial Data Act of 2018 (GDA) was signed into law on October 5, 2018. The GDA was included as a component of the FAA Reauthorization Act (H.R. 302, P.L. 115-254). The GDA is now in [U.S. Code, Title 43 – Public Lands, Chapter 46: GEOSPATIAL DATA](#).¹

The GDA Section 2805(b)(3)(E)(I) requires annual performance reports to be submitted to the Federal Geographic Data Committee (FGDC) that document “the activities relating to and implementation of the National Geospatial Data Asset [NGDA] data theme, including progress in achieving the requirements under subparagraphs (A), (B), (C), and (D)” of Section 2805(b)(3).

This Lead Covered Agency NGDA Theme Annual Performance Report (LCA NGDA Theme Report) covers the Fiscal Year 2023 (FY2023), October 1, 2022 through September 30, 2023. The report provides an update on progress made at the NGDA Portfolio and FGDC agency level in support of meeting GDA requirements. This is the fourth annual report which is based on a template and survey to facilitate consistency across the FGDC NGDA Themes. As per the GDA, a summary and evaluation of the progress to achieve the requirements will be generated by FGDC and will be provided to the National Geospatial Advisory Committee (NGAC) for comment. The FGDC summary is required to include a rating for each responsibility of "meets expectations," "made progress toward expectations," or "fails to meet expectations." These ratings are included in this report and are used to generate part of the annual FGDC Summary Report. The summary report along with NGAC comments are included in the biennial FGDC Report to Congress. This and other required reports and information are available online via the [FGDC GDA pages](#).²

The FY2023 LCA NGDA Theme annual report continues to use the GDA definition for NGDA data theme as the foundation for reporting compliance *for the data within the theme*. From the GDA definitions, NGDA data theme “means the NGDA core geospatial datasets (including electronic records and coordinates) relating to a topic or subject designated under Section 2805.”

Executive Summary

This fourth annual FGDC NGDA Theme report provides insights into cross-cutting FGDC portfolio-level activities and theme-specific agency-level activities that will document progress in meeting GDA requirements.

At the theme level, this report provides updates to summaries and information for ongoing processes, procedures, and actions within agencies that manage NGDA datasets, that were provided in previous annual reports.

At the portfolio level, this report highlights continued efforts across the FGDC agencies and the NGDA themes to evaluate the requirements of the GDA in the context of the goals and objectives of the [National Spatial Data Infrastructure \(NSDI\) Strategic Plan](#).³ Based on an emerging cross-agency understanding of these requirements, the FGDC NGDA Theme community is undertaking efforts to establish governance processes that build on accomplishments, provide value, and ensure efficiency. In alignment with GDA requirements, the NGDA Theme Leads developed an NGDA Theme Strategic Plan template which was approved by the FGDC Steering Committee in July 2023. The template can be tailored to each theme with goals and objectives that are cross walked with all GDA requirements and the NSDI Strategic Plan. This template provides flexibility and allows agencies that manage NGDA data to

identify actions and accomplishments that align with the established goals, objectives, and anticipated outcomes, while being sensitive to technological, economic, and organizational constraints and opportunities of the agencies managing NGDA data. NGDA Theme Leads will develop and finalize their individual theme strategic plans by the end of FY2024.

The efforts documented in this report reflect that all FGDC NGDA Themes are making progress towards meeting GDA requirements.

Official Theme Related Information

As per the OMB Circular A-16 Supplemental Guidance (A-16 Guidance), official theme related information includes designated points of contact for NGDA Portfolio management, including Theme Leads and Executive Champions, and the official list of NGDA datasets. As further described in the sections below, this information is maintained on the [GeoPlatform](#)⁴ [NGDA Portfolio Community](#)⁵ site.

NGDA Theme Points of Contact

Reference: [USC 43 Sec 2805\(b\)\(3\)\(E\)\(i\)](#)

Section 2805(b)(3)(E)(i) requires lead covered agencies to “designate a point of contact within the lead covered agency who shall be responsible for developing, maintaining, coordination relating to, and disseminating data using the GeoPlatform” as part of administering the NGDA theme.

In accordance with the A-16 Guidance, NGDA theme personnel play an ongoing, vital role in the operation and maintenance of a theme. They are individuals who provide interdepartmental leadership and coordination at the NGDA theme level and work with NGDA dataset managers to facilitate portfolio development including activities associated with standards and guidance, among other things.

Traditionally, these roles have been coordinated through lead covered agencies with the FGDC Office of the Secretariat and the NGDA theme lead assuming a majority of NGDA theme responsibilities. Transitioning to meet specific GDA responsibilities provides opportunities for lead covered agencies to designate specific points of contact to coordinate an expanding portfolio of datasets across the NGDA theme and for greater dissemination of data through the GeoPlatform.

Theme and agency points of contact provided in Table 1 below are maintained to meet requirements from the [A-16 Supplemental Guidance Roles and Responsibilities](#).⁶ This information is kept up-to-date in the [NGDA Portfolio Community](#). From the NGDA Portfolio Community page, the NGDA Theme Leads and NGDA Theme Executive Champions lists are found on the [Contacts](#)⁷ page.

Elevation Theme Contacts	
Theme Lead(s):	Brian C. Hadley, U.S. Department of the Interior, U.S. Geological Survey Ashley Chappell, U.S. Department of Commerce, National Oceanic and Atmospheric Administration
Executive Theme Champion(s):	Dr. Michael Tischler, U.S. Department of the Interior, U.S. Geological Survey Rear Admiral Benjamin K. Evans, U.S. Department of Commerce, National Oceanic and Atmospheric Administration

Table 1. Theme and Lead Covered Agency Points of Contact Involved in Theme Management.

NGDA Theme Datasets

The NGDA datasets and the agencies listed in Table 2 are provided as the official list of NGDA that currently populate the Elevation Theme. If the theme includes NGDA datasets managed by non-covered agencies, they are shown in bold. Support for GDA requirements by these non-covered agencies is very important to the success of the themes. The official list of NGDA Portfolio Datasets is maintained on the GeoPlatform in the [NGDA Portfolio Community](#). Each NGDA dataset also has a unique value assigned, called an NGDAID, that allows the dataset to be tracked throughout its lifecycle.

NGDAID	Elevation Theme NGDA Datasets	Agency
37	U.S. Coastal Lidar Elevation Data - Including The Great Lakes And Territories, 1996 - Present	U.S. Department of Commerce, National Oceanic and Atmospheric Administration
39	Global Multi-Resolution Terrain Elevation Data - National Geospatial Data Asset (NGDA)	U.S. Department of the Interior, U.S. Geological Survey
40	Lidar Point Cloud - USGS National Map 3DEP Downloadable Data Collection	U.S. Department of the Interior, U.S. Geological Survey
41	MultiBeam Bathymetry Database (MBBDB)	U.S. Department of Commerce, National Oceanic and Atmospheric Administration
42	1/3rd arc-second Digital Elevation Models (DEMs) - USGS National Map 3DEP Downloadable Data Collection	U.S. Department of the Interior, U.S. Geological Survey
43	National Flood Hazard Layer (NFHL)	U.S. Department of Homeland Security, Federal Emergency Management Agency
44	Marine Trackline Geophysical Database	U.S. Department of Commerce, National Oceanic and Atmospheric Administration
45	NOS Hydrographic Surveys Collection	U.S. Department of Commerce, National Oceanic and Atmospheric Administration
46	Shuttle Radar Topography Mission 1 Arc-Second Digital Terrain Elevation Data - Global - National Geospatial Data Asset (NGDA)	U.S. Department of the Interior, U.S. Geological Survey
184	1 meter Digital Elevation Models (DEMs) - USGS National Map 3DEP Downloadable Data Collection	U.S. Department of the Interior, U.S. Geological Survey
185	5 Meter Alaska Digital Elevation Models (DEMs) - USGS National Map 3DEP Downloadable Data Collection	U.S. Department of the Interior, U.S. Geological Survey
199	Continuously Updated Digital Elevation Model (CUDEM) - 1/9 Arc-Second Resolution Bathymetric-Topographic Tiles	U.S. Department of Commerce, National Oceanic and Atmospheric Administration
200	Continuously Updated Digital Elevation Model (CUDEM) - 1/3 Arc-Second Resolution Bathymetric-Topographic Tiles	U.S. Department of Commerce, National Oceanic and Atmospheric Administration

Table 2. NGDA Theme Datasets.

Meeting General Responsibilities – USC 43 Sec 2805(b)(2)

Reference: [USC 43 Sec 2805\(b\)\(2\)](#)

How is the Lead Covered Agency(ies) participating in ensuring the coordinated management of the Theme? (Select all that apply - see *Appendix A for the complete list of optional responses*)

- Agency participated in cross-agency activities related to the development of the Theme Strategic Plan Template
- Theme Lead(s) attend NGDA Theme Community Meetings
- Theme Lead(s) participate in GDA Working Group meetings
- Theme Leads(s) review the outcomes from GDA Working Group meetings and provide feedback on approaches for GDA compliance
- Theme Lead(s) coordinate GDA compliance activities with Theme personnel
- Theme Lead(s) coordinate changes to the Portfolio inventory for Steering Committee approval
- Theme Lead(s) coordinate Theme Hub Sites on the GeoPlatform with established points of contact (e.g., Site Maintainers, site editors)
- Theme Lead(s) update Dataset Managers and other points of contact (e.g., metadata POC)
- Theme Lead(s) evaluate standards applicable to the Portfolio inventory
- Theme Lead(s) communicate new and ongoing Portfolio Management activities and priorities with Dataset Managers in the Theme
- Steering Committee members coordinate with the Theme

Managing Theme-Related Content on GeoPlatform

During FY2023, the NGDA Themes transitioned from legacy GeoPlatform Theme sites to new [Hub-based Theme sites](#).⁸ As part of the transition, the themes established by consensus, the minimum required site content. All eighteen themes were transitioned and updated to reflect this minimum content requirement. Individual themes have the flexibility to publicly display and manage additional information from a variety of sources related to their theme. The new Hub sites provide end users, stakeholders, and partners with a place to find consistent theme-related information and access to NGDA datasets and services.

Elevation Theme Progress Toward Meeting Requirements

Background

This section provides Theme-related updates to information provided in previous annual reports and designates the Lead Covered Agency self-assessment for each of the four GDA NGDA Data Theme Requirements.

A. Geospatial Data Standards

The following table describes the GDA requirements for Section 2805(b)(3)(A) pertaining to geospatial data standards, and the Lead Covered Agency’s self-assessment for meeting those requirements.

GDA Requirement	USC 43 Sec 2805(b)(3)(A) – Provide leadership and facilitate the development and implementation of geospatial data standards for the National Geospatial Data Asset data theme, with a particular emphasis on a data content standard for the National Geospatial Data Asset data theme, including by— i. assessing existing standards; ii. identifying anticipated or needed data standards; and iii. developing a plan to originate and implement needed standards with relevant community and international practices— I. in accordance with Office of Management and Budget Circular A– 119, or any successor thereto; and II. consistent with or as a part of the plan described in subparagraph (B);
Lead Covered Agency Self-Assessment	Made Progress Toward Expectations

Note: The lead covered agency reports that no change was made to the self-assessment for this requirement from the prior year. FGDC efforts to address Sec 2805(b)(3)(A) are summarized under the “FGDC Portfolio-Level Progress Toward Meeting GDA NGDA Data Theme Requirements” section below.

B. Nationwide Population of the Data Theme

The following table describes the GDA requirements for Section 2805(b)(3)(B) pertaining to a plan for nationwide population of the data theme, and the Lead Covered Agency’s self-assessment for meeting those requirements.

GDA Requirement	<p>USC 43 Sec 2805(b)(3)(B) – provide leadership and facilitate the development and implementation of a plan for nationwide population of the National Geospatial Data Asset data theme, which shall—</p> <ul style="list-style-type: none"> (i) include developing partnership programs with States, Indian tribes, institutions of higher education, private sector entities, other Federal agencies, and local governments; (ii) meet the needs of users of geospatial data; (iii) address human and financial resource needs; (iv) identify needs relating to standards, metadata for geospatial data within the National Geospatial Data Asset data theme, and the GeoPlatform; and (v) expedite the development of necessary National Geospatial Data Asset data themes;
Lead Covered Agency Self-Assessment	Made Progress Toward Expectations

Note: The lead covered agency reports that no change was made to the self-assessment for this requirement from the prior year. FGDC efforts to address Sec 2805(b)(3)(B) are summarized under the “FGDC Portfolio-Level Progress Toward Meeting GDA NGDA Data Theme Requirements” section below.

C. Establish Goals That Support the NSDI Strategic Plan

The following table describes the GDA requirements for Section 2805(b)(3)(C) pertaining to establishing goals that support the NSDI Strategic Plan, and the Lead Covered Agency’s self-assessment for meeting those requirements.

GDA Requirement	USC 43 Sec 2805(b)(3)(C) – establish goals that support the strategic plan for the National Spatial Data Infrastructure prepared under section 2804(c);
Lead Covered Agency Self-Assessment	Made Progress Toward Expectations

References: [NSDI Strategic Plan 2021-2024](#)

Note: The lead covered agency reports that no change was made to the self-assessment for this requirement from the prior year. FGDC efforts to address Sec 2805(b)(3)(C) are summarized under the “FGDC Portfolio-Level Progress Toward Meeting GDA NGDA Data Theme Requirements” section below.

D. Addressing User Needs

The following table describes the GDA requirements for Section 2805(b)(3)(D) pertaining to addressing user needs, and the Lead Covered Agency’s self-assessment for meeting those requirements.

GDA Requirement	USC 43 Sec 2805(b)(3)(D) – as necessary, collect and analyze information from users of geospatial data within the National Geospatial Data Asset data theme regarding the needs of the users for geospatial data and incorporate the needs of users in strategies relating to the National Geospatial Data Asset data theme;
Lead Covered Agency Self-Assessment	Made Progress Toward Expectations

Note: The lead covered agency reports that no change was made to the self-assessment for this requirement from the prior year. FGDC efforts to address Sec 2805(b)(3)(D) are summarized under the “FGDC Portfolio-Level Progress Toward Meeting GDA NGDA Data Theme Requirements” section below.

FGDC Portfolio-Level Progress Toward Meeting GDA NGDA Data Theme Requirements

Background

This section highlights the actions that reflect FGDC Portfolio-level progress towards meeting GDA requirements.

Since the passage of the GDA, FGDC agencies and the Theme Leads have continued to evaluate options to consistently document progress and streamline reporting. In alignment with GDA requirements, the NGDA themes completed development of an NGDA Theme Strategic Plan template in June 2023, based on an existing strategic plan developed for the Transportation Theme. The template was approved by the FGDC Steering Committee for use by all themes on June 30, 2023, and a timeline for completion by the end of FY2024 was established. The template provides a consistent framework for agencies to develop goals, objectives, and actions that directly align with GDA requirements. Theme annual reports will highlight agency actions and accomplishments associated with the strategic plan in support of standards, nationwide population of NGDA datasets, strategic planning that aligns with the NSDI Strategic Plan and other guidance, and meeting user needs. Additional details for each of the four GDA NGDA Data Theme Requirements are included below.

A. Geospatial Data Standards

The FGDC is the lead entity in the executive branch of government for the development, implementation, and review of policies, practices, and standards relating to geospatial data. The GDA describes responsibilities related to geospatial standards for the FGDC and the agencies covered by the law (covered agencies). These responsibilities are reinforced by Office of Management and Budget Circular A-16 and OMB Circular A-119 (development and use of voluntary consensus standards).

The FGDC Executive Committee has established a Standards Task Team to evaluate the requirements, options, processes, resources, and decision structure required to establish an operational and sustainable FGDC standards process. This will include evaluating the FGDC's roles and responsibilities in geospatial standards with those of other standards making bodies, non-Federal participation, and considerations for standards supporting the National Spatial Data Infrastructure (NSDI).

The Executive Committee Standards Task Team is currently developing recommendations to update the FGDC's standards management process and will recommend a path forward for the FGDC. Refer to the FGDC Standards webpage (<https://www.fgdc.gov/standards>) for additional information.

B. Nationwide Population of NGDA Datasets

This section of the GDA calls on the FGDC agencies to “provide leadership and facilitate the development and implementation of a plan for nationwide population of the National Geospatial Data Asset data theme.” FGDC agencies evaluate and manage NGDA core datasets and other geospatial data to meet mission requirements and to address priority needs of the agency and the nation. The approved strategic plan template incorporates ongoing agency efforts to establish partnerships, conduct requirements and user needs analysis, identify options for appropriate human and financial resourcing,

and identify needs relating to standards for NGDA datasets in support of nationwide population of priority geospatial datasets.

In accordance with the GDA definition of NGDA data theme, the NGDA Theme Strategic Plan template will allow theme plans to focus on nationwide population of the core datasets within the theme and allow agencies to document, provide citations to, and report on efforts that facilitate meeting this requirement. NGDA Theme Strategic Plans covering the period from 2025-2027 will be due by the end of FY2024. Once completed, the strategic plans will be published on the GeoPlatform Theme sites.

C. Establish Goals That Support the NSDI Strategic Plan

The NSDI mission is to enable a “national network of geospatial resources that seamlessly integrate location-based information to serve the needs of the Nation and wider global interests.” The FGDC and the geospatial community have partnered for decades in building the National Spatial Data Infrastructure. Through this collaboration and modernization of geospatial data resources on the internet, combined with advances in technology and availability of mobile devices, situational awareness has increased. Having geospatial data and information available on demand for a wide variety of applications has become an expectation for most users. The vision of the NSDI Strategic Plan 2021-2024 of a “geo-enabled Nation and world for place-based decision making” is to support efficient resource allocation and provide a platform for partnerships to support high quality data. The FGDC is developing a new NSDI Strategic Plan which is scheduled to be finalized by the end of FY2024. The goals of the Theme Strategic Plans will subsequently be revised based on the new NSDI Strategic Plan.

The NGDA Theme Strategic Plan template described in the “Background” section above will allow agencies to identify actions and accomplishments that align with mission requirements, and support implementation of the NSDI Strategic Plan and its goals and objectives. For the NGDA portfolio, the NSDI Strategic Plan 2021-2024 objectives include efforts to: 1) streamline portfolio management practices and establish standards for NGDA themes and associated datasets, 2) develop common approaches to implement data acquisition and lifecycle management strategies, 3) advance the practice of integrating government and nongovernment data into national datasets, as necessary and 4) ensure that geospatial and other meaningful data can be easily integrated and used by stakeholders and the public.

D. Addressing User Needs

The NGDA Theme Strategic Plan (planned publication at the end of FY 2024) will identify the needs of users related to NGDA datasets within the Theme and provide strategies to meet those needs. Additionally, the GeoPlatform offers open geospatial hosting and services for US federal agencies with geospatial data assets to address the needs of a diverse user community, including government, non-government, and public users. Each NGDA Theme has a site within the GeoPlatform that hosts the NGDA datasets. These Theme sites, along with the GeoPlatform, provide access to open geospatial data assets including metadata, services, applications, and tools for an open-source geospatial suite of capabilities. These capabilities are consistent with the 'Findability, Accessibility, Interoperability, and Reuse (FAIR) Guiding Principles for scientific data management and stewardship'⁹ as part of meeting user needs. Through ongoing GeoPlatform modernization and FGDC efforts to improve and enhance NGDA metadata and services, users have access to analysis-ready data to meet their geospatial analytical needs.

Appendix A: Survey Picklist

This appendix provides the full set of available choices presented for the Meeting General Responsibilities – USC Sec.2805(b)(2) question.

How is the Lead Covered Agency(ies) participating in ensuring the coordinated management of the Theme? (Select all that apply)

- Agency participated in cross-agency activities related to the development of the Theme Strategic Plan Template
- Theme Executive Champion(s) attend NGDA Theme Community Meetings
- Theme Lead(s) attend NGDA Theme Community Meetings
- Theme Lead(s) participate in GDA Working Group meetings
- Theme Leads(s) review the outcomes from GDA Working Group meetings and provide feedback on approaches for GDA compliance
- Theme Lead(s) coordinate GDA compliance activities with Theme personnel
- Theme Lead(s) coordinate changes to the Portfolio inventory for Steering Committee approval
- Theme Lead(s) update Dataset Managers and other points of contact (e.g., metadata POC)
- Theme Lead(s) coordinate Theme Hub Sites on the GeoPlatform with established points of contact (e.g., Site Maintainers, site editors)
- Theme Lead(s) evaluate standards applicable to the Portfolio inventory
- Theme Lead(s) communicate new and ongoing Portfolio Management activities and priorities with Dataset Managers in the Theme
- Steering Committee members coordinate with the Theme
- No participation in ensuring coordinated management of the Theme
- Other [Textbox provided]

Appendix B: Brief Summary

The following summary provides details on accomplishments the Elevation Theme made in FY2023 in meeting the GDA requirements under USC 43 Sections 2805(b)(3)(A)-(D).

Section 2805(b)(3)(A): Data Standards

During FY2023, the United States Geological Survey (USGS) [3D Elevation Program \(3DEP\)](#)¹⁰ Lidar Base Specification 2023 revision A was approved by the interagency 3DEP Working Group and published on the [3DEP Standard and Specifications website](#).¹¹ The DOI-USGS participated in Open Geospatial Consortium (OGC) meetings related to appropriate data and services formats. USGS also has a leadership role in the American Society of Photogrammetry and Remote Sensing (ASPRS) airborne lidar committee, which helped lead the publication of the new [2nd Edition of the ASPRS Positional Accuracy Standards for Digital Geospatial Data](#).¹²

In November 2023, the four agencies that make up the [Joint Airborne Lidar Bathymetry Technical Center of Expertise \(JALBTCX\)](#)¹³ met in Kiln, Mississippi, to celebrate the [25th anniversary](#)¹⁴ of this consequential partnership that contributes to Federal Geographic Data Committee (FGDC) goals for bathymetric lidar data standards under USC 43 Sec 2805(b)(3)(A). The U.S. Army Corps of Engineers (USACE), the U.S. Navy, the National Oceanic and Atmospheric Administration (NOAA) and USGS all have dependencies on airborne bathymetric lidar for coastal, lake and riverine applications, with two current lidar elevation National Geospatial Data Assets (NGDA) (NOAA and USGS) and one potential pending dataset (USACE). JALBTCX has enabled the agencies to work together, and with academia and the private sector, to discuss requirements, develop the technology, coordinate and collaborate on data acquisition, improve processing techniques, and standardize data stewardship. JALBTCX's successes over the last 25 years includes 2019's Blue Book II, an update to the original Blue Book and a partner-developed, community-validated bathymetric lidar specification to meet user needs. Blue Book II is a compendium of knowledge gained in airborne lidar bathymetry sensor design, testing, evaluation, signal processing, uncertainty estimation, and data exploitation for end-user requirements. The bathymetric lidar specification established a standard specification document that can also be used to acquire data through contracts, enabling additional consistency across federal and state geospatial agencies that procure bathymetric lidar data.

Section 2805(b)(3)(B): Nationwide Data Population

In FY2023, DOI-USGS, in partnership with federal, state, local, and Tribal partners, contracted for acquisition of lidar data that increased nationwide coverage of 3DEP data available or in progress from 89.5% to 94.7% of the Nation. About \$6M of Inflation Reduction Act (IRA) funding was leveraged with partner funding to acquire over 97,000 square miles of 3DEP lidar data in 25 states.

In support of Geospatial Data Act (GDA) requirements for USC 43 Sec 2805(b)(3)(B) and identifying needs relating to standards and metadata for geospatial data within the NGDA Elevation data theme, NOAA's National Centers for Environmental Information (NCEI) worked in 2023 to improve its [CruisePack](#)¹⁵ metadata tool and educate data providers and stakeholders on how to use it. CruisePack is a data packaging and metadata gathering software tool that simplifies data submission preparation for cruise-based data, including bathymetry. CruisePack is a standalone executable that has a simple interface to control packager operation and metadata entry. Once the metadata entry is complete, data packaging is automatic. CruisePack copies the data, generates machine-parseable JavaScript Object

Notation (JSON) metadata records, and creates a checksum manifest file. This information comes into NCEI in a structured data package that conforms to the BagIt specification and can be programmatically scraped by NCEI data ingest pipelines. CruisePack has streamlined the submission process for data providers and will continue to be enhanced and supported by NCEI. CruisePack engagement over the course of the year included one-on-ones with data providers and hands-on college-level training to build student awareness of data stewardship requirements as they head into the geospatial workforce.

Section 2805(b)(3)(C): Supporting NSDI Strategic Plan

In FY2023, the [U.S. Interagency Elevation Inventory \(USIEI\)](#)¹⁶ loaded 105 new datasets, published four quarterly updates, and added more detailed footprints to downloaded products. The USIEI contributes to the National Spatial Data Infrastructure (NSDI) goal for ensuring open standards interoperability with geospatial shared services. DOC-NOAA manages the USIEI with DOI-USGS support, to make federal elevation data and state-contributed data publicly discoverable so that users can search for existing data before acquiring new data.

The National Landslide Preparedness Act (NLPA) established a 3DEP Subcommittee to the National Geospatial Advisory Committee under the FGDC. In June 2023 the Subcommittee published a report on their assessment of the operations and direction of 3DEP. The report included a series of recommendations. The Subcommittee also issued a [resolution](#)¹⁷ in October 2023 endorsing the design for the next generation of 3DEP described in the draft “The 3D National Topography Model Call for Action Part 2: Next Generation of the 3D Elevation Program”. The NLPA also established a 3D Elevation Federal Interagency Coordinating Committee. A package was submitted to the Department to initiate the committee to be chaired by the Deputy Assistant Secretary of Water and Science.

Also in 2023, NOAA, USGS and partner agencies in the [Interagency Working Group on Ocean and Coastal Mapping \(IWG-OCM\)](#)¹⁸ shared the draft Standard Ocean Mapping Protocol (SOMP) for public comment ahead of finalization. The SOMP is a National Ocean Mapping, Exploration and Characterization Strategy objective that supports NSDI strategic plan goals, as characterized under USC 43 Sec 2805(b)(3)(C) in support of consistent approaches to data acquisition. The SOMP includes standards and best practices for bathymetry (elevation), as well as related remote sensing of acoustic backscatter, water column data, side scan and sub-bottom profiling, and magnetometer data. The Department of Commerce (DOC) also continued to implement its [Commerce Geospatial Strategy](#)¹⁹ for fiscal years 2021-2024. The strategy includes goals and supporting objectives that directly support the DOC Data Strategy (2021–2024), the GDA, and the NSDI Strategic Plan (2021–2024).

Section 2805(b)(3)(D): Collect and Analyze Data on User Needs

The [3D Nation Elevation Requirements and Benefits Study](#)²⁰ led by DOC-NOAA and DOI-USGS, was completed in FY23 to document national requirements for improved topographic and bathymetric elevation data, estimate the costs and benefits of meeting these requirements, and evaluate multiple national enhanced program implementation strategies. This was a seminal study that included needs of 45 Federal agencies, all 50 states, and a sampling of local, Tribal, private, and non-profit organizations. Based on the results of the 3D Nation Study, the USGS designed a plan for the next generation of 3DEP with a shorter collection cycle and refreshed coverages of higher quality elevation data for the U.S. and its territories. The new data, when compared to the baseline 3DEP data, will significantly expand analysis capabilities and support assessments of landscape change. The draft plan was shared

extensively with the governance groups and other stakeholders for feedback. The final plan will be published in FY2024.

Over 3 petabytes of elevation data were distributed by DOI-USGS via The National Map. This includes 107 million downloads of lidar point cloud data, not including data accessed through other channels such as the Amazon Web Services (AWS) Public Dataset or portals such as MS Planet and Open Topography. The 3DEP Elevation web coverage service had 678 million hits, and there were another 6.6 trillion elevation base map hits.

Over the course of 2023, NOAA continued its buildout of the [National Bathymetric Source \(NBS\)](#)²¹ to cover the U.S. Atlantic, Gulf, and Caribbean Regions. Supporting USC 43 Sec 2805(b)(3)(D) of the GDA to ‘collect and analyze the needs of users’ and ‘incorporate those needs of users into strategies relating to the NGDA datasets,’ the NBS is an intensive effort to create, integrate and maintain authoritative, high-resolution bathymetry composed of the best available data. This project is responsive to user needs by enabling the creation of next-generation nautical charts while also providing support for modeling, industry, science, regulation, and public use. Primary sources of bathymetry include NOAA and USACE hydrographic surveys and topographic bathymetric (topo-bathy) lidar (light detection and ranging) data (which are also National Geospatial Data Assets). Data submitted through NOAA’s external source data process are also included, with gaps in deep water filled through Global Multi-Resolution Topography, a merged model of bathymetry. Different vertical datums and file formats are made available to meet various uses. The public realization of the NBS named BlueTopo includes multilayer floating point GeoTIFFs with associated Raster Attribute Tables containing elevation, vertical uncertainty, with other quality metrics and source information. BlueTopo is arranged in a tiling and resolution scheme approximating the NOAA Electronic Navigational Chart but are not for navigation due to the inclusion of additional non-navigation data and non-navigation vertical datums. NOAA is currently working on the Mid-Atlantic, with more progress on the West Coast and Alaska anticipated in 2024.

Endnotes

- ¹ U.S. Code, Title 43 – Public Lands, Chapter 46: GEOSPATIAL DATA
<https://www.fgdc.gov/gda/43-usc-ch-46-geospatial-data-geospatial-data-act.pdf>
- ² FGDC GDA Information
<https://fgdc.gov/gda>
- ³ NSDI Strategic Plan
<https://www.fgdc.gov/nsdi-plan>
- ⁴ GeoPlatform
<https://www.geoplatform.gov/>
- ⁵ NGDA Portfolio Community Site
<https://ngda-portfolio-geoplatform.hub.arcgis.com/>
- ⁶ OMB A-16 Supplemental Guidance Roles and Responsibilities
<https://fgdc.gov/policyandplanning/a-16/key-roles-and-responsibilities-a16-supplemental.pdf>
- ⁷ NGDA Theme Contacts
<https://ngda-portfolio-community-geoplatform.hub.arcgis.com/pages/contacts>
- ⁸ NGDA Theme Hub Sites
<https://ngda-portfolio-community-geoplatform.hub.arcgis.com/pages/ngda-themes>
- ⁹ FAIR Principles
<https://www.go-fair.org/fair-principles/>
- ¹⁰ 3D Elevation Program (3DEP)
<https://www.usgs.gov/3d-elevation-program>
- ¹¹ 3DEP Standard and Specifications website
<https://www.usgs.gov/ngp-standards-and-specifications/3d-elevation-program-standards-and-specifications>
- ¹² 2nd Edition of the ASPRS Positional Accuracy Standards for Digital Geospatial Data
<https://aspr.org.sharepoint.com/sites/PublicAccess/Shared%20Documents/Forms/AllItems.aspx?id=%2Fsites%2FPublicAccess%2FShared%20Documents%2FPublic%5FDocuments%2FStandards%2F2023%5FASPRS%5FPositional%5FAccuracy%5FStandards%5FEdition2%5FVersion1%2E0%2Epdf&parent=%2Fsites%2FPublicAccess%2FShared%20Documents%2FPublic%5FDocuments%2FStandards&p=true&ga=1>
- ¹³ Joint Airborne Lidar Bathymetry Technical Center of Expertise (JALBTCX)
<https://jalbtcx.usace.army.mil/>
- ¹⁴ JALBTCX 25th anniversary
<https://www.sam.usace.army.mil/Media/News-Stories/Article/3609033/jalbtcx-celebrates-25th-anniversary/>
- ¹⁵ CruisePack
<https://www.ncei.noaa.gov/products/cruise-pack>
- ¹⁶ U.S. Interagency Elevation Inventory (USIEI)
<https://coast.noaa.gov/inventory/>
- ¹⁷ NGAC Resolution – Next Generation 3D Elevation Program
<https://www.fgdc.gov/ngac/meetings/october-2023/ngac-resolution-next-generation-3d-elevation.pdf>
- ¹⁸ Interagency Working Group on Ocean and Coastal Mapping (IWG-OCM)
<https://iocm.noaa.gov/about/iwg-ocm.html>
- ¹⁹ Commerce Geospatial Strategy
<https://www.commerce.gov/sites/default/files/2021-07/US-Dept-of-Commerce-Geospatial-Strategy-FY21-24.pdf>

²⁰ 3D Nation Elevation Requirements and Benefits Study

<https://www.usgs.gov/3d-elevation-program/3d-nation-elevation-requirements-and-benefits-study>

²¹ National Bathymetric Source (NBS)

<https://nauticalcharts.noaa.gov/updates/building-the-national-bathymetry/>