Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed

1.1. Name of the Data, data collection Project, or data-producing Program:
2022 USACE USGS Topobathy Lidar DEM: East Coast (NY, NJ)

1.2. Summary description of the data:
These files contain rasterized topobathy lidar elevations generated from data collected by the Coastal Zone Mapping and Imaging Lidar (CZMIL) system. CZMIL integrates a lidar sensor with simultaneous topographic and bathymetric capabilities, a digital camera and a hyperspectral imager on a single remote sensing platform for use in coastal mapping and charting activities. Native lidar data is not generally in a format accessible to most Geographic Information Systems (GIS). Specialized in-house and commercial software packages are used to process the native lidar data into 3-dimensional positions that can be imported into GIS software for visualization and further analysis. Horizontal positions, were provided in decimal degrees of latitude and longitude, are referenced to the North American Datum of 1983 Universal Transverse Mercator Zone 18 and 19 North (NAD83 UTM Zone 18N and 19N). Vertical positions were referenced to the NAD83 (2011) ellipsoid and provided in meters. The National Geodetic Survey's (NGS) GEOID18 model was used to transform the vertical positions from ellipsoid to orthometric heights referenced to the North American Vertical Datum of 1988 (NAVD88). The rasters are at a 1 meter grid spacing.

In addition to these bare earth Digital Elevation Model (DEM) data, the lidar point data that these DEM data were created from, are also available. These data are available for custom download at the link provided in the URL section of this metadata record.

1.3. Is this a one-time data collection, or an ongoing series of measurements?
One-time data collection

1.4. Actual or planned temporal coverage of the data:
2022-11-06, 2022-11-08, 2022-11-09, 2022-11-10 to 2022-11-11

1.5. Actual or planned geographic coverage of the data:
W: -73.44, E: -71.91, N: 41.1, S: 40.6
NY collection area

W: -74.82, E: -73.96, N: 40.49, S: 38.99
NJ collection area

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)
Model (digital)

1.7. Data collection method(s):
(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name:
NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:
Metadata Contact

2.3. Affiliation or facility:
NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:
coastal.info@noaa.gov

2.5. Phone number:
(843) 740-1202

3. Responsible Party for Data Management
Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:

3.2. Title:
Data Steward

4. Resources
Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?

Yes

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

Unknown

5. Data Lineage and Quality

NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible

(describe or provide URL of description):

Lineage Statement:

CZMIL data is processed from raw lidar waveforms to point clouds using the CZMIL HydroFusion software package. Point clouds are then classified and edited in industry-standard software packages. Derivative data products are generated through the application of gridding and contouring algorithms in a GIS environment. The data processing workflow, including software packages, algorithms and parameters are provided in detail, herein this metadata as Process Steps.

Process Steps:

- 2022-11-10 00:00:00 - These data were collected using the CZMIL system. It is owned and operated by the U.S. Army Corps of Engineers (USACE). The system collects topobathy lidar data at 10 kHz and RGB imagery at 2 Hz. A CASI-1500 hyperspectral line scanner is integrated with the system as well. Aircraft position, velocity and acceleration information are collected through a combination of NovAtel and POS A/V 610 equipment. All raw data streams are transferred to the office for downloading and processing in CZMIL's HydroFusion software. Aircraft position data are processed using POSPac software and the results are combined with the lidar data to produce 3-D positions for each lidar shot. Upon inspection and QA/QC in the software packages Fledermaus and PFM_ABE, anomalous data are flagged as invalid and have the withheld bit set.

- 2023-04-03 00:00:00 - LAS files are imported into TerraScan V13 module within MicroStation V8i, classifies valid topobathy data as ground points (2) and unclassified points (1), and valid bathymetric points (29). Upon completion the macro, the classification results undergo quality control and any misclassified points are manually edited. In areas of dense vegetation the bare earth ground points might be incorrectly classified due to the inability of the laser to penetrate the canopy and reach the bare ground. In these areas, JALBTCX defaults to the algorithm's ground surface instead of manually reclassifying those points. They are partitioned into a series of 1-km delivery boxes, one Classified LAS file per box. The format of the file is LAS version 1.2. Data are classified as 1 (valid non-ground topographic data), 2 (valid ground topographic data), and 29 (valid bathymetric data). The National Geodetic Survey's (NGS) GEOID18 model is used to transform the horizontal positions from UTM to Geographic coordinates referenced to the

North American Datum of 1983 National Adjustment of 2011 (NAD83 2011). The files are then compressed with the open-source LASzip utility, which is part of the LAStools package (LAStools, "Efficient LiDAR Processing Software" (version 170923, unlicensed)), obtained from http://rapidlasso.com/LAStools.
- 2023-04-26 00:00:00 - Data classified as ground points (2) and bathymetric points (29) in the las files are converted to a grid by generating a triangulated irregular network (TIN) and then extracting the grid node elevations from the TIN surface. The origin point of the grid is located at a horizontal position whose value is evenly divisible by the 1m grid resolution such that rasters from subsequent surveys have common cell boundaries. JALBTCX uses Quick Terrain Modeler V8.2.1 to perform this operation utilizing the following parameters; Legacy Triangulation, Max Sample Excursion - 500, Max Triangle Side 500, and Tiling Settings Snap to Grid (Expand). The grid is exported from Quick Terrain Modeler as a GeoTIFF 32-Bit DEM file. Utilizing an in-house python script within Jupyter Notebook, the null data values in the file are converted from -9999 to NoData with the Set Null tool from the ArcGIS Spatial Analyst Toolbox. The script also calls the Define Projection tool from the ArcGIS Data Management Toolbox to set the file's coordinate system information to The North American Datum of 1983 (2011). The raster is then multiplied against a corresponding 1m mask raster, an intermediate mask image produced from JALBTCX's 1mGrid data product, to remove interpolated areas where data does not exist.
- 2023-06-22 00:00:00 - The NOAA Office for Coastal Management (OCM) received 568 GeoTiff format files from USACE JALBTCX for the New Jersey and New York coastline project area. The bare earth raster files were at a 1 m grid spacing. The data were in UTM Zone 18N and 19N (NAD83 2011), meters coordinates and NAVD88 (Geoid18) elevations in meters. OCM assigned the appropriate EPSG code (Vert - 5703) and copied the raster files to https for Digital Coast storage and provisioning purposes.

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):
Every effort within operational constraints was made to acquire data that meets specifications as outlined in this project's Statement of Work. Per flight block, elevations in areas of swath overlap are internally consistent and meet CZMIL specifications. Anomalous high and/or low elevation values have been removed, and point cloud classification algorithms have been validated via manual review and QC. Temporal differences in elevation exist in areas of active near shore processes from the dune to the depth of closure. JALBTCX conducts operations in a manner to ameliorate temporal differences, to include the collection of entire flight blocks within single missions. For a given flight block, it's adjacent flight blocks are captured within 3 days as weather and airspace permit.

6. Data Documentation
The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented, specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?
No

6.1.1. If metadata are non-existent or non-compliant, please explain:
Missing/invalid information:
- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.4. Approximate delay between data collection and dissemination
- 8.3. Approximate delay between data collection and submission to an archive facility

6.2. Name of organization or facility providing metadata hosting:
NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:
https://www.fisheries.noaa.gov/inport/item/70179

6.4. Process for producing and maintaining metadata
(describe or provide URL of description):
Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access
NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?
Yes

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:
NOAA Office for Coastal Management (NOAA/OCM)

7.2.1. If data hosting service is needed, please indicate:

7.2.2. URL of data access service, if known:
https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=9851/details/9851
https://noaa-nos-coastal-lidar-pds.s3.us-east-1.amazonaws.com/dem/USACE_NJ_NY_DEM_2022_9851/

7.3. Data access methods or services offered:
Data is available online for bulk and custom downloads.

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection
The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:
(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)
NCEI_CO

8.1.1. If World Data Center or Other, specify:

8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:

8.2. Data storage facility prior to being sent to an archive facility (if any):
Office for Coastal Management - Charleston, SC

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?
Discuss data back-up, disaster recovery/contingency planning, and off-site data storage

relevant to the data collection
        Data is backed up to tape and to cloud storage.

9. Additional Line Office or Staff Office Questions
Line and Staff Offices may extend this template by inserting additional questions in this section.