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:

2019 USGS Topobathy Lidar: Potomac River, MD

1.2. Summary description of the data:

Product: These lidar data are processed Classified LAS 1.4 files, formatted to 247 individual 1000 m x 1000 m tiles; used to create intensity images, land/water interface breaklines and topobathymetric DEMs as necessary.

Geographic Extent: Potomac River and margins in Maryland, West Virginia, and Virginia, covering approximately 39.2 square miles.

Dataset Description: The Maryland Potomac River Topobathymetric Lidar project called for the planning, acquisition, processing and derivative products of lidar data to be collected at a nominal pulse spacing (NPS) of 0.7 meter. Project specifications are based on the U.S. Geological Survey National Geospatial Program Base Lidar Specification, version 1.3. The data was developed based on a horizontal projection/datum of NAD83 (2011), Universal Transverse Mercator zone 18, meters and vertical datum of NAVD88 (GEOID12B), meters. Lidar data was delivered as processed Classified LAS 1.4 files, formatted to 247 individual 1000 m x 1000 m tiles, as tiled Intensity Imagery, and as tiled topobathymetric DEMs; all tiled to the same 1000 m x 1000 m schema. A merged topobathymetric DEM was also delivered.

Ground Conditions: Lidar was collected in October 2019, while no snow was on the ground and rivers were at or below normal levels. In order to post process the lidar data to meet task order specifications and meet ASPRS vertical accuracy guidelines, Dewberry established a total of 39 checkpoints that were used to calibrate the lidar to known ground locations established the project area and assess the vertical accuracy of the data.

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:

2019-10-21 to 2019-10-26

1.5. Actual or planned geographic coverage of the data:
W: -77.805817, E: -77.115929, N: 39.457914, S: 38.918843

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:

The NOAA Office for Coastal Management (OCM) downloaded this data from the USGS rockyweb site. OCM processed the data to make it available for custom download from the NOAA Digital Coast Data Access Viewer (DAV) and for bulk download from AWS S3.

Process Steps:

- 2020-03-01 00:00:00 - The boresight for each lift was done individually as the solution may change slightly from lift to lift. The initial points for each mission calibration were inspected for flight line errors, flight line overlap, slivers or gaps in the data, point data minimums, or issues with the lidar unit or GPS. Roll, pitch and scanner scale were optimized during the calibration process until the relative accuracy was met. Dewberry utilized Bayesmap StripAlign for this alignment procedure. This alignment procedure corrected systematic issues globally, per aircraft lift, per flightline, and finally based on local errors along the flight trajectory. Error adjustments included internal sensor parameters. Due to the complex geometric relationship of the elliptical scan pattern the forward and reverse directions must be aligned independently. Additionally, since the green and NIR scanner map different surfaces, they were also aligned independently, then corrected to match each other. Difference rasters (DZ orthos) were generated, adjustment parameters were reviewed, and registration/match regions were reviewed to ensure data quality. A final vertical accuracy check of the boresighted flight lines was completed against the surveyed check points after the z correction to ensure the requirement of NVA = 19.6 cm 95% Confidence Level was met. Point classification was performed according to USGS Lidar Base Specification 1.3. Bare earth DEMs were exported from the classified point cloud. Synthetic points generated by Leica refraciton correction algorithms are present in this dataset. Please see the final project report for more details on the synthetic points
- 2020-03-01 00:00:00 - Dewberry used algoritms in TerraScan to create the intial ground/submerged topography surface. Dewberry used rasterized aggregate extents of refracted points to create automated 2-D breaklines with LAStools and ArcGIS. Light travels at different speeds in air versus water and its speed and direction of travel change when it enters the water column. The refraction

correction process accounts for this difference by adjusting the depth (distance traveled) and horizontal position (change of angle/direction) of the lidar points acquired within water. These breaklines delineate areas where the refraction correction was applied to the lidar data by Riegl's automated refraction correction software based on the software's detection of water. Where the automated process missed discrete water bodies that did not contain valid bathymetry (submerged topography) data, breaklines were manually drawn and added to a separate feature class to ensure the correct classification of the point cloud. Dewberry used the 2-D refraction extents and additional bathy features to classify the bathymetric bottom and ground points properly in TerraScan. Geometrically unused points at the edges of flight lines were flagged using the withheld bit. This includes synthetically generated class 42 (synthetic water surface) points at the edges of flight lines. All class 42 points were flagged using the synthetic bit. All lidar data was peer-reviewed. Dewberry's QAQC also included creating void polygons for use during review. All necessary edits were applied to the dataset. GeoCue software was used to update LAS header information, including all projection and coordinate reference system information. The final lidar data are in LAS format 1.4 and point data record format 6. All data was then verified by an Independent QC department within Dewberry. The independent QC was performed by separate analysts who did not perform manual classification or editing. The independent QC involved quantitative and qualitative reviews.
- 2023-09-01 00:00:00 - The NOAA Office for Coastal Management (OCM) downloaded 247 laz point data files from this USGS site: https://rockyweb.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/MD_PotomacRiverTopoBathy_2019_D19/MD_PotomacRiver_Bathy_2019/LAZ/ The data were in UTM Zone 18N (NAD83 (2011), meters coordinates and NAVD88 (Geoid12B) elevations in meters. The data were classified as: 1 - Unclassified, 2 - Ground, 7 - Low Noise, 17 - Bridge Deck, 18 - High Noise, 40 - Bathymetry bottom, 41 - Water Surface, 42 - Synthetic Water Surface, 45 - No bathymetry bottom found. OCM processed all classifications of points to the Digital Coast Data Access Viewer (DAV). Classes available on the DAV are: 1, 2, 7, 17, 18, 40, 41 ,42, 45. OCM performed the following processing on the data for Digital Coast storage and provisioning purposes: 1. Internal OCM scripts were run to check the number of points by classification and by flight ID and the gps, elevation, and intensity ranges. 2. Internal OCM scripts were run on the laz files to: a. Convert from orthometric (NAVD88) elevations to NAD83 (2011) ellipsoid elevations using the Geoid12B model b. Convert from UTM Zone 18N (NAD83 (2011), meters coordinates to geographic coordinates c. Assign the geokeys, sort the data by gps time and zip the data to database and to AWS S3

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):

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
- 5.2. Quality control procedures employed
- 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/70734

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=9892/details/9892
https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/9892/index.html

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.