

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:

2020 DC OCTO Lidar: Washington, DC

1.2. Summary description of the data:

These lidar data are processed classified LAS 1.4 files at USGS QL2 covering the District of Columbia. Voids exist in the data due to data redaction conducted under the guidance of the United States Secret Service.

In addition to these lidar point data, the bare earth Digital Elevation Models (DEM) created from the lidar point data 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:

2020-06-26, 2020-06-29, 2020-06-30

1.5. Actual or planned geographic coverage of the data:

W: -77.122373, E: -76.900716, N: 39.001746, S: 38.785481

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

This data was collected by Fugro Geospatial, Inc. for the Washington DC Office of the Chief Technology Officer (OCTO). The NOAA Office for Coastal Management (OCM) downloaded the data from the Open Data DC site and processed it to be available for

custom download from the Data Access Viewer (DAV) and for bulk download from AWS.

Process Steps:

- Acquisition: The lidar data acquisition for DC OCTO was flown to support the creation of a 2 ppsm classified lidar point cloud data set, 1 m resolution hydro-flattened bare earth DEM and nDSM, and .6m contours over the full project area covering the District of Columbia. Due to security requirements in the area, Fugro received waivers to fly in the Flight Restricted Zone (FRZ) and P-56 areas. The lidar acquisition was flown on 6/26/2020, 6/29/2020, and 6/30/2020, at an altitude of 9,022 feet above mean sea level and composed of 28 flight lines, 26 primary lines and two cross ties. All lidar data was collected with a Cessna 441, tail# N93HC and a Leica ALS80 lidar sensor, #130. Due to the known difficulties flying over DC, the ALS80 sensor was selected to take advantage of its flight altitude and speed, minimizing the number of lifts for the various flight restrictions. All lidar was collected in conjunction with airborne GPS.

- Ground Control and Projection: Rice Associates, under contract to Fugro Geospatial, Inc., successfully established ground control for the DC OCTO project area. A total of 31 survey points were used, 6 ground control points, 20 NVA checkpoints, and 5 VVA checkpoints. GPS was used to establish the control network. The ground control was delivered in Maryland State Plane (FIPS1900) meters, with the horizontal datum provided in both NAD1983 and NAD83(2011). The vertical datum was the North American Vertical Datum of 1988 (NAVD88) using GEOID12B. Control was collected on February 24, 2020. Survey results are included in the Report of Survey 2020 LiDAR Ground Control Washington D.C.pdf During initial processing, QC and accuracy assessments were run the data in NAD83(2011) datum which is the native coordinate system from the sensor. Following boresight the data was re-projected to NAD83 for delivery per the contract specifications and cut to the delivery extent the control was re-run in the final deliverable projection. The initial QC process determined that a few small areas in the AOI were affected by cloud cover. The data in the affected areas were patched with 2018 data. A data layer of the patched areas is available on opendata.dc.gov.

- Pre-Processing and Boresight: All lidar data went through a preliminary field review to ensure that complete coverage was obtained and that there were no gaps between flight lines prior to leaving the project site. Once back in the office, the data went through a complete iteration of processing to ensure that it is complete, uncorrupted and that the entire project area was covered without gaps. There were three steps to processing: 1) GPS/IMU processing - airborne GPS and IMU data was processed using the airport GPS base station data; 2) raw lidar data processing - the raw data was processed to LAS format flight lines with full resolution output before performing QC. A starting configuration file is used in this process, which contains the latest calibration parameters for the sensor and outputs the flight line trajectories. 3) Verification of coverage and data quality - the trajectory files were checked to ensure completeness of acquisition for the flight lines, calibration lines and cross flight lines. Intensity images were generated for the entire lift and thoroughly reviewed for data gaps in project area. A sample TIN surface was

generated to ensure no anomalies or turbulence were present in the data; if any adverse quality issues were discovered, the flight line was rejected and re-flown. The achieved post spacing confirmed against the project specification of 2 ppsm and checked for clustering in point distribution. The review showed that the lidar data exceeded the 2 ppsm post spacing. The lidar data was boresighted using the following steps: 1) The raw data was processed to LAS format flight lines using the final GPS/IMU solution. This LAS dataset was used as source data for boresighting. 2) Fugro proprietary and commercial software was used to calculate initial boresight adjustment angles based on sample areas within the lift. These areas cover calibration flight lines collected in the lift, cross tie and production flight lines. These areas are well distributed in the lift coverage and cover multiple terrain types that are necessary for boresight angle calculation. The results were analyzed and any additional adjustments were completed the selected areas. 3) Once the boresight angle calculation was completed, the adjusted settings were applied to the flight lines of the lift and checked for consistency. The technicians utilized commercial and proprietary software packages to analyze the matching between flight line overlaps for the entire lift and adjusted as necessary. 4) Vertical misalignment of all flight lines was checked and corrected, as was the matching between data and ground truth. 5) A final vertical accuracy check of the boresighted flight lines against the surveyed ground control points was conducted. The boresighted lidar data achieved a vertical accuracy of 0.027m RMSE (0.051m at 95% confidence) against the 20 NVA checkpoint control locations (two of which fall outside of the deliverable project boundary).

- Data Redaction: Following the boresight completion, the lidar dataset redaction was conducted under the guidance of the United States Secret Service. Except for classified ground points and classified water points, all lidar data returns and collected data were removed from the dataset using the United States Secret Service 1m redaction boundary generated for the 2017 orthophoto flight.

- 2022-04-28 00:00:00 - The NOAA Office for Coastal Management (OCM) downloaded this data set from the Open Data DC site (<https://opendata.dc.gov/datasets/2020-lidar-classified-las/explore?location=38.893593%2C-77.011550%2C12.50>). The total number of files downloaded and processed was 328. The data were in Maryland State Plane South (NAD83), meters coordinates and NAVD88 (Geoid12B) elevations in meters. The data were classified as: 1 - Unclassified, 2 - Ground, 3 - Low Vegetation, 4 - Medium Vegetation, 5 - High Vegetation, 6 - Building, 7 - Low Noise, 9 - Water, 17 - Bridge Deck, 18 - High Noise, 20 - Ignored Ground. OCM processed all classifications of points to the Digital Coast Data Access Viewer (DAV). Classes available in the DAV are: 1, 2, 3, 4, 5, 6, 7, 9, 17, 18, 20. OCM performed the following processing on the data for Digital Coast storage and provisioning purposes: 1. An internal OCM script was run to check the number of points by classification and by flight ID and the gps and intensity ranges. 2. Internal OCM scripts were run on the las files to convert from orthometric (NAVD88) elevations to ellipsoid elevations using the Geoid12B model, to convert from Maryland State Plane South (NAD83), meters coordinates to geographic coordinates, to assign the

geokeys, to sort the data by gps time and zip the data to database and to the Amazon s3 bucket.

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
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 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?

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/67079>

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?

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=9492/details/9492>
<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/9492/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)

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

9. Additional Line Office or Staff Office Questions

Line and Staff Offices may extend this template by inserting additional questions in this section.