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 SEWRPC Lidar DEM: Milwaukee County, WI

1.2. Summary description of the data:
This Southeastern Wisconsin Regional Planning Commission (SEWRPC) high density lidar project encompassed the entirety of Milwaukee County, Wisconsin, which covers approximately 250 square miles and includes a 333 foot buffer around the county boundary. The airborne lidar data was acquired at an aggregate nominal point density (ANPD) of 30 points per square meter. Project specifications are based on SEWRPC requirements. The data was developed and delivered in State Plane Coordinates, Wisconsin South zone, with a horizontal datum of NAD83(2011) and vertical datum of NAVD88 - Geoid12B, with horizontal and vertical units in US Survey Feet. LiDAR data was acquired using a Riegl VQ 1560i sensor, serial number 4040, from April 2, 2020 to April 3, 2020 in three total lifts. Lidar acquisition occurred with leaves absent from deciduous trees, when no snow was present on the ground and with rivers at or below normal levels. The lidar data was calibrated, processed, and delivered in 2020. The data deliverables include classified point cloud, breaklines, and a digital elevation model. The lidar data is not to be used for purposes other than those outlined by SEWRPC for its partners and stakeholders on this project.

This metadata record supports the data entry in the NOAA Digital Coast Data Access Viewer (DAV).

The NOAA Office for Coastal Management (OCM) received ERDAS Imagine (.img) raster files at a 1 ft grid spacing from the Milwaukee County Land Information Office. The data were processed to the NOAA Digital Coast Data Access Viewer (DAV) to make the data available for bulk and custom downloads. 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:
2020-04-02 to 2020-04-03

1.5. Actual or planned geographic coverage of the data:
W: -88.075628, E: -87.811807, N: 43.195998, S: 42.837963

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:
Data were collected for the Southeastern Wisconsin Regional Planning Commission (SEWRPC) and were provided to the NOAA Office for Coastal Management (OCM) by the Milwaukee County Land Information Office. 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 https.

Process Steps:
- 2020-10-05 00:00:00 - The boresight for each lift was done individually as the solution may change slightly from lift to lift. The following steps describe the Raw Data Processing and Boresight process: 1) Technicians processed the raw data to LAS format flight lines using the final GPS/IMU solution. This LAS data set was used as source data for boresight. 2) Technicians first used RIEGL RiPROCESS software to calculate initial boresight adjustment angles based on sample areas selected in 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 technician then analyzed the results and made any necessary additional adjustment until it is acceptable for the selected areas. 3) Once the boresight angle calculation was completed for the selected areas, the adjusted settings were applied to all of the flight lines of the lift and checked for consistency. The technicians utilized commercial and proprietary software packages to analyze how well flight line overlaps match for the entire lift and adjusted as necessary until the results met the project specifications. 4) Once all lifts were completed with individual boresight adjustment, the technicians checked and corrected the vertical misalignment of all flight lines and also the matching between data and ground truth. The relative accuracy was less than or equal to 2 cm RMSEz within individual swaths and less than or equal to 5 cm RMSEz or within swath overlap (between adjacent swaths). 5) The technicians ran a final vertical accuracy check of the boresighted flight lines against the surveyed check points after the z correction to ensure the requirement

of NVA = 9.8 cm 95% Confidence Level (Required Accuracy) was met. Point classification was performed according to USGS Lidar Base Specification 1.3, and breaklines were collected for water features. Bare earth DEMs were exported from the classified point cloud using collected breaklines for hydroflattening.
- 2020-10-05 00:00:00 - LiDAR processing utilizes several software packages, including GeoCue and the TerraSolid suite of processing components. The GeoCue software is a database management system for housing the LiDAR dataset (usually multiple gigabytes in size). GeoCue incorporates a thorough checklist of processing steps and quality assurance/quality control (QA/QC) procedures that assist in the LiDAR workflow. The TerraSolid software suite is used to automate the initial classification of the LiDAR point cloud based on a set of predetermined parameters. Lidar technicians refer to ground cover research (natural and cultural features) within the project area and determine algorithms most suitable for the initial automated LiDAR classification. (Some algorithms/filters recognize the ground in forests well, while others have greater capability in urban areas). During this process each point is given an initial classification (e.g., as ground, vegetation, or noise) based on the point's coordinates and the relation to its neighbors. Classifications to be assigned include all those outlined by ASPRS standards. The initial classifications produce a coarse and inexact dataset, but offer an adequate starting point for the subsequent manual classification procedure. During this step, " overlap" points are automatically classified (those originating from neighboring flightlines) using information gathered from the ABGPS and IMU data. Any duplicate points existing from adjacent flightlines are removed during this process. Hydrographic breaklines are collected using LiDARgrammetry to ensure hydroflattened water surfaces. This process involves manipulating the LiDAR data's intensity information to create a metrically sound stereo environment. From this generated "imagery", breaklines are photogrammetrically compiled. Breakline polygons are created to represent open water bodies. The LiDAR points that fall within these areas are classified as "water." All hydrographic breaklines include a 1 foot buffer, with the Class 2 (bare earth) points being re-classified as Class 20 (ignored ground). TerraSolid is further used for the subsequent manual classification of the LiDAR points allowing technicians to view the point cloud in a number of ways to ensure accuracy and consistency of points and uniformity of point coverage. The TIN was processed to create a GRID or digital elevation model (DEM) with 1 foot pixels.
- 2023-06-01 00:00:00 - The NOAA Office for Coastal Management (OCM) received 1205 ERDAS Imagine (.img) raster files from the Milwaukee County Land Information Office. The data were in Wisconsin South State Plane (NAD83 2011), US Survey Feet coordinates and NAVD88 (Geoid12b) elevations in US Survey Feet. The bare earth hydro-flattened files were at a 1 ft grid spacing. OCM converted the raster files to cloud optimized files in GeoTiff format 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):

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/70063

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=9843/details/9843
https://noaa-nos-coastal-lidar-pds.s3.us-east-1.amazonaws.com/dem/WI_Milwaukee_DEM_2020_9843

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.