

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:

2018 SWFWMD Lidar: Pasco County, FL

1.2. Summary description of the data:

Original Data Collection:

Dewberry collected 822 square miles of lidar data in Pasco County, Florida. The nominal pulse spacing for this project was 1 point every 0.25 meters or a nominal pulse density of 8 points per square meter. Dewberry used proprietary procedures to classify the LAS according to project specifications: 1-Unclassified, 2-Ground, 6-Building Rooftops, 7-Low Noise, 9-Water, 17- Bridge Decks, 18-High Noise. Geometrically unreliable points, ground points within 2 feet of breaklines, and ground points within 3 feet of building rooftops have been identified with the Withheld Flag. Overage points have been identified with the Overlap Flag. Final lidar deliverables are in LAS v1.4. The data were tiled according to the Florida Statewide Lidar Index tiling scheme with each tile covering an area of 5,000 feet by 5,000 ft.

In addition to the lidar point data, bare earth Digital Elevation Models (DEMs) at a 2.5 ft grid spacing, created from the lidar point data, are also available from the NOAA Digital Coast Data Access Viewer (DAV). A link to the bare earth DEM data is 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:

2018-01-14 to 2018-01-25

1.5. Actual or planned geographic coverage of the data:

W: -82.8, E: -82.05, N: 28.49, S: 28.17

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) received the Pasco County, FL lidar data from the Southwest Florida Water Management District (SWFWMD). NOAA OCM processed the data to make it available for custom downloads from the NOAA Digital Coast Data Access Viewer and for bulk downloads from AWS S3.

Process Steps:

- 2018-03-01 00:00:00 - Dewberry collected 822 square miles of lidar data in Pasco County, Florida. Lidar data were collected with the Riegl VQ-1560i lidar system in conjunction with a high accuracy airborne GPS and IMU unit. Sixteen missions were flown between January 14, 2018 and January 25, 2018 at an average flying height of 1300 meters above mean ground level. A maximum of five base stations were used and the maximum baseline or distance from base stations during acquisition never exceeded 40 kilometers. Maximum GPS PDOP allowed was 2.5. The flight lines were planned with 55% overlap with a nominal swath width on the ground of approximately 4800 feet and distance between flight lines approximately 1900 feet. The missions were planned with a nominal pulse spacing of 0.35 m. The Riegl VG-1560i is capable of capturing an unlimited number of returns per pulse. Boresight calibration flights were performed in Wauchula, Florida and cross flights were flown as part of every mission. The calibration process considered all errors inherent with the equipment including errors in GPS, IMU, and sensor specific parameters. Adjustments were made to achieve a flight line to flight line data match (relative calibration) and subsequently adjusted to control for absolute accuracy. All sources of error such as the sensor's ranging and torsion parameters, atmospheric variables, GPS conditions, and IMU offsets were analyzed and removed to the highest level possible. This method addresses all errors, both vertical and horizontal in nature. Ranging, atmospheric variables, and GPS conditions affect the vertical position of the surface, whereas IMU offsets and torsion parameters affect the data horizontally. The horizontal accuracy is proven through repeatability: when the position of features remains constant no matter what direction the plane was flying and no matter where the feature is positioned within the swath, relative horizontal accuracy is achieved. Absolute horizontal accuracy is achieved through the use of differential GPS with base lines shorter than 40 kilometers. The base station is set at a temporary monument that is 'tied-in' to the CORS network. The same position is used for every lift, ensuring that any errors in its position will affect all data equally and can therefore be removed equally. Vertical accuracy is achieved through the adjustment to ground control survey points within the finished product. Although the base station has absolute vertical accuracy, adjustments to sensor parameters introduces vertical error that

must be normalized in the final (mean) adjustment. Riegl Riprocess, Applanix POSPac MMS v8, Microstation Connect, and the Terra suite (Terrascan, Terramodel, and Terramatch) were used to process and calibrate the swath data. After calibration is performed, final point density, spatial distribution of the lidar point cloud, within swath relative vertical accuracy (hard surface repeatability), between swath relative vertical accuracy (overlap relative accuracy), horizontal alignment, and absolute vertical accuracy (Fundamental Vertical Accuracy) is verified on the final swath data. See the final Report of Survey for results from these tests and verifications.

- 2018-08-01 00:00:00 - Dewberry utilizes a variety of software suites for inventory management, classification, and data processing. All lidar related processes begin by importing the data into the GeoCue task management software. The swath data are tiled according to project specifications (5,000 ft x 5,000 ft). The tiled data are then opened in Terrascan where Dewberry identifies edge of flight line points that may be geometrically unusable with the withheld bit. These points are separated from the main point cloud so that they are not used in the ground algorithms. Dewberry then uses proprietary ground classification routines to remove any non-ground points and generate an accurate ground surface. The ground routine consists of three main parameters (building size, iteration angle, and iteration distance); by adjusting these parameters and running several iterations of this routine an initial ground surface is developed. The building size parameter sets a roaming window size. Each tile is loaded with neighboring points from adjacent tiles and the routine classifies the data section by section based on this roaming window size. The second most important parameter is the maximum terrain angle, which sets the highest allowed terrain angle within the model. As part of the ground routine, low noise points are classified to class 7 and high noise points are classified to class 18. Once the ground routine has been completed, bridge decks are classified to class 17 using bridge breaklines compiled by Dewberry. Points within the building rooftop polygons compiled by Dewberry are then classified to class 6. A manual quality control routine is then performed using hillshades, cross-sections, and profiles within the Terrasolid software suite. After this QC step, a peer review is performed on all tiles and a supervisor manual inspection is completed on a percentage of the classified tiles based on the project size and variability of the terrain. After the ground classification, bridge deck, and rooftop corrections are completed, the dataset is processed through a water classification routine that utilizes breaklines compiled by Dewberry to automatically classify hydrographic features. The water classification routine selects ground points within the breakline polygons and automatically classifies them as class 9, water. During this water classification routine, ground points that are within 2 feet of the hydrographic features are flagged with the withheld bit. Ground points within 3 feet of the building rooftops are flagged with the withheld bit. Overage points are then identified with the overlap bit. A final QC is performed on the data. All headers, appropriate point data records, and variable length records, including spatial reference information, are updated in GeoCue software and then verified

using proprietary Dewberry tools. These data were classified as follows: Class 1 = Unclassified. This class includes vegetation, buildings, noise etc. Class 2 = Ground Class 6 = Building Rooftops Class 7 = Low Noise Class 9 = Water Class 17 = Bridge Decks Class 18 = High Noise

- 2024-09-12 00:00:00 - The NOAA Office for Coastal Management (OCM) received the Pasco County, FL lidar data from the Southwest Florida Water Management District (SWFWMD). The data were in Florida State Plane West NAD83(2011), US survey feet coordinates and in NAVD88 (Geoid12B) elevations in feet. The data were classified as: 1 - Unclassified, 2 - Ground, 6 - Building Rooftops, 7 - Low Noise, 9 - Water, 17- Bridge Decks, 18 - High Noise. OCM processed all classifications of points to the Digital Coast Data Access Viewer (DAV). Classes available on the DAV are: 1, 2, 6, 7, 9, 17, 18. 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 laz files to: a. Convert the files from FL State Plane West NAD83(2011), US survey feet coordinates to geographic coordinates b. Convert the files from NAVD88 (Geoid12B) elevations to ellipsoid (NAD83 2011) elevations c. Convert the files from elevations in feet to meters d. Assign the geokeys, to 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/73466>

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=10173/details/10173>
<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/10173/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_NC

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 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.