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:
2006 FEMA Lidar: Rhode Island Coastline

1.2. Summary description of the data:
LIDAR data is remotely sensed high-resolution elevation data collected by an airborne collection platform. By positioning laser range finding with the use of 1 second GPS with 100 hz inertial measurement unit corrections; Terrapoint LIDAR instruments are able to make highly detailed geospatial elevation products of the ground, man-made structures and vegetation. The LiDAR flightlines for this project was planned for a 50 percent acquisition overlap. The nominal resolution of this project without overlap is 1.25 m. Four returns were recorded for each pulse in addition to an intensity value. GPS Week Time, Intensity, Flightline and number attributes were provided for each LiDAR point.

Data is provided as random points, in LAS format, classified according to ASPRS Class Code 2=Ground 1=Undefined.

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:
2006-12-16 to 2006-12-18

1.5. Actual or planned geographic coverage of the data:
W: -71.898698, E: -71.401523, N: 41.654748, S: 41.146134

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

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):

Process Steps:

- 2007-02-01 00:00:00 - - Airborne GPS Kinematic Airborne GPS kinematic data was processed on-site using GrafNav kinematic On-The-Fly (OTF) software. Flights were flown with a minimum of 6 satellites in view (13o above the horizon) and with a PDOP of better than 4.5. Distances from base station to aircraft were kept to a maximum of 35 km, to ensure a strong OTF (On-The-Fly) solution. For all flights, the GPS data can be classified as excellent, with GPS residuals of 5cm average but no larger than 12 cm being recorded. - Calculation of 3D laser points (raw data) The post-processing software to derive X, Y, Z values from roll, pitch, yaw, and range is Optech's Realm. Data - Classification and Editing The data was processed using the software TerraScan, and following the methodology described herein. The initial step is the setup of the TerraScan project, which is done by importing client provided tile boundary index encompassing the entire project areas. The 3D laser point clouds, in binary format, were imported into the TerraScan project and divided in 325 tiles, as per the contract specifications. tiled, the laser points were classified using a proprietary routine in TerraScan. This routine removes any obvious outliers from the dataset following which the ground layer is extracted from the point cloud. The ground extraction process encompassed in this routine takes place by building an iterative surface model. This surface model is generated using three main parameters: building size, iteration angle and iteration distance. The initial model is based on low points being selected by a "roaming window" with the assumption is that these are the ground points. The size of this roaming window is determined by the building size parameter. The low points are triangulated and the remaining points are evaluated and subsequently added to the model if they meet the iteration angle and distance constraints. This process is repeated until no additional points are added within an iteration. A second critical parameter is the maximum terrain angle constraint, which determines the maximum terrain angle allowed within the classification model. The data is then manually quality controlled with the use of hillshading, cross-sections and profiles. Any points found to be of class vegetation, building or error during the quality control process, are removed from the ground model and placed on the appropriate layer. An integrity check is also performed simultaneously to verify that ground features such as rock cuts, elevated roads and crests are present. Once data has been cleaned and complete, it is then reviewed by a supervisor via manual inspection and through the use of a hillshade mosaic of the entire project area. - Projection Transformation The data was processed in the native UTM zone in meters and then transformed to the Rhode Island State Plane final projection system and US survey feet using an in-house transformation software which uses the Coorpscon DLL.
- 2006-12-01 00:00:00 - - General Overview The Airborne LiDAR survey was conducted using an OPTECH 3100EA flying at a nominal height of 1550 meters AGL with a total angular coverage of 40 degrees. Flight line spacing was nominally 564 meters providing overlap of 50% on adjacent flight lines. Lines were flown in east/west and north/south orientated blocks to best optimize flying time considering the layout for the project. - Aircraft A Piper Navajo, registration C-FQQB was used for

the survey. This aircraft has a flight range of approximately 6.5 hours and was flown at an average altitude of 1550, thereby encountering flying altitudes of approximately 1550 meters above sea level (ASL). The aircraft was staged from the East Haven CT Airport, and ferried daily to the project site for flight operations. - GPS Receivers A combination of Sokkia GSR 2600 and NovAtel DL-4+ dual frequency GPS receivers were used to support the airborne operations of this survey and to establish the GPS control network. - Number of Flights and Flight Lines For both Connecticut and Rhode Island Coastline Sites; a total of 6 missions were flown for this project with flight times ranging approximately 31 hours under good meteorological and GPS conditions. 33 flight lines were flown over the Connecticut Coastline site to provide complete coverage.
- 2007-08-01 00:00:00 - Quantitative vertical positional accuracy assessment: Independent accuracy testing was performed by Dewberry & Davis using 20 high accuracy quality control checkpoints distributed throughout the project in four major land cover types (open terrain, weeds/crops, forest, urban) . Dewberry used testing procedures consistent with those specified in the National Standard for Spatial Data Accuracy (NSSDA) as well as LiDAR accuracy testing guidelines and specifications published by the Federal Emergency Management Agency (FEMA), National Digital Elevation Program (NDEP), and American Society for Photogrammetry and Remote Sensing (ASPRS).
- 2007-08-01 00:00:00 - The NOAA Office for Coastal Management (OCM) received topographic LAS files as part of the USGS CLICK elevation data shipment. The files contained lidar easting, northing, elevation, as well as ancillary collection attributes. The data were received in Rhode Island State Plane Zone 3800, NAD83 coordinates and were vertically referenced to NAVD88 using the Geoid03 model. The vertical and horizontal units of the data were in U.S. feet. OCM performed the following processing for data storage and Digital Coast provisioning purposes: 1. The LAS files were converted from feet to meters, removing erroneous elevations. 2. The LAS files were converted from orthometric (NAVD88) heights to ellipsoidal heights using the Geoid03 model. 3. The LAS files were converted from a Projected Coordinate System (RI Zone 3800h) to a Geographic Coordinate system with decimal degree units.

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/49956

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=2570
https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/2570/index.html

7.3. Data access methods or services offered:
This data can be obtained on-line at the following URL:

https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=2570;

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.