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:
    2012-2013 U.S. Geological Survey LiDAR: Territory of Guam

    1.2. Summary description of the data:
    Territory of Guam, LiDAR Task G11PD01189

    This task order is for production of surface model products of The Territory of Guam. The models are produced from data acquired using airborne Light Detection and Ranging (LiDAR) sensors. The data is calibrated, classified and processed to produce surface models and products including Classified LAS, bare earth Digital Elevation Models (DEM), intensity raster images, shapefiles of road centerlines, forest canopy, building foot prints and breaklines of surface hydrology.

    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:
    2012-01-18 to 2013-02-09

    1.5. Actual or planned geographic coverage of the data:
    W: 144.612, E: 144.958, N: 13.66, S: 13.235

    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:
- 2012-03-01 00:00:00 - Ground based survey points are measured to be compared as check points with airborne data points.   One hundred thirty-three survey

points were collected throughout the island in various ground cover categories. - 2013-05-01 00:00:00 - The LiDAR data was captured using a twin engine fixed wing aircraft equipped with an Optech ALTM Gemini LiDAR system. This system consists of Airborne Global Position System (ABGPS), inertial measurement unit (IMU), and laser sensor. The ABGPS collects XYZ coordinates of the laser sensor and the IMU calibrates the orientation of the aircraft. During flight, laser pulses are reflected from features on the surface and the system collects this data. The acquired LiDAR data receives a preliminary review to assure that complete coverage is obtained and to ensure the absence of data gaps.   Acquisition parameters: 1. Scanner - Optech Gemini SN# 03SEN145 and 07SEN201   2. Flight Height - 450 to 600 meters above mean terrain 3. Scan Rate - 45 Hz 4. Field of View - 22 degrees 5. Pulse Rate - 70 kHz.   GPS and IMU processing parameters: 1. Processing Programs and versions - Applanix - POSGPS and POSProc, versions 4.4, MMS version 5.2 2. Max separation between base stations during LiDAR collection - 0.12m 3. IMU processing monitored for consistency and smoothness - Yes   GPS and IMU processing software: Optech's Dashmap version 5.20 and Applanix version 4.4, - 2013-06-01 00:00:00 - 1. Point Cloud data is imported to TerraScan in a Microstation V8 (V) CAD environment on a specified 1500 meter by 1500 meter tiling scheme.   2. Analyze the data for overall completeness and consistency. This is to ensure that there are no voids in the data collection.   3. Inspect for calibration errors in the dataset using the TerraMatch software. This is accomplished by sampling the data collected across all flight lines and classify the individual lines to ground. The software will use the ground-classified lines to compute corrections (Heading, Pitch, Roll, and Scale).   4. Orientation corrections (i.e. Calibration corrections) are applied (if needed) to the entire dataset.   5. Automatic surface classification is performed using algorithms with customized parameters to best fit the project area. Several areas of varying relief and planimetric features were inspected to verify the final ground surface.   6. AeroMetric used ground survey points in 'open terrain' land cover to verify accurate position of the LiDAR data and ground surface. TerraScan's Output Control Report (OCR) was used to compare the survey data to the LiDAR data. This routine searches the LiDAR dataset by X and Y coordinate, finds the closest LiDAR point and compares the vertical (Z) values to the known data collected in the field. Based on the QA/QC data, a bias adjustment was determined, and the results were applied (if necessary) to the LiDAR data.   7. Each tile is reviewed for accuracy and consistency of the macro ground classification.   8. Once the automatic processing and the testing of LiDAR is complete, AeroMetric reviews the generated bare-earth surface data to ensure that proper classification was achieved as part of a Quality Control process. Point classification follows the standard established by The American Society for Photogrammetry and Remote Sensing (ASPRS) for LAS data: Code 1 Processed, but unclassified   Code 2 Bare Earth / Ground   Code 3 Low Vegetation   Code 4 Medium Vegetation   Code 5 High Vegetation   Code 6 Building   Code 7 Noise (Low or High, Manually identified, if needed) Code 9 Water   Code 10 Ignored Ground (Breakline proximity)   9. Classified LAS data is delivered on a per tile base and named according to the Tile

Layout, based on coordinates at lower left corner of the tile.
- 2015-07-10 00:00:00 - The NOAA Office for Coastal Management (OCM) received the topographic files in classified LAZ format from USGS' ftp site. The data were received in UTM Zone 55N NAD83 coordinates (meters) and vertically referenced to Guam Vertical datum in meters. OCM performed the following processing for data storage and Digital Coast provisioning purposes: 1. LAS files were compressed to LAZ format with LASTools. 2. LAS files were removed of any duplicated points and extraneous points were reclassified to noise. 3. The LAS files were transformed to geographic (decimal degrees), ellipsoidal coordinates (meters).
- 2018-10-04 12:00:00 - The data from the previous step was in WGS84 horizontally, but on the NAD83(MA11) ellipsoid vertically and erroneously tagged as NAD83 horizontally. The data was adjusted horizontally to NAD83(MA11) by applying a Helmert transform under the assumption that the WGS84 realization was equivalent to IGS08. No explicit documentation was found for which realization of WGS84 was used and IGS08 was the most logical for data collected in 2012. Transform parameters were those found at https://www.ngs.noaa.gov/CORS/coords. shtml#Col2Exp.

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/49737

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=4939

https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid12b/4939/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=4939;

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.