

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 - 2020 NOAA USGS Lidar: Hawaii, HI

1.2. Summary description of the data:

Product: Processed, classified lidar point cloud data tiles in LAS 1.4 format.

Geographic Extent: Approximately 4,028 square miles encompassing the Big Island of Hawaii.

Dataset Description: The HI Hawaii Island Lidar NOAA 2017 B17 lidar project called for the planning, acquisition, processing, and production of derivative products of lidar data to be collected at a nominal pulse spacing (NPS) of 0.35 meters. Project specifications were based on the U.S. Geological Survey National Geospatial Program Base Lidar Specification 2020 Revision A. The data was developed based on a horizontal datum/projection of NAD83 (PA11) UTM Zone 5N Meters (EPSG 6635) and a vertical datum of NAVD88 (GEOID12B) Meters. Lidar data was delivered as processed LAS 1.4 files formatted to 8,629 individual 1,000-meter x 1,000-meter tiles.

Ground Conditions: Lidar was collected from January 30, 2018 through January 6, 2020 by Leica Geosystems, Inc. while no snow was on the ground and rivers were at or below normal levels. In order to post process the lidar data to meet task order specifications and meet ASPRS vertical accuracy guidelines, Woolpert established 70 ground control points that were used to calibrate the lidar to known ground locations established throughout the project area. Additional independent accuracy checkpoints were collected by NOAA and used to assess the vertical accuracy of the data. These checkpoints were not used to calibrate or post process the data.

This dataset has been noted to have issues with ground classification in areas of dense vegetation. Please read the data use constraints section for further details.

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:

2018-01-30 to 2020-01-06

1.5. Actual or planned geographic coverage of the data:

W: -156.073778, E: -155.057848, N: 20.280495, S: 18.903687

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):

Process Steps:

- 2020-12-29 00:00:00 - Lidar Point Cloud Classification: The Single Photon Lidar (SPL) data acquisition was acquired at a density greater than the task order specified density of QL1 or 8 points per square meter. USGS and NOAA agreed the density of the data should be reduced to provide a more manageable data set. The data was decimated to provide a density not less than 8 points per square meter, however due to significant overlap of acquisition flight lines in some areas of the project, the density in some cases exceeds 8 points per square meter. The Single Photon Lidar (SPL) data acquisition occurred between multiple acquisition seasons creating significant data overlap between seasons. To reduce excessive density, the data was processed to eliminate excess overlap in these areas. The point cloud underwent a classification process to determine bare-earth points and non-ground points utilizing "first and only" as well as "last of many" lidar returns. This process determined Processed, but Unclassified (Class 1), Bare Earth Ground (Class 2), Vegetation (Class 5), Low Noise (Class 7), Water (Class 9), Ignored Ground (Class 10), Bridge Decks (Class 17), and High Noise (Class 18). The bare-earth (Class 2 - Ground) lidar points underwent a manual QA/QC step to verify the quality of the DEM as well as a peer-based QC review. This included a review of the DEM surface to remove artifacts and ensure topographic quality.

- 2020-12-29 00:00:00 - After the bare-earth surface is finalized, it is then used to generate all hydro-breaklines through a semi-automated process. All ground (Class 2) lidar data inside of the Lake Pond and Double Line Drain hydro flattening breaklines were then classified to water (Class 9) using TerraScan/LP360 macro functionality. A buffer of 0.7 meters was also used around each hydro-flattened feature to classify these ground (Class 2) points to Ignored ground (Class 10). All Lake Pond Island and Double Line Drain Island features were checked to ensure that the ground (Class 2) points were reclassified to the correct classification after the automated classification was completed. These classes were created through automated processes only and were not verified for classification accuracy. Due to software limitations within TerraScan, these classes were used to trip the withheld bit within various software packages. These processes were reviewed and accepted

by USGS through numerous conference calls and pilot study areas.

- 2020-12-29 00:00:00 - The single photon lidar data acquisition for this award occurred across two separate deployments. The approximate date range of the first acquisition window was from January 2018 to March 2018 and second window was from November 2019 to January 2020. Given the complexity of the terrain, the flight plan for the project included significant overlapping and off-angle lines between the 2018 and 2019/2020 collection which can create more opportunity to notice differences than is normally seen in a lidar collection where lines tend to follow a single direction and acquisition across years is cut into more complete blocks. For each acquisition season, the acquired data was processed and geometrically calibrated by Woolpert's teaming and data acquisition partner Hexagon. During the calibration, the data was processed to meet the required accuracy specifications per each mission as well as between adjacent missions of the differing flight dates within a given acquisition season. Once the calibration was complete and the data entered full processing, Woolpert made the best efforts to populate delivery tiles containing flights from different acquisition seasons with data acquired from a single season. In these tiles preference was given to the points acquired during the 2018 season because of the significant data processing had occurred within these tiles prior to the second acquisition season. In some areas pieces of lines from the different acquisitions created the edge artifacts. Low confidence polygons were generated around these areas to make the user aware of the discrepancy. All data was manually reviewed and any remaining artifacts removed using functionality provided by TerraScan and TerraModeler. Global Mapper was used as a final check of the bare earth dataset. GeoCue was then used to create the deliverable industry-standard LAS files. Woolpert proprietary software and LP360 was used to perform final statistical analysis of the classes in the LAS files, on a per tile level to verify final classification metrics and full LAS header information.

- 2022-10-18 00:00:00 - NOAA Office for Coastal Management received the classified point cloud data from Woolpert in Orthometric (Geoid12b) NAD83(PA11) UTM zone 5 coordinates with units of meters. An examination of the histograms of height by class indicated that some issues with low points. The withheld points were removed as being geometrically unreliable. In addition, all points below -30 meters were reclassified to low noise (class 7). Data were converted to geographic coordinates in ellipsoid heights for use in the Data Access Viewer. (Citation: classified lidar data)

- 2023-04-14 00:00:00 - The point clouds for two tiles (5QKB800850.laz and 5QKB810850.laz) were re-examined to find ground points near the cliffs. The lack of ground points identified near the edge caused issues in DEM generation as the TIN process was cutting off the cliffs. This work was done by the original lidar contractor, Woolpert. The original tiles were replaced with the new tiles.

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/68082>

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=9635/details/9635>

<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid12b/9635/index.html>

7.3. Data access methods or services offered:

Data is available online for bulk or 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 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.