

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 AK DGGS Lidar: Haines, Alaska

1.2. Summary description of the data:

The Alaska Division of Geological & Geophysical Surveys (DGGS) used aerial lidar to produce a digital terrain model (DTM), surface model (DSM), and intensity image for an area in and around the community of Haines, Alaska, as part of emergency operations in response to the December 2, 2020, landslide that claimed the lives of two residents. Airborne data were collected December 8 - 12, 2020, and subsequently processed in Terrasolid and ArcGIS. Ground control were collected December 15-16, by the DMLW. This data collection is released as a Raw Data File with an open end-user license. All files can be downloaded free of charge from the Alaska Division of Geological & Geophysical Surveys website (<http://doi.org/10.14509/30595>).

The NOAA Office for Coastal Management (OCM) downloaded this data set from this AK DGGS site:

<https://elevation.alaska.gov/>

These files were processed to the NOAA Digital Coast Data Access Viewer (DAV) and AWS S3. The total number of files downloaded was 209, but only 203 of the 209 files were processed.

In addition to the lidar point data, the bare earth Digital Elevation Model (DEM) data at a 1 meter grid spacing, created from the lidar point data are also available from the NOAA Digital Coast. Links to these data are 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:

2020-12-08 to 2020-12-12

1.5. Actual or planned geographic coverage of the data:

W: -135.603351, E: -135.292675, N: 59.337092, S: 59.161999

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 data were collected for the Alaska Division of Geological and Geophysical Surveys (DGGS) and made available on the AK DGGS Elevation Portal (<https://elevation.alaska.gov/>). The NOAA Office for Coastal Management (OCM) downloaded the data from this site to make the data available for custom downloads from the NOAA Digital Coast Data Access Viewer and for bulk downloads from the AWS S3 bucket.

Process Steps:

- 2020-12-12 00:00:00 - Airborne survey - DGGS operates a Riegl VUX1-LR laser scanner integrated with a GNSS and Northrop Grumman IMU system. The integration was designed by Phoenix LiDAR systems. The sensor is capable of collecting up to 820,000 points per second over a distance of 150 m. This survey was flown with a pulse refresh rate between 200,000 and 400,000 pulses per second at a scan rate between 80 and 150 lines per second. This survey was flown with an average elevation of 400 m above ground level and a ground speed of approximately 40 m/s, using a Bell 206 helicopter. The scan angle was set from 55 to 305 degrees. The total area surveyed was approximately 73 km². The airborne survey was flown December 8-12, 2020, using a Bell 206 helicopter. The weather throughout the survey was sub-optimal, with strong winds, light precipitation, and low-hanging clouds.
- 2020-12-16 00:00:00 - Ground survey - The DMLW collected 67 points using a Trimble R10 GNSS instrument. Of these points, 31 were used as control points, while 36 were used as checkpoints.
- 2020-01-01 00:00:00 - Lidar dataset processing - Point data were processed in SDCimport software for initial filtering and multiple-time-around (MTA) disambiguation. MTA errors, corrected in this process, are the result of imprecise interpretations of received pulse time intervals and occur more frequently with higher pulse refresh rates. IMU and GPS data were used to integrate flightline information with the point cloud in Spatial Explorer software. The point data were calibrated at an incrementally precise scale of sensor movement and behavior, incorporating sensor velocity, roll, pitch, and yaw fluctuations throughout the survey. Points were classified in accordance with American Society for Photogrammetry and Remote Sensing (ASPRS) 2014 guidelines, using macros designed in Terrasolid software. Careful attention was given to the interpolation of

the project's ground surface to compensate for inconsistent penetration through low vegetation as a function of the scan angle. Once classified, points underwent a geometric transformation and were converted from ellipsoidal heights to GEOID12B (Alaska) heights. Raster products were derived from the point cloud using ArcMap. The DTM was interpolated from all ground class returns using a tin-based method. The DSM was likewise interpolated from only the first returns for all classes. An intensity image was produced in ArcMap, using closest-to-mean binning.

- 2022-11-23 00:00:00 - The NOAA Office for Coastal Management (OCM) downloaded 209 laz files from the Alaska Division of Geological and Geophysical Surveys Elevation Portal (<https://elevation.alaska.gov/>). The files contained classified elevation and intensity measurements for the 2020 Haines, Alaska project. The data were in UTM Zone 8 NAD83 (2011), meters coordinates and NAVD88 (GEOID12B) elevations in meters. During processing, OCM noted that there are some points classified as buildings, that don't appear to fall on buildings and also that 6 of the 209 laz files failed to process to the NOAA Digital Coast Data Access Viewer database. These files were: pt000005.laz pt000025.laz pt000067.laz pt000068.laz pt000069.laz pt000070.laz The data had the following classifications: 1 - Unclassified, 2 - Ground, 3- Low Vegetation, 4 - Medium Vegetation, 5 - High Vegetation, 6 - Building, 7 - Noise. OCM processed all points to the Digital Coast Data Access Viewer (DAV). OCM performed the following processing on the data for Digital Coast storage and provisioning purposes:

1. Internal OCM scripts were 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 convert from UTM Zone 8 NAD83 (2011), meters coordinates to geographic coordinates, to convert from NAVD88 elevations to ellipsoid elevations using the GEOID12B model, to filter out elevation values less than -50 meters, to assign the geokeys, to sort the data by gps time, zip the data to database, and to create Cloud Optimized Point Cloud (COPC) version laz files that are available from the AWS S3 bucket.

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/68536>

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=9670/details/9670>
<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid12b/9670/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_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.