

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 FEMA Lidar: Valdez, Alaska

1.2. Summary description of the data:

This task order is for planning, acquisition, processing, and derivative products of lidar data to be collected for the Valdez area. This project is located in Valdez-Cordova county, Alaska for Starr. Specifications listed below are based on FEMA Procedure Memorandum No. 61 Standards for LiDAR and Other High Quality Digital Topography. LiDAR acquisition of Valdez, consisted of 25 square miles. The 25 square miles was captured to the "Highest" vertical accuracy requirement. This collection specification is the equivalent of a 2 foot contour accuracy, and was collected with a nominal pulse spacing of 8 points per meter. AeroMetric, Inc. employed an Optech ALTM Gemini LIDAR system, as well as a our Leica ALS70 in the acquisition of this LIDAR data. The airborne GPS and IMU data were processed immediately following each mission. In addition, a sample of the LIDAR data was post-processed at the completion of each mission and the data was reviewed to ensure planned data quality and coverage.

The NOAA Office for Coastal Management (OCM) downloaded this lidar data from the AK DGGS site (<https://elevation.alaska.gov/>) and processed the data to be available on the Digital Coast Data Access Viewer (DAV).

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:

2011-09-21, 2011-09-26, 2011-10-18, 2011-10-28, 2012-06-18

1.5. Actual or planned geographic coverage of the data:

W: -146.431, E: -146.096, N: 61.195, S: 61.072

1.6. Type(s) of data:

(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)
Point Cloud (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?

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:

- 2011-01-01 00:00:00 - Using a Optech Gemini LiDAR system, 120 flight lines of highest density (Nominal Pulse Spacing of 1.0 m) were collected over the Valdez area. A total of 6 missions were flown on the following dates: 9-21-2011, two on 9-26-2011, 10-18-2011, 10-28-2011 and 6-18-2012. Four airborne global positioning system (GPS) base stations were used to support the LiDAR data acquisition: 45652650, 83682650, 19112910, and 45652910 located at the Valdez airport. Coordinates and further information is available in the Cordova Post-Flight Aerial Acquisition Report.

- 2012-08-02 00:00:00 - The LiDAR data was captured using a twin engine fixed wing aircraft equipped with a LiDAR system. The LiDAR system includes a differential GPS unit and inertial measurement system to provide superior accuracy.

Acquisition parameters: 1. Scanner - Optech ALTM Gemini LIDAR, Leica ALS70 2. Flight Height - 1750 meters above ground level 3. Swath Width - 10 degrees 4. Sidelap - 67% 5. Nominal Point Spacing - 8 points per meter GPS and IMU

processing parameters: 1. Processing Programs and version - Applanix POSPac, version 4.4 2. IMU processing monitored for consistency and smoothness - Yes.

Point Cloud Processing: 1. Program and version - Optech's Dashmap 5.20 2. Horizontal Datum - NAD83 3. Horizontal Coordinates - UTM zone 6N, in meters. 4. Vertical Datum - NAVD88 5. Geoid Model used to reduce satellite derived elevations to orthometric heights - Geoid09 (Survey Feet).

LIDAR Processing: 1. Processing Programs and versions - Optech's Dashmap version 5.20, Leica's IPAS version 3.1, TerraSolid TerraScan (version 011.018), TerraModeler (version 011.005 and TerraMatch (version 011.015) and Intergraph MicroStation (version.08.05.02.70) . 2. Point Cloud data is imported to TerraScan in a Microstation V8 (V) CAD environment on a specified 1500m by 1500m tiling scheme 3. Analyze the data for overall completeness and consistency. This is to ensure that there are no voids in the data collection. 4. QC (Quality Control) for calibration errors in the dataset. This is accomplished by sampling the data collected accross 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). 5. Orientation corrections (i.e. Calibration corrections) are then applied (if needed) to the entire dataset. 6. Automatic ground 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. 7. Aerometric provided Quality Assurance and Quality Control (QAQC) data for this project. Aerometric processed QA/QC points in 'open terrian' land cover category that were used to test the accuracy of the LiDAR ground surface. TerraScan's Output Control Report (OCR) was used to compare the QAQC 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 QAQC data, a bias adjustment was determined, and the results were applied to the LIDAR data. A final OCR was performed with a resulting RMSE of 0.055m for the project. 8. Once the automatic processing and testing of LiDAR is complete, Aerometric meticulously reviews the generated bare-earth surface data to insure that proper classification was achieved as part of a Quality Control process. 9. Final deliverables are generated and output to a client specified PLSS tiling scheme.

- 2018-06-06 00:00:00 - The NOAA Office for Coastal Management (OCM) downloaded 64 laz files from the Alaska Division of Geological and Geophysical Surveys data Portal (<https://elevation.alaska.gov/>). The files contained classified elevation and intensity measurements for the 2012 Valdez data set. The data were in UTM Zone 6 coordinates and NAVD88 (GEOID09) elevations in feet. The data had the following classifications: 1 - Unclassified, 2 - Ground, 7 - Noise, 8 - Model Key Point. OCM processed all points to the Digital Coast Data Access Viewer (DAV). OCM found that several differing values for the vertical accuracy were noted in different fields within the provided metadata and the accompanying reports. Those values have been maintained in this metadata record, as provided in the original metadata. All values for the vertical accuracy found during the OCM processing are: 1. From the AeroMetric metadata - values of 4.5 cm RMSE (Purpose field), 5.5 cm RMSE (Process Step field) and 6.9 cm RMSE (Vertical Accuracy field) 2. From the Elevation Data Quality Assurance Report (Spatial Information Solutions) - 14.4 cm RMSE 3. From the AeroMetric Post-Flight Aerial Acquisition Report - 17.6 cm RMSE OCM performed the following processing on the data for Digital Coast storage and provisioning purposes: 1. LAStools lasinfo and lasvalidate were run on the laz files to check for errors. 2. LAStools lasinfo was used to convert the global encoding bit from 0 to 1. 3. An internal OCM script was run to check the number of points by classification and by flight ID and the gps and intensity ranges. 4. Internal OCM scripts were run on the laz files to convert from UTM Zone 6 coordinates to geographic coordinates, to convert from NAVD88 elevations to ellipsoid elevations using the GEOID09 model, to convert from feet to meters, to assign the geokeys, to sort the data by gps time and zip the data to database and to http.

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/52860>**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=8539>

<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid12b/8539/index.html>

7.3. Data access methods or services offered:

Data is available online for custom and bulk 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)

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.