

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 MN DNR Lidar: Blue Earth County, MN

1.2. Summary description of the data:

The project vendor, AeroMetric, Inc., acquired highly accurate Light Detection and Ranging (LiDAR) elevation data for Blue Earth County in south central Minnesota in Spring 2012. The project area consists of approximately 2,260 square kilometers (862 square miles). LiDAR data are in the UTM Zone 15 coordinate system, NAD83 NAVD88 Geoid09 meters. The tiling scheme is 16th USGS 1:24,000 quadrangle tiles.

The vendor delivered the data to the Minnesota Department of Natural Resources (DNR) in several formats:

- 1) One-meter digital elevation model
- 2) Edge-of-water breaklines
- 3) Classified LAS formatted point cloud data

DNR staff created two additional products: two-foot contours and building outlines.

Note: The original metadata record was created at the Minnesota Geospatial Information Office by combining information supplied by AeroMetric and DNR. Abstract Addendum - USGS National Geospatial Technical Operations Center (NGTOC), data edited February 2016: Data may have been modified from the original, delivered data by the NGTOC to correct issues such as breakline enforcement and hydro-flattening of water bodies, pits and spikes, and to remove edge tinning and other anomalies.

This metadata record reflects the Blue Earth County, MN data set and supports the data entry in the NOAA Digital Coast Data Access Viewer (DAV). For this data set, the DAV is leveraging the Entwine Point Tiles (EPT) hosted by USGS on Amazon Web Services.

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:

2012-04-06

1.5. Actual or planned geographic coverage of the data:

W: -94.382, E: -93.763, N: 44.267, S: 43.845

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 Blue Earth County, MN lidar was ingested into the Data Access Viewer for custom product generation by leveraging USGS hosted Entwine Point Tiles.

Process Steps:

- LiDAR data and derivative products produced in compliance with this task order are part of the data to be obtained under Contract number E112-10821 with Minnesota Department of Natural Resources. Specifications listed below are based on National Digital Elevation Program (NDEP) and the American Society for Photogrammetry and Remote Sensing (ASPRS) and Other High Quality Digital Topography. AEROMETRIC, INC. PROCESSING INFORMATION: This LiDAR data set consists of approximately 2,260 square kilometers (862 square miles). 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 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 highly accurate positioning. Acquisition parameters: 1. Scanner - Leica ALS70 2. Flight Height - 2400 meters above ground level 3. Swath Width - 40 degrees 4. Sidelap - 30 percent 5. Nominal Point Spacing - 1.4 meters GPS and IMU processing parameters: 1. Processing Programs and version - TerraTec TerraPOS, TPAS TC GNSS/INS Processor version 3.10, IPAS Pro version 2.01.02 2. IMU processing monitored for consistency and smoothness - Yes Point Cloud Processing: 1. Program and version - ALS Post Processor version 2.74 build#9 2. Horizontal Datum - NAD83 HARN 3. Horizontal Coordinates - UTM zone 15N, in meters 4. Vertical Datum - NAVD88 5. Geoid Model used to reduce satellite derived elevations to orthometric heights - Geoid09 (Meters)

- Lidar Processing: 1. Processing Programs and versions - ALS Post Processor version 2.74 build#9, TerraSolid TerraScan (version 012.010), TerraModeler (version 012.005 and TerraMatch (version 012.004) and Intergraph MicroStation (version.08.05.02.70). 2. Point Cloud data was imported to TerraScan in a Microstation V8 (V) CAD environment on a specified tiling scheme based on the US

National Grid Square. 3. Analyzed the data for overall completeness and consistency. This was to ensure that there were no voids in the data collection. 4. QC (Quality Control) for calibration errors in the dataset. This was accomplished by sampling the data collected across all flight lines and classifying the individual lines to ground. The software used the ground-classified lines to compute corrections (Heading, Pitch, Roll, and Scale). 5. Orientation corrections (i.e. Calibration corrections) were then applied (if needed) to the entire dataset. 6. Automatic ground classification was 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, Inc. provided Quality Assurance and Quality Control (QAQC) data for this project. AeroMetric processed QA/QC points in 'open terrain' land cover category that were used to test the accuracy of the LiDAR ground surface. TerraScan's Output Control Report (OCR) tool 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 on the entire data set to assess any adjustment and ensure that data was accurately positioned. 8. Once the automatic processing and testing of lidar was complete, Aerometric meticulously reviewed the generated bare-earth surface data to insure that proper classification was achieved. Each tile was reviewed for accuracy and consistency of the macro ground classification. Also during this phase, MicroStation was used to generate linework representing water bodies and rivers. Separate linework was also placed in instances where overpasses had blocked enough valid ground returns or water gave too few ground returns to reasonably portray the ground surface. A proprietary in-house software program was then run to drape the river linework in a flowing fashion. Contours were generated on the river breaklines to review monotonicity of the draped linework. 9. After the lidar data was finalized for vertical placement, a macro was run via TerraScan to output a dataset generated on a per swath basis as part of the final deliverables. All points of the swath were reclassified to class 0 during this step. 10. Final deliverables were generated and output to a client-specified tiling scheme set of geodatabases.

- DNR PROCESSING INFORMATION Additional products generated by Minnesota DNR staff are in the geodatabase for each of the tiles: 1. Two-foot contours were created by resampling the 1-meter DEM to 3 meters, then smoothing the 3-meter grid using a neighborhood average routine, and then creating contours from this surface using standard ArcGIS processing tools. 2. Building outlines were created by extracting from the LAS files those points with Classification 6 (buildings), then grouping those points within 3 meters of each other into a single cluster and then creating an outline around those points. This was done using standard ArcMap tools. 3. Hillshades were created from the one- and three-meter DEMs using standard ArcMap tools. Azimuth value = 215, Altitude = 45, Z-Factor = 1
- Original point clouds in LAS/LAZ format were restructured as Entwine Point Tiles

and stored on Amazon Web Services. The data were reprojected horizontally to WGS84 web mercator (EPSG 3857) and no changes were made to the vertical (NAVD88 GEOID09 meters).

- 2022-12-12 00:00:00 - The NOAA Office for Coastal Management (OCM) created references to the Entwine Point Tiles (EPT) that were ingested into the NOAA Digital Coast Data Access Viewer (DAV). No changes were made to the data. The DAV will access the point cloud as it resides on Amazon Web Services (AWS) under the usgs-lidar-public container. This is the AWS URL being accessed: https://s3-us-west-2.amazonaws.com/usgs-lidar-public/USGS_LPC_MN_BlueEarth_2011_LAS_2016/ept.json

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/68787>

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=9680/details/9680>

https://rockyweb.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/USGS_LPC_MN_BlueEarth

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.