

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:

2015 OLC Lidar DEM: Willowa, OR

1.2. Summary description of the data:

The dataset encompasses 522 square miles in portions of Willowa and Union Counties, Oregon. The highest hit digital surface models (DSM) represent the earth's surface with all vegetation and human-made structures included. The highest hit DSMs were derived from lidar data using TIN processing of the all-return point cloud. The bare earth digital elevation model (DEM) represents the earth's surface with all vegetation and human-made structures removed. The bare earth DEMs were derived from lidar data using TIN processing of the ground point returns. The DSM and DEM grid cell size is 3 feet. The projection is Oregon Statewide Lambert Conformal Conic, units are in International Feet. The horizontal datum is NAD 83 (2011) and vertical datum is NAVD88 (Geoid 12A). Some elevation values have been interpolated across areas in the models where there is no elevation data (e.g. over water, over dense vegetation). Watershed Sciences, Inc. collected the lidar and created this data set for the Oregon Department of Geology and Mineral Industries (DOGAMI).

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:

2015-07-04 to 2015-07-15

1.5. Actual or planned geographic coverage of the data:

W: -118.123, E: -116.901, N: 45.789, S: 45.248

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:

Watershed Sciences Inc. has collected Light Detection and Ranging (LIDAR) data in the Milton-Freewater Study Area for the Oregon Department of Geology and Mineral Industries (DOGAMI). NOAA OCM has taken the data and ingested it into the Digital Coast Data Access Viewer for distribution.

Process Steps:

- 2016-05-28 00:00:00 - Acquisition. LiDAR data acquisition was conducted from 23-May to 5-Jun. The survey utilized a Leica ALS 80 laser system mounted in a Cessna 208. Scan angles near nadir were used to increase penetration of vegetation to ground surfaces. Ground level GPS and aircraft IMU were collected during the flight.
- 2016-07-05 00:00:00 - Processing.
 1. TRAJECTORY: Aircraft trajectory (position and attitude) were calculated based on on-board GPS and IMU data with post-processing refinement through coincident static GPS collection.
 2. POST-PROCESSING: Laser point return coordinates (x,y,z) were computed using sensor-specific post processing software, combining LiDAR return range and intensity information with aircraft trajectory information.
 3. INITIAL QAQC: The post-processed LiDAR files were assembled into flight lines and reviewed for gaps and consistency, as well as systematic noise.
 4. CALIBRATION: Custom algorithms evaluated individual swaths for misalignments based on IMU configuration as well as aircraft attitude variability. Offsets were resolved through surface and linear matching algorithms that minimize variability in elevation and slope. Descriptive statistics, thresholds, and specifications providing transparency for data calibration are discussed in the accompanying Data Report.
 5. GROUND MODELING: Ground classified point cloud was generated through proprietary data processing tools, with settings and thresholds appropriate to landscape and vegetation condition.
 6. ARTIFACT FILTRATION: Noise and processing artifacts were filtered using post-processing software and proprietary quality control methods.
 7. ACCURACY ASSESSMENT: Vertical accuracy for the LiDAR dataset was assessed against Ground Check Points (GCP) distributed throughout the study area. See the accompanying Data Report for methodology, descriptive statistics, and relevant standards and reporting language.
 8. DATA PRODUCT: LiDAR points classified as 'ground' were output as a digital elevation model (DEM). (Citation: raw lidar data)
- 2017-01-19 00:00:00 - Lidar has been collected and processed for all areas within the project study area. In some areas of heavy vegetation and forest cover, there may be relatively few ground points in the Lidar data. TINing the points produces large triangles and hence the elevations may be less accurate within such areas. In some areas with large bodies of water, competing water surface levels may be visible. This is due to seasonal water level fluctuation and intervals of time between acquisitions of an area. Shaded relief images have been visually inspected for data errors such as pits, border artifacts, gaps, and shifting. The data was examined at a 1:3000 scale. DOGAMI examines all data associated with this delivery to ensure that

all required data products are present and function correctly. Quality control review is conducted on every data file delivered to DOGAMI. Lidar ASCII Standard (LAS) point files have been loaded into TerraSolid and ArcGIS to ensure complete and correct lidar data coverage and file integrity. Raster and vector files have been viewed in ArcMap and cross referenced with the delivery area to ensure proper coverage, extent and integrity. Metadata content is reviewed by using a visual check as well as analysis by the USGS Geospatial Metadata validation service. (Citation: processed lidar data)

- 2019-07-10 00:00:00 - NOAA/OCM received the data from DOGAMI in a proprietary format (ESRI ArcGrid). Data were converted to GeoTiff for ingest into the Digital Coast Data Access Viewer. (Citation: ArcGrid Raster Hydroflattened DEMs)

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):

The approach adopted for DOGAMI lidar surveys was comprised of three components:

1) Verify the horizontal and vertical coordinates established by Watershed Sciences for a select number of survey monuments used to calibrate the lidar survey. These surveys typically involved a minimum of two hours of GPS occupation over a known point. The collected data were then submitted to the National Geodetic Survey (NGS) Online Positioning User Service (OPUS) for post-processing against several Continuously Operating Reference Stations (CORS) operated by the NGS.

2) Collect GCPs along relatively flat surfaces (roads, paths, parking lots etc.). This step involved the collection of both continuous measurements (from a vehicle as well as from a backpack) as well as static measurements (typically 5 epochs).

3) Having collected the GCP data, the GPS data was post-processed using Trimble Business Center software. Data post-processing typically involved calibrations against at least three CORS stations as well as from local site calibrations performed in the field using those benchmarks that had been independently verified. Data is post processed to refine measurements so that horizontal and vertical errors are less than 0.02 meters (0.065 feet). Horizontal accuracy of data is tested by reoccupying a sample subset of survey monuments used for processing of lidar data. Each occupation's x and y coordinates are compared with the vendor coordinates for offsets.

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
- 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/56885>

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=8786>

https://noaa-nos-coastal-lidar-pds.s3.us-east-1.amazonaws.com/dem/OLC_Wallowa_2015_8786/index

7.3. Data access methods or services offered:

Data is available online for 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.