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:
2007 Oregon Trout Lidar DEM: Lower Salmon River, OR

1.2. Summary description of the data:
No metadata record was provided with the data. This record is populated with information from the Watershed Sciences, Inc. technical report available from the Oregon DOGAMI Lidar Viewer. The technical report is available from the link provided in the URL section of this metadata record.

Watershed Sciences, Inc. collected Light Detection and Ranging (LiDAR) data for Oregon Trout on 1,573 acres along the Salmon River in Oregon on May 18th and 19th, 2007. The TAF acreage of the study area is greater than the original area of interest (AOI) due to buffering and optimization for flight planning. The data delivered conforms to the AOI requested and the statistics in this report reflect only the AOI. The Salmon River study area was flown in conjunction with data collection on the Upper Salmon for the Oregon Department of Geology and Mineral Industries (DOGAMI). The AOI flown for Oregon Trout has been acquired and processed using the same methodology as the DOGAMI data set for the purpose of compatibility.

In addition to these bare earth Digital Elevation Model (DEM) data, the lidar point data that these DEM data were created from are also available from the NOAA Digital Coast. The link 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:
2007-05-18 to 2007-05-19

1.5. Actual or planned geographic coverage of the data:
W: -121.974291, E: -121.928996, N: 45.334353, S: 45.26662

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 NOAA Office for Coastal Management (OCM) received one raster file from Oregon DOGAMI and processed the data to be available for custom download from the NOAA Digital Coast Data Access Viewer (DAV) and for bulk download from https.

Process Steps:

- Acquisition: The LiDAR survey utilized a Leica ALS50 Phase II sensor mounted in a Cessna Caravan 208B. The Leica ALS50 Phase II system was set to acquire greater than or equal to 105,000 laser pulses per second (i.e. 105 kHz pulse rate) and flown at 900 meters above ground level (AGL), capturing a scan angle of ±14 degrees from nadir. These settings were developed to yield points with an average native density of greater than or equal to 8 points per square meter over terrestrial surfaces. The native pulse density is the number of pulses emitted by the LiDAR system. Some types of surfaces (i.e., dense vegetation or water) may return fewer pulses than the laser originally emitted. Therefore, the delivered density can be less than the native density and vary according to distribution of terrain, land cover and water bodies.   The completed areas were surveyed with opposing flight line side-lap of greater than or equal to 50% (greater than or equal to 100% overlap) to reduce laser shadowing and increase surface laser painting. The system allows up to four range measurements per pulse, and all discernable laser returns were processed for the output dataset. To solve for laser point position, an accurate description of aircraft position and attitude is vital. Aircraft position is described as x, y, and z and measured twice per second (2 Hz) by an onboard differential GPS unit. Aircraft attitude is measured 200 times per second (200 Hz) as pitch, roll, and yaw (heading) from an onboard inertial measurement unit (IMU).   The Salmon River study area was flown on May 18th and 19th, 2007 in conjunction with data collection on the Upper Salmon for the Oregon Department of Geology and Mineral Industries (DOGAMI). The AOI flown for Oregon Trout has been acquired and processed using the same methodology as the DOGAMI data set for the purpose of compatibility.
- Ground Survey: During the LiDAR survey of the study area, a static (1 Hz recording frequency) ground survey was conducted over monuments with known coordinates. After the airborne survey, the static GPS data are processed using triangulation with CORS stations and checked against the Online Positioning User Service (OPUS) to quantify daily variance. Multiple sessions are processed over the same monument to confirm antenna height measurements and position accuracy. Multiple DGPS units are used for the ground real-time kinematic (RTK) portion of the survey. To collect accurate ground surveyed points, a GPS base unit is set up

over monuments to broadcast a kinematic correction to a roving GPS unit. The ground crew uses a roving unit to receive radio-relayed kinematic corrected positions from the base unit. This method is referred to as real-time kinematic (RTK) surveying and allows precise location measurement (sigma less than or equal to 1.5 cm - 0.6 in). For the Salmon River study area, 323 RTK points were collected in the vicinity and compared to LiDAR data for accuracy assessment.

- Laser Point Processing: Laser point coordinates were computed using the IPAS and ALS Post Processor software suites based on independent data from the LiDAR system (pulse time, scan angle), and aircraft trajectory data (SBET). Laser point returns (first through fourth) were assigned an associated (x, y, and z) coordinate along with unique intensity values (0-255). The data were output into large LAS v. 1. 1 files; each point maintaining the corresponding scan angle, return number (echo), intensity, and x, y, and z (easting, northing, and elevation) information.   These initial laser point files were too large to process. To facilitate laser point processing, bins (polygons) were created to divide the dataset into manageable sizes (< 500 MB). Flightlines and LiDAR data were then reviewed to ensure complete coverage of the study area and positional accuracy of the laser points. Once the laser point data were imported into bins in TerraScan, a manual calibration was performed to assess the system offsets for pitch, roll, heading and mirror scale. Using a geometric relationship developed by Watershed Sciences, each of these offsets was resolved and corrected if necessary. The LiDAR points were then filtered for noise, pits and birds by screening for absolute elevation limits, isolated points and height above ground. Each bin was then inspected for pits and birds manually, and spurious points were removed. For a bin containing approximately 7.5-9.0 million points, an average of 50-100 points were typically found to be artificially low or high. These spurious non-terrestrial laser points must be removed from the dataset. Common sources of non-terrestrial returns are clouds, birds, vapor, and haze.   Internal calibration was refined using TerraMatch. Points from overlapping lines were tested for internal consistency and final adjustments made for system misalignments (i.e., pitch, roll, heading offsets and mirror scale). Automated sensor attitude and scale corrections yielded 3-5 cm improvements in the relative accuracy.   Once the system misalignments were corrected, vertical GPS drift was resolved and removed per flight line, yielding a slight improvement (<1 cm) in relative accuracy. In summary, the data must complete a robust calibration designed to reduce inconsistencies from multiple sources (i.e. sensor attitude offsets, mirror scale, GPS drift). The TerraScan software suite is designed specifically for classifying near-ground points (Soininen 2004). The processing sequence began with removal of all points not near the earth based on geometric constraints used to evaluate multi-return points. The resulting bare earth (ground) model was visually inspected and additional ground point modeling was performed in site-specific areas (over a 50-meter radius) to improve ground detail. This was only done in areas with known ground modeling deficiencies, such as bedrock outcrops, cliffs, deeply incised stream banks, and dense vegetation. In some cases, ground point classification included known vegetation (i.e., understory, low/dense shrubs, etc.)

and these points were manually reclassified as non-grounds. Ground surface rasters were developed from triangulated irregular networks (TINs) of ground points.
- 2023-05-09 00:00:00 - The NOAA Office for Coastal Management (OCM) received 1 raster file in Esri GRID format from Oregon DOGAMI. The bare earth raster file was at a 3 ft grid spacing. The file was in OR State Plane North, NAD83 HARN, International feet coordinates and in NAVD88 (Geoid03) elevations in US survey feet. OCM assigned the appropriate EPSG codes (Horiz - 2913 and Vert - 6360) and copied the raster files to https for Digital Coast storage and provisioning purposes.

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/69877

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=9820/details/9820
https://noaa-nos-coastal-lidar-pds.s3.us-east-1.amazonaws.com/dem/OR_Lwr_Salmon_Rvr_DEM_2007

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.