

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:

2021 AK DGGS Lidar DEM: Kipnuk, AK

1.2. Summary description of the data:

Lidar-derived elevation data for Kipnuk, Southwest Alaska, collected August 18, 2021, Raw Data File 2023-20, provides lidar derived classified point cloud data, a digital surface model (DSM), a digital terrain model (DTM), and an intensity model of Kipnuk, Southwest Alaska. The survey was flown during leaf-on ground conditions. The survey provides snow-free surface elevation data for assessing coastal erosion and flooding hazards. Ground control data and aerial lidar data were collected on August 18, 2021, and subsequently processed using a suite of geospatial processing software. All files can be downloaded from the Alaska Division of Geological & Geophysical Surveys website (<https://dggs.alaska.gov/pubs/id/31036>).

This metadata record supports the data entry in the NOAA Digital Coast Data Access Viewer (DAV).

The NOAA Office for Coastal Management (OCM) downloaded 1 GeoTiff data file from the AK DGGS (Alaska Division of Geological and Geophysical Surveys) website (https://dggs.alaska.gov/webpubs/data/rdf2023_020_kipnuk_dtm.zip). The data were processed to the NOAA Digital Coast Data Access Viewer (DAV) to make the data available for bulk and custom downloads. 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. A link to these data is 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:

2021-08-18

1.5. Actual or planned geographic coverage of the data:

W: -164.079683, E: -164.003041, N: 59.976282, S: 59.912959

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:

Data were collected by the Alaska Division of Geological and Geophysical Surveys (AK DGGS). The data were downloaded by the NOAA Office for Coastal Management (OCM) and processed to make it available for custom download from the NOAA Digital Coast Data Access Viewer (DAV) and for bulk download from AWS S3.

Process Steps:

- 2021-08-18 00:00:00 - Ground survey - We collected ground control and checkpoints on August 18, 2021. We deployed a Trimble R10 GNSS receiver at benchmark IIK-A near the Kipnuk Airport. It provided a base station occupation and real-time kinematic (RTK) corrections to points we surveyed with a rover Trimble R8 GNSS receiver (internal antenna). We collected 45 ground control and checkpoints for calibration and to assess the vertical accuracy of the point cloud. All points were collected on bare earth surfaces. We processed and delivered all data in NAD83 (2011) UTM3N and vertical datum NAVD88 GEOID12B.
- 2021-08-18 00:00:00 - Aerial photogrammetric survey - DGGS used a Riegl VUX1-LR laser scanner integrated with a global navigation satellite system (GNSS) and Northrop Grumman LN-200C inertial measurement unit (IMU). Phoenix LiDAR Systems designed the lidar integration system. The sensor can collect up to 820,000 points per second at a range of up to 150 m. The scanner operated with a pulse refresh rate of 400,000 pulses per second at a scan rate of 200 lines per second. We used a Cessna 180 fixed-wing platform to survey from an elevation of about 200 m above ground level, at a ground speed of about 40 m/s, and with a scan angle set from 80 to 280 degrees. The total survey area covers about 20 km². We flew the aerial survey on August 18, 2021, departing at 2:30 pm from Kipnuk, Alaska Airport, and landing back at Kipnuk at 3:10 pm. The weather throughout the survey was clear with no wind.
- 2022-01-01 00:00:00 - Lidar dataset processing - We processed point data in SDCimport software for initial filtering and multiple-time-around (MTA) disambiguation. MTA errors, corrected in this process, result from ambiguous interpretations of received pulse time intervals and occur more frequently with higher pulse refresh rates. We processed IMU and GNSS data in Inertial Explorer and we used Spatial Explorer software to integrate flightline information with the point cloud. We calibrated the point data at an incrementally precise scale of sensor movement and behavior, incorporating sensor velocity, roll, pitch, and yaw

fluctuations throughout the survey. We created macros in Terrasolid software and classified points following the American Society for Photogrammetry and Remote Sensing (ASPRS) 2019 guidelines. Once classified, we applied a geometric transformation and converted the points from ellipsoidal heights to GEOID12B (Alaska) orthometric heights. We used ArcGIS Pro to derive raster products from the point cloud. The DSM was interpolated from maximum return values from the ground, vegetation, bridge deck, and building classes using a binning method. The DTM was interpolated from all ground class returns, also using a binning method and minimum values. In ArcGIS Pro, we produced an intensity image by binning and averaging ground, vegetation, building, and bridge deck classes.

- 2024-02-20 00:00:00 - The NOAA Office for Coastal Management (OCM) downloaded 1 GeoTiff data file from the Alaska Division of Geological and Geophysical Surveys (AK DGGS) for the Kipnuk, AK project. The bare earth raster file was at a 0.5 m grid spacing. The data were in UTM Zone 3N NAD83 (2011), meters coordinates and NAVD88 (Geoid12b) elevations in meters. OCM assigned the appropriate EPSG codes (Horiz - 6332, Vert - 5703) and copied the raster files to AWS S3 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/72182>

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=10075/details/10075>

https://noaa-nos-coastal-lidar-pds.s3.us-east-1.amazonaws.com/dem/AK_Kipnuk_DEM_2021_10075/in

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_NC

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 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.