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:

2010 USACE Topobathy Lidar: California

1.2. Summary description of the data:

These files contain bathymetric lidar data collected by the SHOALS-1000T system along the coast of California. Data coverage generally extends along the coastline from the waterline offshore 1,000 meters or to laser extinction. Exclusively on areas where Fugro Pelagos acquired or planned to acquire multibeam sonar data by December 31, 2009, data coverage extends from the shoreline either to the 10-m contour, the 20-m contour or the landward extend of the multibeam data plus an additional 100 m offshore. The SHOALS system has a pulse repetition rate of 1 kHz at 532 nm (green wavelength). Native lidar data is not generally in a format accessible to most Geographical Information Systems (GIS). Specialized in-house and commercial software packages are used to process the native lidar data into 3-dimensional positions that can be imported into GIS software for visualization and further analysis. Horizontal positions, provided in decimal degrees of latitude and longitude, are referenced to the North American Datum of 1983 (NAD83). Vertical positions are referenced to the NAD83 ellipsoid and provided in meters. The National Geodetic Survey's (NGS) GEOID09 model is used to transform the vertical positions from ellipsoid to orthometric heights referenced to the North American Vertical Datum of 1988 (NAVD88). The 3-D position data are sub-divided into a series of ASCII file products, with each covering approximately 5 kilometers of shoreline. The file index is provided by the shape file, "CA_Boxes", and the numbers used to identify files are in the "Box" field of the shape file. The data file naming convention is based on the year, project, area name, "Box" number and product type (H - bathymetry). An example file name is "2009_NCMP_CA_001_H.xyz", where <2009> is the project year, <NCMP> is the project under which data were collected, <CA> is the area of data collection, <001> is the "Box" number and <H> is the product type. The ASCII columns are Longitude, Latitude, UTM Zone, Easting, Northing, Elevation (orthometric), Elevation (ellipsoid), Date, and Time.

Upon arrival to NOAA's Office for Coastal Management the data were converted to geographic coordinates and to GRS80 (ellipsoid) in meters.

Original contact information:

Contact Org: JALBTCX

Title: Data Production Manager

Phone: 228-252-1111

Email: shoals-info@sam.usace.army.mil

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:
2010-05-29 to 2010-08-21

1.5. Actual or planned geographic coverage of the data:
W: -120.62677167, E: -120.62488407, N: 35.12050452, S: 35.11958802

1.6. Type(s) of data:
(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)

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:

- Topographic data - These data were collected using the ALS60 lidar system. They are owned by Fugro EarthData and operated through contract. The system collects topographic lidar data at maximum pulse rate of 200 kHz in a wavelength of 1064 nm. A CASI-1500 hyperspectral line scanner is integrated with the system. Aircraft position, velocity and acceleration information are collected by the onboard GPS/ IMU system. Raw data were transferred to the office and processed in IPAS software. Aircraft position data are processed using POSPac software and the results are combined with the lidar data to produce 3-D positions for each lidar shot. Upon processing, validation and QA/QC in the software packages GeoCue and TerraScan, anomalous data are flagged as invalid and necessary reflights are called. Fugro's proprietary software converts all valid data from ellipsoid to orthometric heights based on the NGS' GEOID09 model and exports topographic data as a series of LAS files with a single file per flightline per 5km box.
- Topographic data - 1. The raw lidar data was processed through a minimum block mean algorithm, and points were classified as either bare earth or non-bare earth. 2. User developed macros that factor mean terrain angle and height from the ground were used to determine bare earth point classification. 3. The next phase of the surfacing process was a 2D edit procedure that ensures the accuracy of the automated feature classification. 4. Editors used a combination of imagery,

intensity of the lidar reflection, profiles and tin-editing software to assess points. 5. The lidar data was filtered, as necessary, using a quadric error metric to remove redundant points. This method leaves points where there is a change in the slope of surfaces (road ditches) and eliminates points from evenly sloped terrain (flat field) where the points do not affect the surface. 6. The algorithms for filtering data were utilized within Fugro EarthData's proprietary software and commercial software written by TerraSolid. 7. The flight line overlap points were merged back into filtered data set for delivery product. 8. The point cloud data were delivered tiled in LAS 1.0 format; unclassified (1), ground (2), low/noise (7), water (9), and overlap (12).
- These data were collected using the SHOALS-1000T system. It is owned by Fugro Pelagos Inc. and operated through contract. The system collects bathymetric lidar data at 1kHz and RGB imagery at 1Hz. A CASI-2 hyperspectral line scanner is integrated with the system as well. Aircraft position, velocity and acceleration information are collected through a combination of Novatel and POS A/V 410 equipment. All raw data streams are transferred to the office for downloading and processing in SHOALS GCS software. Aircraft position data are processed using POSPac software and the results are combined with the lidar data to produce 3-D positions for each lidar shot. Upon inspection and QA/QC in the software package Fledermaus, anomalous data are flagged as invalid. FPI Workbench then converts all valid data from ellipsoid to orthometric heights based on the NGS' GEOID09 model and exports data as a series of bathymetry (H) ASCII files. The bathymetry files contain all of the returns from the bathymetric sensor which include returns both above and below the water.
- 2015-03-24 00:00:00 - The topographic and bathymetric data were received by the Office for Coastal Management (OCM). The topographic data were in las format and the bathymetric data were in ASCII format. The topographic and bathymetric data were in orthometric (NAVD88) heights and in geographic coordinates. The following steps document the processing of the data for Digital Coast storage and provisioning purposes: 1. The topographic data were converted from orthometric heights to ellipsoid heights using GEOID09. 2. The bathymetric data were converted from orthometric heights to ellipsoid heights using GEOID09. 3. All points were converted to laz format.

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:
- 1.6. Type(s) of data
- 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
- 7.3. Data access methods or services offered
- 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/49641

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=4825
https://coast.noaa.gov/htdata/lidar4_z/geoid18/data/4825

7.3. Data access methods or services offered:

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.