

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:

2009 USACE NCMP Topobathy Lidar: Isle Royale, MI

1.2. Summary description of the data:

These files contain topographic and bathymetric lidar data collected by the Compact Hydrographic Airborne Rapid Total Survey (CHARTS) system along the

coastline of the island of Isle Royale, Michigan in Lake Superior. CHARTS integrates topographic and bathymetric lidar sensors, a digital camera and

a hyperspectral scanner on a single remote sensing platform for use in coastal mapping and charting activities. Data coverage generally extends along

the coastline from the waterline inland 500 meters (topography) and offshore 1,000 meters or to laser extinction (bathymetry). The topographic lidar

sensor has a pulse repetition rate of 9 kHz at 1064 nm (near-infrared wavelength). The bathymetric lidar sensor 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 were referenced to the NAD83 ellipsoid and provided in meters. The National Geodetic Survey's (NGS) GEOID03 model was used to transform

the vertical positions from ellipsoid to orthometric heights referenced to the North American Vertical Datum of 1988 (NAVD88). The positions are relative

to NAD83 in decimal degrees of longitude and latitude. The heights were converted from ellipsoid to orthometric heights (NAVD88) using the Geoid03 model

with the results in meters. Once converted to geoid heights, the data were then converted to IGLD85 using the VDatum program from NOAA (National Oceanic and Atmospheric Administration). The NOAA Office for Coastal Management received the data and converted the hydro files from IGLD85 heights to NAVD88 heights using VDatum. The heights were then converted to ellipsoid heights using Geoid03. The topo files were converted from NAVD88 heights to ellipsoid heights using Geoid03. These files were converted for data storage and Digital Coast provisioning purposes.

In addition to these lidar point data, the bare earth Digital Elevation Models (DEM) created from the lidar point data are also available. These data are available for custom download at the link 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:

2009-07-27 to 2009-08-02

1.5. Actual or planned geographic coverage of the data:

W: -89.3269497, E: -88.3551972, N: 48.240609, S: 47.815609

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):

Lineage Statement:

The USACE collected, processed, and provided the data to the NOAA Office for Coastal Management (OCM). OCM received the data and processed it to be available for custom download from the Data Access Viewer (DAV) and for bulk download from https.

Process Steps:

- These data were collected using the CHARTS system. It is owned by the Naval Oceanographic Office and operated through contract. The system collects topographic lidar data at 9 kHz, bathymetric lidar data at 1 kHz and RGB imagery at 1Hz. A CASI-1500 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 packages Fledermaus and PFM_ABE, anomalous data are flagged as invalid. PFM_ABE's chartsLAS module then converts all valid data from ellipsoid to orthometric heights based on the NGS' GEOID03 model and exports data as a series of first return topography (TF), last return topography (TL) and 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. The data are converted from ellipsoid to orthometric heights, based on the GEOID03 model, within the chartsLAS program. The data were then shifted vertically from the orthometric heights to IGLD 85 using VDatum software from NOAA.

- 2012-08-01 00:00:00 - The NOAA Office for Coastal Management (OCM) received the topo files in LAS v1.1 format and the hydro files in ascii format. The files contained lidar elevation and intensity measurements. The topo data were received in geographic coordinates (NAD83) and vertically referenced to NAVD88 using the Geoid03 model. The vertical units of data were meters. The data were classified according to ASPRS LAS classification scheme (1 = unclassified, 2 = ground). The hydro files were received in geographic coordinates (NAD83) and vertically reference to IGLD85. OCM performed the following processing for data storage and Digital Coast provisioning purposes: 1. Both topo and hydro files were filtered for elevation outliers. 2. The topo las files were converted from orthometric (NAVD88) heights to ellipsoidal heights using Geoid03. 3. The hydro ascii files were converted from IGLD85 heights to orthometric (NAVD88) heights using VDatum. 4. The hydro las files were converted from orthometric (NAVD88) heights to ellipsoidal heights using Geoid03. 5. The hydro ascii files were converted to las format and points were classified as 11 (Bathymetry)

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
- 7.4. 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/50078>

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=1391>

<https://noaa-nos-coastal-lidar-pds.s3.amazonaws.com/laz/geoid18/1391/index.html>

7.3. Data access methods or services offered:

This data can be obtained on-line at the following URL:

<https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=1391>

;

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.