Department of Geology and Mineral Industries (DOGAMI)
Oregon Beach and Shoreline Mapping Analysis Program (OBSMAP)

Please provide the following information and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

NANOOS DMP: https://www.nanoos.org/documents/certification/DMP/2023/NANOOS-DMP.pdf

1. General Description of Data to be Managed

1.1. Name of the Data, data collection Project, or data-producing Program:

Oregon Beach And Shoreline Mapping Analysis Program (OBSMAP), which consists of discrete transects and tidal-datum based shorelines that are being collected along the Oregon coast.

1.2. Summary description of the data:

Physical environmental data, such as discrete station beach profiles and tidal-datum based shorelines, have been collected along the Oregon Coast by the Oregon Department of Geological and Mineral Industries (DOGAMI) since October 2004. These data make up the Oregon Beach and Shoreline Mapping Program (OBSMAP). The data are the product of multiple funding partners, including the Northwest Association of Networked Ocean Observing System (NANOOS), the Oregon Department of Land Conservation and Development (DLCD), Oregon Parks and Recreation Department (OPRD), City of Cannon Beach, the Hatfield Marine Science Center, and federal government agencies such as the Federal Emergency Management Agency (FEMA) and the US Army Corps of Engineers (USACE). In all cases, the data are collected using Real-Time Kinematic Differential Global Positioning System (RTK-DGPS) at seasonal to annual timescales, post-processed at the DOGAMI Newport Coastal Field Office and disseminated via the web (http://nvs.nanoos.org/BeachMapping).

The transect data show the degree of change (horizontal and vertical) taking place across the sub-aerial beach down into the inter-tidal zone. Tidal (Mean Higher High Water) datum-based shorelines document the alongshore variations in the beach, which may be the product of rip current embayments, hotspot erosion due to storms, or changes due to climate phenomena such as El Niños and La Niñas.

1.3. Is this a one-time data collection, or an ongoing series of measurements?

Ongoing series of measurements.

1.4. Actual or planned temporal coverage of the data:

NANOOS funded sentinel stations (e.g. Rockaway and Neskowin littoral cells and along the Clatsop Plains) are measured approximately seasonally. Other sites are measured annually (e.g. central Oregon coast (Yachats to Otter Rock)) or when funding becomes available (e.g. southern Oregon coast (Gold Beach to Nesika Beach area)).

1.5. Actual or planned geographic coverage of the data:

Geographic coverage includes NANOOS funded sentinel stations that are located along much of the Tillamook County coast and along the Clatsop Plains, Northwest Oregon coast. Other sites that may be periodically measured occur on the central Oregon coast (Yachats to Otter Rock) and on the southern Oregon coast in Curry County (Gold Beach to Nesika Beach area).

1.6. Type(s) of data:

digital numeric data

1.7. Data collection method(s):

Real time kinematic differential global positioning system (RTK-DGPS)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

NANOOS

1.8.1. If data are from another observing system, please specify: N/A

2. Point of Contact for this Data Management Plan (author or maintainer)

2.1. Name: Dr. Jonathan Allan

2.2. Title: Coastal Geomorphologist

2.3. Affiliation or facility: Oregon Department of Geology and Mineral Industries (DOGAMI), Coastal Field Office

2.4. E-mail address: jonathan.allan@dogami.oregon.gov

2.5. Phone number: 541-819-9023

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: Dr. Jonathan Allan

3.2. Position Title: Coastal Geomorphologist

3.3. Name of current Position holder:

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?

Collection, processing, and data dissemination of these data are covered by NANOOS. Long-term archiving of these data is maintained by the Oregon Department of Geology and Mineral Industries (DOGAMI).

4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):

~5%

5. **Data Lineage and Quality**
NOAA has issued Information Quality Guidelines[1] 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):

We use Trimble® R7/R8/R12 GPS receivers, powered by Trimble Maxwell 6 chips and an

[1] http://www.cio.noaa.gov/services_programs/IQ_Guidelines_030414.html

unparalleled 440 GNSS channels, capable of tracking carrier signals from a wide range of satellite systems, including GPS and GLONASS. This system consists of a GPS base station (R7), Zephyr Geodetic antenna (model 2), HPB450 radio modems, and R8/R12 "rover" GPS. Trimble reports that both the R7/R8/R12 GPS systems have horizontal errors of approximately ±0.8-cm + 1ppm (parts per million * the baseline length) and ±1.5-cm in the vertical when operated in real-time kinetic (RTK) mode. When operated in static GNSS mode, Trimble reports both receivers having errors of ±0.3-cm + 0.1ppm (parts per million * the baseline length) in the horizontal and ±0.35-cm in the vertical.

To convert a space-based positioning system to a ground-based local grid coordinate system, a precise mathematical transformation is necessary. While some of these adjustments are accomplished by specifying the map projection, datum, and geoid model prior to commencing a field survey, an additional transformation is undertaken whereby the GPS measurements are tied to known ground control points. This step is called a GPS site calibration, such that the GPS measurements are calibrated to ground control points with known vertical and horizontal coordinates using a rigorous least-squares adjustments procedure. The approach used is to occupy the control benchmark by undertaking 180 GPS epoch measurements (~3 minutes of measurement per calibration site) using a fixed-height 2.0 m GPS pole and tripod. A local site calibration is then implemented in the field using the Trimble TSC2 GPS computer controller and re-evaluated in the office using Trimble Business Office software.

During post processing, the data are subject to both quantitative and qualitative QA/QC procedures after they are collected. These include:

- Exclusion of data measurements > +/-1 m of horizontal offset from either side of the predefined transect line. Previous analyses (e.g. Allan et al., 2012) have demonstrated that the horizontal variability during surveys is generally minor, typically less than ±0.25 m either side of the transect line. This results in negligible vertical uncertainties due to the relatively uniform nature of beaches characteristic of much of the Oregon coast (Ruggiero et al., 2005).
- Removal of spurious elevation data. Data spikes that are clearly erroneous relative to adjacent points are also removed.

From our previous research at numerous sites along the Oregon coast, this method of surveying can reliably detect elevation changes on the order of 4-5 cm, that is, well below normal seasonal changes in beach elevation, which typically varies by 1–2 m (Ruggiero and others, 2005; Allan and Hart, 2007, 2008).

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): See above

6. **Data Documentation**

The EDMC Data Documentation Procedural Directive[2] *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.*

[2] https://www.nosc.noaa.gov/EDMC/PD.DD.php

6.1. Does metadata comply with EDMC Data Documentation directive?

Yes

6.1.1. If metadata are non-existent or non-compliant, please explain:

6.2. Name of organization or facility providing metadata hosting:

Oregon Department of Geology and Mineral Industries (DOGAMI)

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:

Metadata is presently provided upon request with the data. NANOOS and the PI have been working to make these data available via NOAA NCEI

6.4. Process for producing and maintaining metadata (describe or provide URL of description):

The PI maintains a standard metadata template (Excel format) that has been developed for the Oregon coast. A customized python script that uses the base template is run periodically to export up-to-date metadata in both XML and html format for areas where active beach monitoring is occurring.

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[3] 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? N/A

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure: N/A

7.2. Name of organization of facility providing data access:

NANOOS and Oregon Department of Geology and Mineral Industries (DOGAMI).

DOGAMI beach profiles, contour change plots, and trend plots are available via the web shortly after they have been collected (typically within 1-2 weeks). These data can be accessed via the NVS Beach and Shoreline Changes portal (http://nvs.nanoos.org/BeachMapping). Access to the reduced (processed) beach profile and contour change data are available upon request via email to the principle investigator.

NANOOS and the PI have been working to make these data available via NOAA NCEI as well.

7.2.1. If data hosting service is needed, please indicate:

[3] Data Access Directive currently in review; URL to be added.

7.2.2. URL of data access service, if known:

http://nvs.nanoos.org/BeachMapping

7.3. Data access methods or services offered:

7.4. Approximate delay between data collection and dissemination:

Data is made available typically within 1-2 weeks from date of collection.

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

Data reflect seasonal measurements of the beach and shoreline. Delays of 1-2 weeks to make these data available are not unreasonable given the temporal scale of the sampling. Delays reflect agency priorities and agency IT staff time to respond.

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:
NANOOS and the PI have been working to make these data available via NOAA NCEI. Delays to implement this capability are presently a function of NCEI limitations as opposed to any delay by the PI or NANOOS.

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):

The Oregon Department of Geology and Mineral Industries is the state archive repository for all geologic data collected by the agency for the state of Oregon. Multiple forms of hard disk drive (HDD) storage are implemented by the Oregon Department of Geology and Mineral Industries (DOGAMI). These include both local and offsite (e.g. cloud-based) forms of storage. Offsite storage includes permanent archiving on the Oregon State Enterprise system and in long-term secure repositories.

8.3. Approximate delay between data collection and submission to an archive facility:

1-2 days

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:

The Oregon Department of Geology and Mineral Industries is the state archive repository for all geologic data collected by the agency for the state of Oregon. Multiple forms of hard disk drive (HDD) storage are implemented by the Oregon Department of Geology and Mineral Industries (DOGAMI). These include both local and offsite (e.g. cloud-based) forms of storage. Offsite storage includes permanent archiving on the Oregon State Enterprise system and in long-term secure repositories.

9. **Additional Line Office or Staff Office Questions**
Line and Staff Offices may extend this template by inserting additional questions in this section.

10. Previously Published Data

Allan, J. C., and Hart, R., 2007, Assessing the temporal and spatial variability of coastal change in the Neskowin littoral cell: Developing a comprehensive monitoring program for Oregon beaches Oregon Department of Geology and Mineral Industries, Open-file-report O-07-01.

Allan, J. C., and Hart, R., 2008, Oregon beach and shoreline mapping and analysis program: 2007-2008 beach monitoring report: Oregon Department of Geology and Mineral Industries, Open file report O-08-15.

Allan, J. C., Ruggiero, P., and Roberts, J. T., 2012, Coastal Flood Insurance Study, Coos County, Oregon: Oregon Department of Geology and Mineral Industries, Special Paper 44.

Barnard, P.L., Short, A.D., Harley, M.D., Splinter, K.D., Vitousek, S., Turner, I.L., Allan, J., Banno, M., Bryan, K.R., Doria, A., Hansen, J.E., Kato, S., Kuriyama, Y., Randall-Goodwin, E., Ruggiero, P., Walker, I.J. and Heathfield, D.K., 2015. Coastal vulnerability across the Pacific dominated by El Niño/Southern Oscillation. Nature Geoscience.

Barnard, P.L., Hoover, D., Hubbard, D.M., Snyder, A., Ludka, B.C., Allan, J., Kaminsky, G.M., Ruggiero, P., Gallien, T.W., Gabel, L., McCandless, D., Weiner, H.M., Cohn, N., Anderson, D.L. and Serafin, K.A., 2017. Extreme oceanographic forcing and coastal response due to the 2015-16 El Niño. Nature Communications, 8.

Ruggiero, P., Kaminsky, G. M., Gelfenbaum, G., and Voight, B., 2005, Seasonal to interannual morphodynamics along a high-energy dissipative littoral cell: Journal of Coastal Research, v. 21, no. 3, p. 553-578.

Trimble, 2016, Trimble R7 & R8 GNSS system datasheets: Trimble Navigation Limited.