

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:

National Coral Reef Monitoring Program: Methodological Case Study for 'Downscaling Ecological Trends from the Spatially Randomized Datasets' in the Main Hawaiian Islands, 2005-2016

1.2. Summary description of the data:

The data described here result from the application of a down-scaling method to NOAA National Coral Reef Monitoring Program (NCRMP) benthic cover data, in an attempt by the Pacific Islands Fisheries Science Center (PIFSC) Ecosystem Sciences Division (ESD) to make NCRMP data maximally useful to reef managers.

ESD scientists took benthic cover data from the Main Hawaiian Islands from 2005-2016 and applied a statistical technique based on contiguous clustering and mixed model analysis to discover an optimal reporting sector for NCRMP data (Oliver et al 2020). Specifically, clusters were identified based on NCRMP benthic cover data collected by ESD from 4 survey methods (towed diver, line point intercept, and photoquadrat surveys in which benthic images were analyzed either using CoralNet or CPCe) and then the optimal size and number of spatial sectors was assessed to generate reporting sector assignments that balanced minimal size against maximal ecological homogeneity and statistical power. These assignments are recorded in the dataset along with the source benthic cover observations, including live hard coral cover, soft coral cover, crustose coralline algae cover, macroalgal and turf algae cover, sediment cover, and all other categories are binned into "other".

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:

2005-07-14 to 2016-08-24

1.5. Actual or planned geographic coverage of the data:

W: -160.2520966, E: -154.8065752, N: 22.24684434, S: 18.90837018

Main Hawaiian Islands (MHI), including Hawaii, Kauai, Maui, Oahu, Molokai, Niihau, and Lanai.

1.6. Type(s) of data:

(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)

Table (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:

Annette M DesRochers

2.2. Title:

Metadata Contact

2.3. Affiliation or facility:

2.4. E-mail address:

annette.desrochers@noaa.gov

2.5. Phone number:

(808)725-5461

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:

Thomas Oliver

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:

In the NOAA Technical Memo Report associated with this dataset, we present a statistical technique based on contiguous clustering and mixed model analysis to downscale the NOAA National Coral Reef Monitoring Program (NCRMP) and Pacific Reef Assessment and Monitoring Program benthic cover data and apply it to a case study in the main Hawaiian Islands.

Process Steps:

- Data Compilation: First, we summarize relevant data across methodologies and metrics. Data selected include benthic cover data from line-point intercept, benthic towed diver, and stratified-random photoquadrat surveys (analyzed either in CPCe or CoralNet). A key step in this process is to thoughtfully, with an understanding of the respective methods, compile data into an analyzable dataset. Benthic categories selected for the analysis include hard live coral, soft coral, crustose coralline algae (CCA), macro and turf algae, sediment, and other. (Citation: Oliver TA, Barkley H, Couch C, Kindinger T, Williams I. 2020. Downscaling ecological trends from the spatially randomized datasets of the National Coral Reef Monitoring Program. NOAA Tech Memo. NOAA-TM-NMFS-PIFSC-106, 59 p.)
- Hierarchical Contiguous Clustering: To perform the clustering, we first convert points to polygons using Voronoi tessellation, define a neighbor-joining network and assign branch lengths based on ecological distance across a number of benthic cover categories, and then prune the network into a minimum-spanning tree to set up for evaluating the quality of defined clusters. (Citation: Oliver TA, Barkley H, Couch C, Kindinger T, Williams I. 2020. Downscaling ecological trends from the spatially randomized datasets of the National Coral Reef Monitoring Program. NOAA Tech Memo. NOAA-TM-NMFS-PIFSC-106, 59 p.)
- Select the Appropriate Number of Clusters: With the generation of a minimum spanning tree, we have a data structure that represents a hierarchically nested set of clusters, but we do not yet know the appropriate number of clusters. To assess the appropriate number of clusters to generate, we primarily balance the number/size of sectors against the statistical performance of the cluster set, as our other goals are inherently dealt with in the methodological approach. (Citation: Oliver TA, Barkley H, Couch C, Kindinger T, Williams I. 2020. Downscaling ecological trends from the spatially randomized datasets of the National Coral Reef Monitoring

Program. NOAA Tech Memo. NOAA-TM-NMFS-PIFSC-106, 59 p.)

- Mixed Model Analysis of Trends: Given a chosen level of clustering and the spatial polygons, we can define spatial sectors with which to run our analysis and apply hierarchical mixed models to evaluate long-term trends. (Citation: Oliver TA, Barkley H, Couch C, Kindinger T, Williams I. 2020. Downscaling ecological trends from the spatially randomized datasets of the National Coral Reef Monitoring Program. NOAA Tech Memo. NOAA-TM-NMFS-PIFSC-106, 59 p.)

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):

The NOAA National Coral Reef Monitoring Program (NCRMP) runs thorough quality control procedures described in the original survey records. Our analysis was reviewed by all co-authors, their respective Division chiefs, and NOAA Fisheries technical and editorial review by the Pacific Islands Fisheries Science Center.

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)

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/59928>

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 National Centers for Environmental Information (NCEI)

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

7.2.2. URL of data access service, if known:

<https://accession.nodc.noaa.gov/0211127>

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<https://accession.nodc.noaa.gov/0211127>

7.3. Data access methods or services offered:

Data can be accessed online via the NOAA National Centers for Environmental Information (NCEI) Ocean Archive.

7.4. Approximate delay between data collection and dissemination:

Unknown

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_MD

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):

Pacific Islands Fisheries Science Center - Honolulu, HI

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

Unknown

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

NOAA IRC and NOAA Fisheries ITS resources and assets.

9. Additional Line Office or Staff Office Questions

Line and Staff Offices may extend this template by inserting additional questions in this section.