DATA MANAGEMENT PLAN

Research products and data types

This project will generate multiple data sets, a mechanistic model of thermal performance, and outreach protocols and surveys. All data types are described below.

Project 1:
1. Field environmental monitoring data for an entire year: temperature, salinity, irradiance, and dissolved oxygen from sampled corals surrounding waters. Data will be downloaded from instruments (i.e., YSI) and saved in electronic files. File types .csv and .excel.
2. Coral photosynthetic performance (F_v/F_m): monthly measures from a pulse amplitude modulated fluorometer (DIVING-PAM). Data will be downloaded from the instrument and saved in electronic files File type .csv
3. Statistical analyses: R scripts and functions code. File type .R and .Rmd
Project 2:
1. Field collection records: event logs will include event dates, start/end times, exact GPS locations, samples collected, sample ID. Will be recorded on paper log sheets and converted to electronic files. File types .csv and scanned PDFs.
2. Coral acclimation records: Holding tank parameters include temperature, salinity, irradiance cycles, dissolved oxygen, and coral health. Will be recorded on paper log sheets and converted to electronic files. File types .csv and scanned PDFs.
3. Oxygen respirometry experimental data: Species, sample ID, dates, and times will be recorded by hand on log sheets. Information from logs will be transferred into excel spreadsheets. Photographs of each experiment will be taken using a digital camera for a visual record of coral health. File types .csv and scanned PDFs, and picture images as .jpeg.
4. Statistical analyses: R scripts and functions code. File type .R and .Rmd
5. Computer generated simulations from mechanistic model of thermal performance. File type .R.
Outreach
1. Planned protocols for field/lab days for Panamian students K-11. File types .docx and .pdf.
2. Surveys from outreach activities. Information from surveys will be transferred into excel spreadsheets. File types .excel and scanned PDFs.

Standards and metadata

Data collection will be strictly checked for quality assurance in a weekly basis. Monitoring and experimental data will be recorded and examined for integrity by the PI and collaborators. I will train undergraduate research assistants on laboratory experiments and will periodically assess their performance to ensure inter-experimenter reliability. In addition, all assistants will maintain laboratory notebooks by entering data and performing crosschecks on a weekly basis.

Metadata will be prepared in accordance by the Biological and Chemical Oceanography Data Management Office (BCO-DMO) conventions (i.e. using the BCO-DMO metadata forms) and will include detailed descriptions of collection and analysis procedures.

Data storage and access during the project

All researchers responsible to collect and conduct quality assurance of data will use a shared cloud-based storage system such as Microsoft One Drive that permit editing files in any computer (Mac or PC) that has been linked to One Drive. Editing files from One Drive does not require an internet connection, however, internet *is* needed to upload the latest file update to the cloud. All data will be backed-up on a weekly basis into an onsite hard drive, and monthly to an offsite hard drive.

Data sharing and archiving

All datasets collected from this project will be made available through the BCO-DMO data system within two years of collection. The PI will work with BCO-DMO data managers to make project data available online in compliance with the NSF OCE Sample and Data Policy. In addition, all data sets corresponding to specific manuscripts will be made available in the open access Dryad repository at the time of publication. Manuscripts will be published in peer reviewed journals as open access whenever possible, and later deposited on 'Researchgate' to increase readership and access.

In addition, long term data archiving is processed by BCO-DMO. They will also ensure project data are submitted to the appropriate national data archive. The PI will work with BCO-DMO to ensure data are archived appropriately and that proper and complete documentation are archived along with the data.

Roles and responsibilities

The PI, Diana P. López, will be primarily responsible for data collection, data management, and data dissemination. All other co-PIs will provide guidance for data management, and developing outreach materials and interacting with the public. Dr. Okamoto will provide support for developing, managing, and sharing code for the thermal performance model. Data archiving for this project will provide a strong foundation for long-term open-access to data and code.