Protocol: Temperature Loggers & Sampling Event Metadata

How to cite this work: Protocol: Name of the MarineGEO Protocol. (2020) Tennenbaum Marine Observatories Network, MarineGEO, Smithsonian Institution.



## Introduction

Use this protocol to collect appropriate metadata for each sampling locality at least once per field season, and to deploy temperature loggers to track temperature throughout the year.

## Measured Parameters

Qualitative and quantitative site characteristics.

## Requirements

Number of Personnel: 1-2 people

Estimated Total Time Per Location:

Preparation: 1 person x 0.5 hours

Field work: 1 person x 0.25 hours

Post-processing: None

Data processing: 1 person x 0.5 hours

## Materials:

* Clipboard with datasheet on waterproof paper
* Pencil
* Camera
* Hand-held GPS
* 2 EnvLogger temperature loggers

## Methods

Fully review this and any additional protocols necessary for the sampling excursion. Address any questions or concerns to [marinegeo@si.edu](mailto:marinegeo@si.edu) before beginning this protocol.

**Preparation:**

1. Review the protocol designs for selection of permanent sites.

2. Use the EnvLogger App to name your loggers with a unique identifier (TBD)

3. Label the plastic casings of your EnvLogger temperature loggers with the same unique identifiers.

4. In the EnvLogger App, set your loggers to start their missions around the time you plan to deploy. Set loggers to record at two hour intervals, with time set to Coordinated Universal Time (UTC). Select the “pretty dates” option, which will log on the hour. See EnvLogger handbook for more detailed instructions.

**Fieldwork:**

1. Locate permanent transect markers. Record coordinates of transect start and end points on site metadata fieldsheet.
2. Deploy two EnvLogger temperature loggers, one each at opposite ends of the site. Loggers should be secured at least 30cm from the substratum and in a location you will be able to easily relocate. Attaching the loggers to permanent transect markers is recommended.
   1. Record logger locations on site metadata fieldsheet (either lat/lon or location e.g. “start of transect 2”)
   2. At intertidal locations, [need guidance for where to put loggers]
3. Record minimum and maximum depth along each transect.
4. Record site notes if relevant. These can include:
   1. Perturbations: major recent storms, algal blooms, vessel groundings
   2. Weather conditions
   3. Tidal height
5. Take context photo at a permanent marker at the starting point of the central transect, facing your survey site.
6. Take photo from a uniform height.
   1. Select a height that allows you to capture the landscape (if intertidal) or seascape (if subtidal).
   2. Capture the landscape/seascape horizontally, but include more benthos than water column
   3. Once you have established the optimal height to capture your landscape/seascape, use a framer (your permanent marker if it is the correct height) to maintain uniform photo height. (A PVC t-shaped framer works well)
7. Take photo in the same direction each time
   1. Take a compass heading in the chosen direction, record the heading, store the information where all potential photographers of your site will find it
   2. Use wide angle lens or camera setting
8. Record photo metadata on fieldsheet: file number, camera used, exact location, direction

**Logger Retrieval**

1. Loggers should remain at each site year-round
2. If possible, download temperature data quarterly
   1. Bring your logger to the surface. Use the EnvLogger App to retrieve data.
   2. Remove any fouling material on your logger.
   3. Return your logger to its location
3. After one year has passed, replace each logger with a new logger when downloading temperature data.

## Data Submission

1. Scan the completed field data sheets and save both paper and electronic versions locally. We do not require you to submit the scanned forms.
2. Enter data into the provided data entry template. Each template is an Excel spreadsheet. Please provide as much protocol and sample metadata as possible, such as the protocol version and contact information. Use the “notes” columns to provide additional information or context if a relevant column doesn’t already exist, rather than renaming or creating columns.
3. Use our online submission portal to upload the Excel Spreadsheet: <https://marinegeo.github.io/data-submission>
4. Contact us if you have any questions: [marinegeo@si.edu](mailto:marinegeo@si.edu)