
Plan Overview

A Data Management Plan created using DMPTool

Title: Quantifying Nutrient, Oxygen, and Salinity Budgets in Elkhorn Slough and Adjacent Regions

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Project abstract:

The project will focus on quantifying the nutrient, oxygen, and salinity budgets in an effort to learn how seasonal patterns and tidal exchange influences transport between Elkhorn Slough and its adjacent regions. To achieve this, an analysis will be conducted on data collected from oceanographic sensors stationed in Elkhorn Slough, Moro Cojo Slough, Tembladero Slough, and offshore in Monterey Bay. Several questions will be addressed throughout the projects execution. How do nutrient, oxygen, and salinity budgets affect the eutrophic levels of Elkhorn Slough and its adjacent bodies of water (Moro Cojo Slough, Old Salinas River, Monterey Bay)? How much do seasonal patterns and tidal exchanges play a role in circulation? Cross-sectional surveys will be conducted using an Acoustic Doppler Current Profiler to provide high-resolution spatial and temporal velocity profiles in addition to underway data acquisition systems, current meters, and the established monitoring stations. An environmental study for a proposed TMDL plan found nitrate load was highest in Tembladero Slough and Monterey Bay, which flows into the Old Salinas River. However, the estimates were distributed unevenly across the study sites, leading to a high level of uncertainty. Using this study, I will quantify not only nitrate, but also oxygen and salinity as a means of tracking transport and associating the physical fluxes with seasonal patterns. Monitoring the physical fluxes of nutrients, oxygen, and salinity between each body of water can offer essential information about the circulation dynamics and the physical, biological, and chemical processes affecting each variable. The issue of eutrophication on a local scale has been a continuous, unresolved issue for this estuary. By tracking the vital budgets, agencies and organizations will gain new insight into the links between the circulation and eutrophication in order to make well-informed decisions for the future of Elkhorn Slough.

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Quantifying Nutrient, Oxygen, and Salinity Budgets in Elkhorn Slough and Adjacent Regions

Type of data and information created

Describe the types of environmental data and information created during the course of the project

Data collected throughout the course of this project will be sourced from Monterey Bay, Elkhorn Slough, Moro Cojo Slough, and Tembladero Slough. The specific data that will be collected includes temperature, salinity, dissolved oxygen, nitrate, pressure/depth, and velocity.

Expected schedule for data sharing

Tentative date by which the data will be shared

All data will be collected by January 2022 and will be made publicly available online through <https://www.zenodo.org>.

Standards for format and content

Describe the standards to be used for data/metadata format and content

Data will be uploaded using a standard tabulated raw data, including date, time, and sensor measurements. As the project progresses, variations of the dataset will be made available with various filtering algorithms and station locations. A final data set will include metadata and the finalized processed data. Analysis code will also be made publicly available.

Policies for stewardship and preservation

Describe your program's policies that address data stewardship and preservation

Real-time monitoring stations being used and installed in the project are made publicly available on MLML's data portal, and the Central and Northern California Ocean Observing System (CeNCOOS) data portal. Students in the graduate program at MLML are required to provide their advisors with copies of all data collected as part of their thesis or make all data publicly available themselves.

Procedures for providing access

Describe the procedures for providing access, sharing, and security

Data will be made publicly available on <https://zenodo.org>. Established monitoring stations have data available through MLML's online data portal, and the CeNCOOS online data portal. A master's thesis focused on the project under the Margaret A. Davidson fellowship will be publicly available through MLML's Digital Commons (<http://digital.mlml.calstate.edu/islandora/object/islandora%3A252>).

Previous published data

Describe your prior experience in publishing research data

The faculty advisor for this project, Dr. Thomas Connolly, routinely makes environmental data publicly available through the MLML public data portal and CeNCOOS data portal as a shore station PI for CeNCOOS. Quality controlled data and analysis code for these measurements are also made available through MLML Digital Commons. Dr. Connolly also has experience publishing data and analysis code associated with peer-reviewed publications on Zenodo.