

SLOSEA: WATER QUALITY NETWORK ARCHIVE DATA

NOTES

1. The comma-separated value (CSV) files can be opened with Microsoft Excel and other common spreadsheet programs.
2. All measurements and their units are described by a header in the first row of each column. Resize the width of each column to see the full text of each column header.
3. Each Time value is common to all measurements in its row. As indicated, times are given in Coordinated Universal Time (UTC), not local (PDT/PST) time.
4. Missing measurements are indicated by blank data cells NOT substitute values.
5. Meteorological measurements are available from BS1 only.
6. The geographic coordinates of the water quality measurements for each station are indicated on the [Water Quality Station Map](#) unless otherwise noted in a column's header row. At present, measurement locations differ only for the current velocity data from BM1.
7. Latitude and longitude coordinates (given in decimal degrees) are projected using the WGS84 datum.
8. All depths and elevations are relative to Mean Low Low Water (MLLW).
9. Current velocities are given as U (east-west), V (north-south) and, where available, W (up-down) vector components. These directions are cardinal compass directions, with W (up-down) corrected for pitch and roll.

PARAMETERS MEASURED

Water Quality

- Water Temperature ($^{\circ}\text{C}$)
- Salinity (psu)
- Conductivity (S m^{-1})
- Pressure (dBar)
- Tide (m MLLW)
- Dissolved Oxygen Concentration ($\mu\text{Mol l}^{-1}$)
- Dissolved Oxygen Saturation (%)
- Chlorophyll a Concentration ($\mu\text{g l}^{-1}$)
- Turbidity (NTU)
- Nitrate Concentration ($\mu\text{Mol l}^{-1}$)
- U Velocity Component (mm s^{-1}) – Only BM1, CM1, and CM2
- W Velocity Component (mm s^{-1}) – Only BM1, CM1, and CM2

Meteorological – Only BS1

- Air Temperature (°C)
- Relative Humidity (%)
- Dew Point (°C)
- Wind Speed (m s⁻¹)
- Wind Direction (°True)
- Wind Chill (°C)
- Rainfall (mm)
- Barometer (hPa)
- Sunlight (W m⁻²)

TIMELINE OVERVIEW

BM1

- 4/4/2007 - Station deployed.
- 10/8-11/26/2008 - Station down for annual maintenance and calibration.
- 6/1-8/4/2010 - Station down for annual maintenance and calibration.
- 4/25-6/28/2011 - ADCP down for repair.

BS1

- 12/21/2006 - Station deployed
- 9/9-10/13/2007 - Station down for annual maintenance and calibration.
- 7/18-11/24/2008 - Station down for annual maintenance and calibration.
- 10/6/2009 - Meteorological station deployed.
- 7/10-9/13/2010 - Station down for annual maintenance and calibration.

CM1

- 11/26/2007 - Station deployed in a fixed configuration.
- 9/4-12/10/08 - Station down for annual maintenance and calibration.
- 1/23/2009 - Station in fixed station retired.
- 9/29/2009 - Station redeployed in a floating configuration.
- 9/28-10/27/2010 - Station down for annual maintenance and calibration.
- 8/16/2011 - current - Station down for annual maintenance and calibration.

CM2

- 11/20/2007 - Station deployed.
- 9/9-11/21/2007 - Station down for maintenance.
- 4/8-8/4/2008 - Station down for maintenance.
- 8/15-10/30/2008 - Station down for maintenance.
- 3/23/2009 - Station retired.

OVERVIEW

The San Luis Obispo Science and Ecosystem Alliance (SLOSEA) Water Quality Network consists of four fixed water quality stations strategically located in Morro Bay Estuary (Fig. 1). Each station supports physical, chemical, and biological sensors selected to tolerate marine conditions. The first station, BS1 (35° 20' 1.6794" N, 120° 50' 50.28" W), was installed on 21 December 2006 in the southern end of the Estuary at a depth of 0.72 m below mean low low water (MLLW). BS1 had a Novalynx 110-WS-16 Modular Weather Station deployed on 6 October 2009. BM1 (35° 22' 15.2394" N, 120° 51' 32.04" W) near the mouth of the Estuary was installed on 4 April 2007 and was mounted to a pier at a depth of 0.83 m below MLLW to capture the flux between Morro Bay Estuary and Estero Bay. CM1 (35° 20' 17.1594" N, 120° 49' 56.64" W) was installed on 26 November 2007 downstream of the confluence of Chorro and Los Osos Creeks. CM1 water quality sensors were originally deployed at a fixed depth, 1 m above the bottom of the channel; however, due to accessibility CM1 was reconfigured as a floating sensor array on 29 September 2009. The fourth station, CM2 (35°20. 535' N, 120°49. 691' W), was installed on 20 November 2007 in Chorro Creek. CM2 was retired on 23 March 2009.

Each array was comprised of three main components: power supply, water quality instruments, and modem with a remotely located server computer. The power supply contained a 12-volt rechargeable marine-grade battery, a casing for the battery, and a 60-watt solar panel. The water quality instruments included a Satlantic STOR-X data logger, Satlantic *In Situ* Ultraviolet Spectrophotometry (ISUS-X) nitrate sensor (Johnson and Coletti, 2002), Sea-Bird CTD (SIP-37) sensor, WET Labs Combination Chlorophyll Fluorometer and Turbidity Sensor (ECO-FLNTUS), Aanderaa Oxygen Optode 3835, Nortek Current Profilers (Continental Profiler and Aquadopp Profiler) (Fig. 2). At each fixed station, the water quality instruments sampled every 15 minutes for a two minute sampling interval. With a schedule file, the STOR-X controlled the timing of applying and removing power, acquiring and packaging data from connected sensors, and communicating with the GSM modem to transmit packaged raw data. The raw data were sent to a California Polytechnic State University's (Cal Poly) Center for Coastal Marine Science (CCMS) server by cell phone connection for storage as a day file and processing. Near-real time data were available for the general public on the SLOSEA website (<http://www.slosea.org/about/dash.php>).

Each parameter was averaged over the two minute burst sampling period every 15 minutes, and the mean was assigned a timestamp to that nearest 15 minute. Each mean value was subjected to threshold processing based on sensor ratings and physical limits to ensure quality assurance and quality control (QA/QC). Missing data were a result of transmission error, instrument malfunction, instrument calibration and repair, or QA/QC process. To minimize the effect of bio- and geo-fouling, each station was cleaned once a month and more frequently during high growth seasons. Additionally, all sensors were factory calibrated and updated each year.



Fig. 1 Map of the Morro Bay Estuary, CA with the location of the San Luis Obispo Science and Ecosystem Alliance's (SLOSEA) four instrumented water quality stations (BM1, BS1, CM1, CM2)

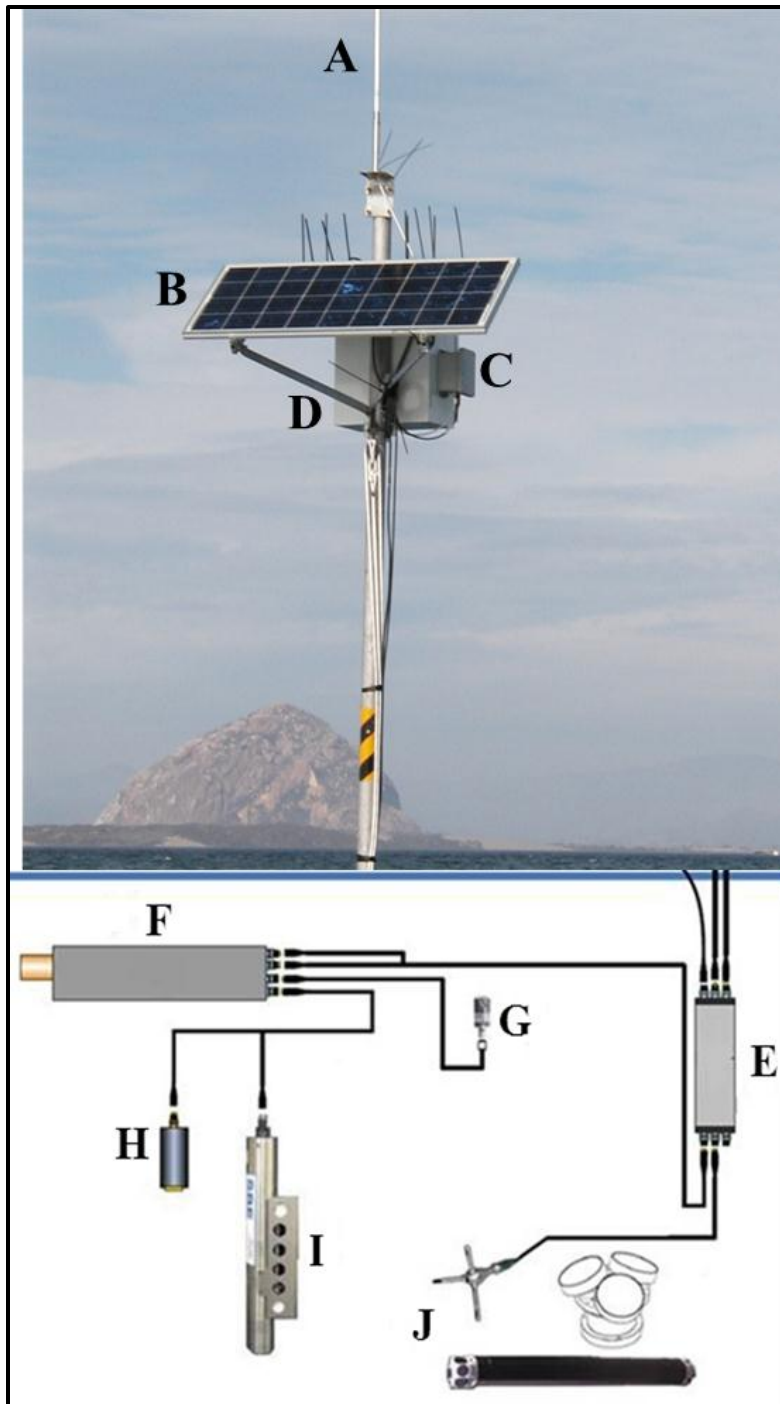


Fig. 2 Schematic from the BS1 station in the Water Quality Network (A) Antenna, (B) Solar Panel, (C) GSM Modem, (D) Battery, (E) Satlantic STOR-X Data Logger, (F) Satlantic ISUS-X Nitrate Sensor, (G) Aanderaa Oxygen Optode 3835, (H) WET Labs ECO-FLNTUS Fluorometer, (I) Sea-BirdSBE-SIP37 CTD, and (J) Nortek Current Profilers

Created: November 11, 2011