

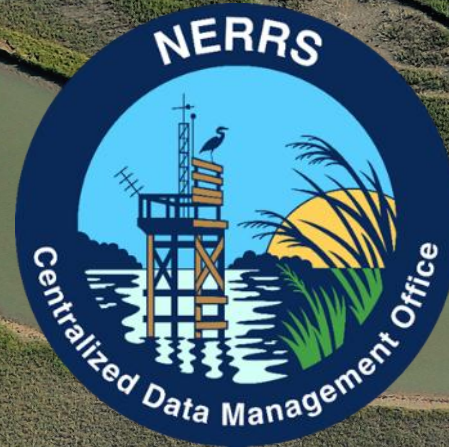
NERRS Centralized Data Management Office

PMEP Effective Estuary Restoration Symposium

May 6, 2025

Melissa Ide, Deputy Director: melissa@baruch.sc.edu

Dr. Dwayne Porter, Director: porter@sc.edu



NERRS CDMO

- **National Estuarine Research Reserve System (NERRS)**
 - Network of 30 coastal sites (reserves) designated to protect and study estuarine systems in collaboration with and service to surrounding communities
 - Established through the Coastal Zone Management Act
 - Partnership program between NOAA and the coastal states
 - Each reserve has a state partner (university, state government, nonprofit)
 - State role – land ownership and management, staff, program implementation
 - Federal role – funding (~70%) and national coordination

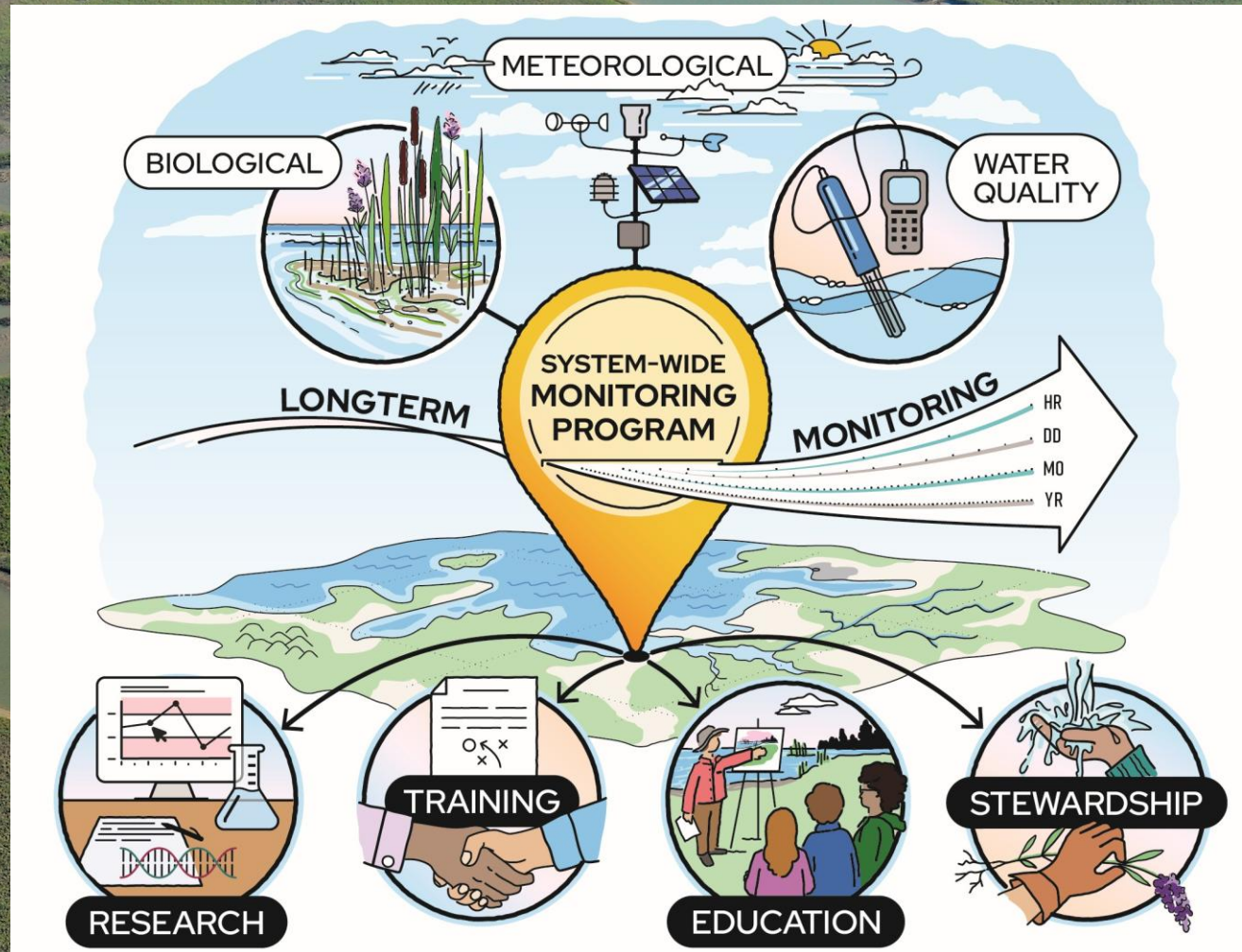


NERRS CDMO

- **System-Wide Monitoring Program (SWMP)**
 - Established in 1995
 - Standardized monitoring across all reserves
 - Standardized equipment, data collection protocols, training, QAQC protocols, and data management
 - Core funded/required datasets: weather, water quality, nutrient/pigment
 - ~113 million data records (15-minute record for all parameters)
 - Water quality: 89+ million (temp, spcond, sal, do%, do mg/L, pH, depth, turbidity)
 - Weather: 23+ million (temp, rh, bp, wind spd, wind dir, total PAR, precip)
 - Nutrient/pigment: 170+ thousand (phosphate, nitrogen, chlorophyll a)
 - Additional datasets: boundary and habitat maps, vegetation monitoring
 - Designed to identify short-term variability and long-term changes, but has become much more...



Advancing Estuarine Science and Management Through Long-Term Research and Monitoring in the U.S. National Estuarine Research Reserve System



JGR Biogeosciences, Volume: 130, Issue: 4, First published: 23 April 2025, DOI: (10.1029/2024JG008630)



National Estuarine Research Reserve System
Centralized Data Management Office

NERRS CDMO

- **Centralized Data Management Office (CDMO)**
 - Established in 1995 in support of SWMP
 - University of South Carolina and Baruch Institute, North Inlet-Winyah Bay NERR
 - SWMP: data collection protocols, data acquisition, QAQC, documentation and **metadata**, data and information dissemination and archival
 - Water quality, weather, and nutrient/pigment datasets
 - Ancillary datasets: GIS, vegetation monitoring
 - Online data and information server for NERRS data
 - Telemetry support for SWMP
 - NERRS Data Management Committee (DMC) meeting (annually)
 - NERRS Technicians' Training Workshop (annually)
 - Technical support for the NERRS
 - Data management support for the NERRS Science Collaborative
 - Technical consultation for special NOAA projects and other local, state, and national monitoring programs



CDMO Real-Time Data Acquisition: Telemetry through NOAA GOES Satellites



GOES Satellite



NERRS Weather &
Water Data Collection
Platforms

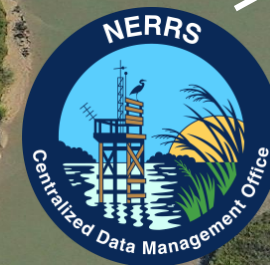


HADS/NWS
NERRS Satellite
Receive Station
University of South
Carolina, Columbia



www.nerrsdata.org

Web Services



NERRS CDMO
Automated QAQC →
Provisional data



CDMO Data Upload/Acquisition:



Weather & Water raw files

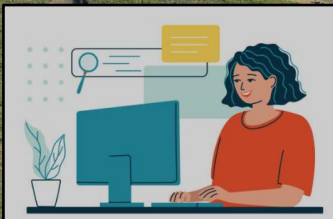


Nutrient raw files



NERRS CDMO
Automated QAQC →
Provisional data

QAQC'd file



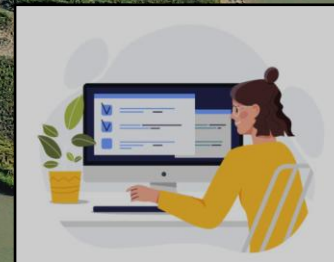
Reserve
Secondary QC

Quarterly and
Annual files



NERRS CDMO
Provisional plus data

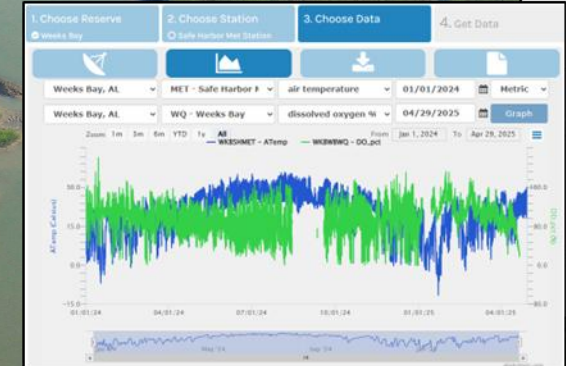
Annual File



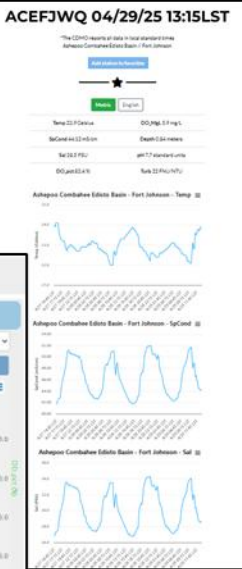
CDMO Tertiary QC



NERRS CDMO
Authenticated data



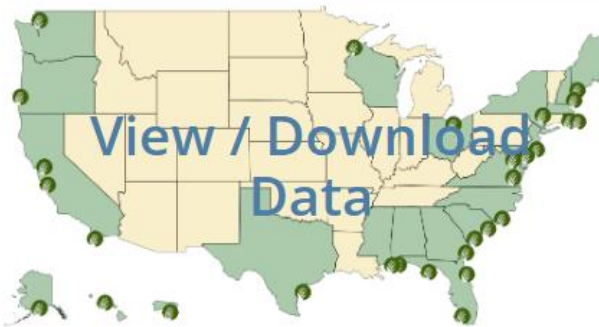
www.nerrsdata.org





National Estuarine Research Reserve System

Centralized Data Management Office

[Home](#)[About CDMO](#)[About Data](#)[Get Data](#)[Web Services](#)[About Data](#)[Available Data](#)[CDMO Manual/SOPs](#)[Data Policy](#)[Data Citation](#)[SWMP Data QAQC](#)[SWMP Parameters](#)[SWMP Stations](#)[Metadata](#)[Teach with Data](#)[View / Download Data](#)

Suggested Citation Format

[Real Time Monitoring Data](#)

PDBBPWQ

PDBBPWQ
04/28/2025 13:15



14.5°C (58.1°F)
126.3%

28.1 psu
pH
8.5 units

The CDMO i
announce th
SWMP Mobile application. Near
real-time SWMP data is now
available on your smartphone or
tablet at:
www.nerrsdata.org/mobile

Our **Data Graphing and Export
System** has been updated and
now has enhanced graphing
capabilities! Want to easily
export or graph data? If so,
check out our [Data Graphing
and Export System](#)!

Department of Commerce | NOAA | National Ocean Service | Office for Coastal Management | NERRS | Webmaster

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National Estuarine Research Reserve System
Centralized Data Management Office

www.nerrs.data.org



National Estuarine Research Reserve System

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PDBBPWQ
04/28/2025 13:15



14.5°C (58.1°F)
126.3%

28.1 psu
pH
8.5 units

[From the CDMO](#)

The CDMO is excited to announce the launch of our new **SWMP Mobile application**. Near real-time SWMP data is now available on your smartphone or tablet at:
www.nerrsdata.org/mobile

Our **Data Graphing and Export System** has been updated and now has enhanced graphing capabilities! Want to easily export or graph data? If so, check out our **Data Graphing and Export System**!

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National Estuarine Research Reserve System
Centralized Data Management Office

www.nerrs.data.org

NERRS CDMO

- **Get Data Applications**

- **Data Graphing and Export System**

- **Data exploration workhorse**

- **Advanced Query System**

- **Power users, large and more customizable queries**

- **Real Time Data Application**

- **Quick displays of near real-time data on any device (mobile)**

- **www.nerrsdata.org/pwa**

- **SWMPrats Widgets**

- **Packaged R tools/widgets using summarized SWMP data**

- **Coming soon...**

- **CMECS station classifications, SET data, GitHub SWMP Rcode repo, Nile water levels**



National Estuarine Research Reserve System
Centralized Data Management Office



Data Graphing and Export System

The DGES was developed to provide the majority of users with quick and easy access to SWMP data. The DGES utilizes an intuitive map-based interface and offers single station exports, yearly authenticated file downloads (these may include non-standard nutrient parameters), charting, and a current conditions display for real-time stations. A quick start tutorial is also available [here](#).

Launch



Advanced Query System

The AQS was developed to specifically address the data delivery needs of those end-users looking for large amounts of data exported in a format that can be easily imported and manipulated for data analysis. The AQS offers three different query options allowing for mass downloads of annual files, customized queries for specific parameters and multiple stations in the same file, and an option to merge water quality, meteorological and nutrient datasets.

Launch



Real Time Data Application

The Real Time Application allows users to view near real time SWMP data from any browser or mobile device. Current conditions and 48 hour graphs are available in either metric or English units. Explore and select available stations, add favorite stations, or use a bookmarked link to access your station directly.

Launch



GIS Application

The GIS Application gives users access to Reserve boundary, watershed boundary, and high resolution reserve habitat maps. In addition, Google Earth KML files are available for the Reserve boundaries, watershed boundaries, and monitoring station locations.

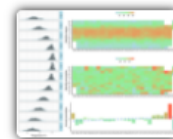
Launch



Vegetation Monitoring Application

The Vegetation Monitoring Application delivers submerged aquatic vegetation (such as eelgrass and algae) and emergent vegetation (such as salt marshes and mangroves) monitoring data for participating Reserves. Parameters monitored include percent cover of all plant species, as well as stem density and canopy height of the common species.

Launch



SWMPrats Widgets

Access interactive widgets to quickly assess status and trends using summarized SWMP data. These widgets were created as part of the SWMPrats community of practice.

Launch

1. Choose Reserve

2. Choose Station

3. Choose Data

4. Get Data

Enter station code

Go ->

San Francisco Bay, CA (SFB)



04/29/2025 08:45 LST



16.7°C (62.1°F)



17.2°C (63.0°F)



3k/h (1.9MPH)



National Estuarine Research Reserve System
Centralized Data Management Office

1. Choose Reserve

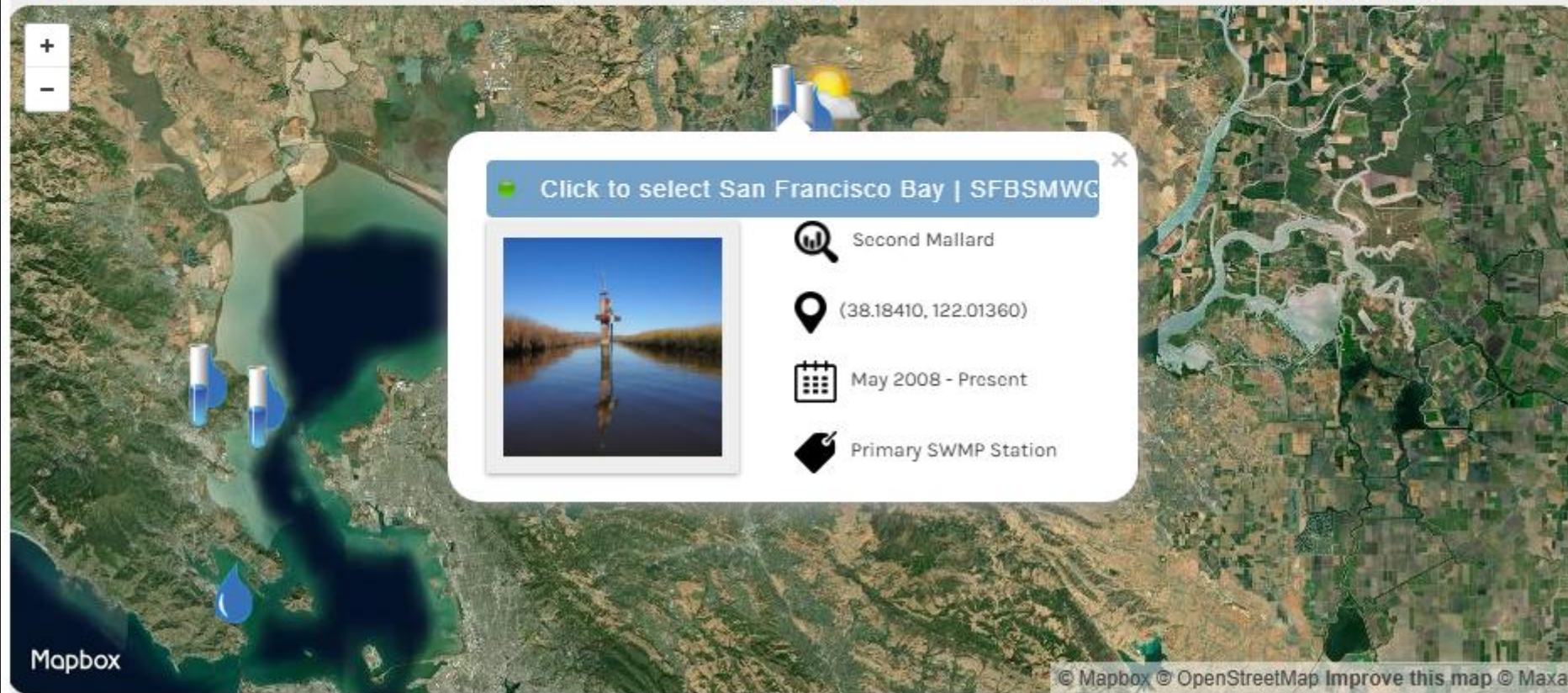
✓ San Francisco Bay

2. Choose Station

3. Choose Data

4. Get Data

 SWMP Status	Station Code	Station Name	Active Dates	Data Type
 P	SFBCCWQ	China Camp	Mar 2005-	 Water Quality
 P	SFBFMWQ	First Mallard	May 2008-	 Water Quality
 P	SFBGCWQ	Gallinas Creek	Dec 2005-	 Water Quality
 P	SFBRRMET	Rush Ranch	Aug 2006 -	 Meteorological
 P	SFBSMWQ	Second Mallard	May 2008-	 Water Quality



1. Choose Reserve

✓ San Francisco Bay

2. Choose Station

🔥 Second Mallard

3. Choose Data

4. Get Data



🔥 SFBSMWQ

🕒 April 28, 2025 13:30 LST

Name: Second Mallard

Status: Active

🔍 SWMP Status: P

Latitude: 38.1841

Longitude: 122.0136

🔍 UTC offset: -8

🔍 UTC time: 04/28/25 05:30

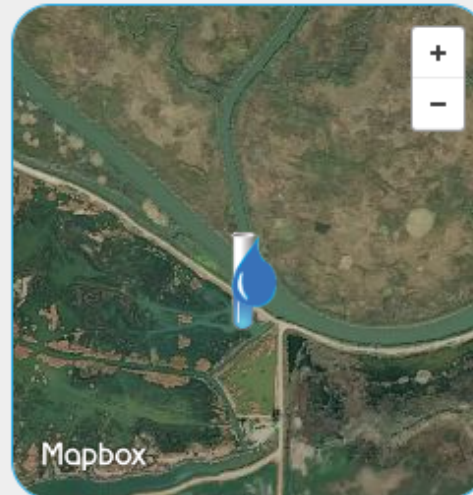
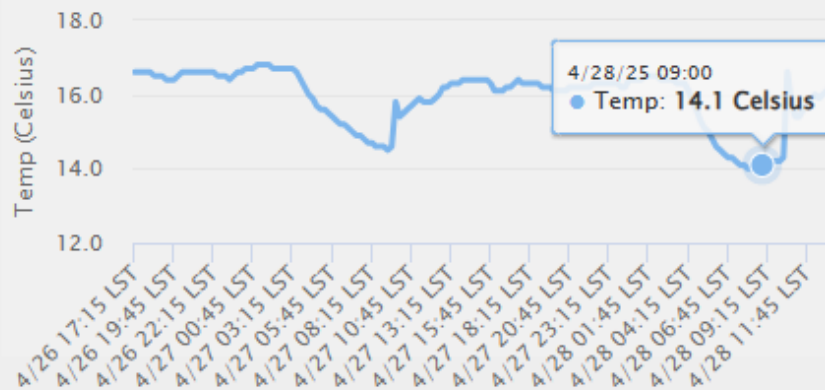
Active Dates: May 2008-

🔍 Vert. Control: Depth

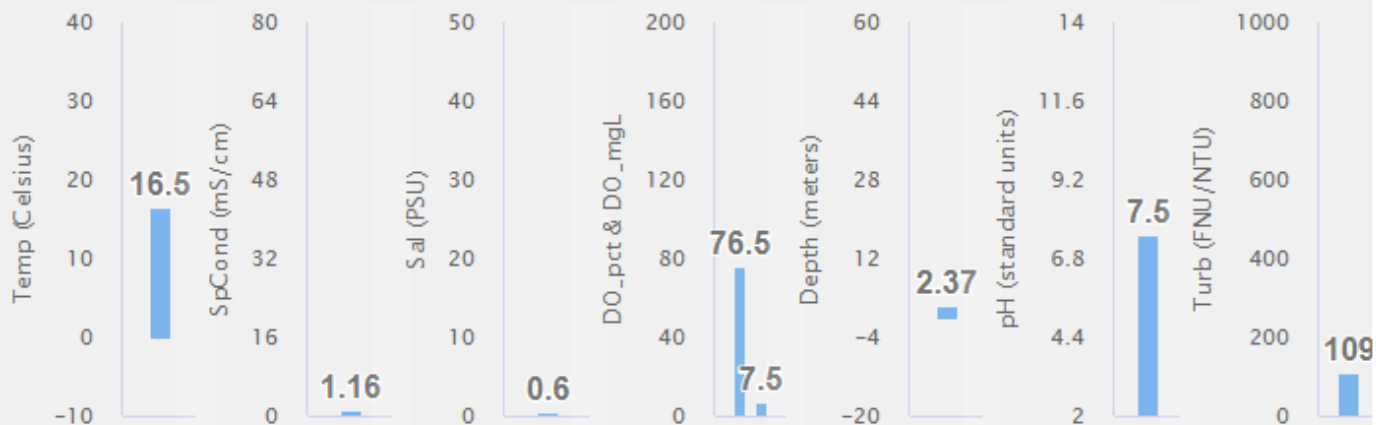
Choose parameter ▼

Switch to english units

Last 24 hours of Temp data from SFBSMWQ



Mapbox



1. Choose Reserve

✓ San Francisco Bay

2. Choose Station

📍 Second Mallard

3. Choose Data

4. Get Data



San Francisco Bay, ▼

WQ - Second Mallard ▼

water temperature ▼

01/01/2022



Metric ▼

San Francisco Bay, ▼

WQ - Second Mallard ▼

dissolved oxygen % ▼

04/28/2025



Graph

Zoom

1m

3m

6m

YTD

1y

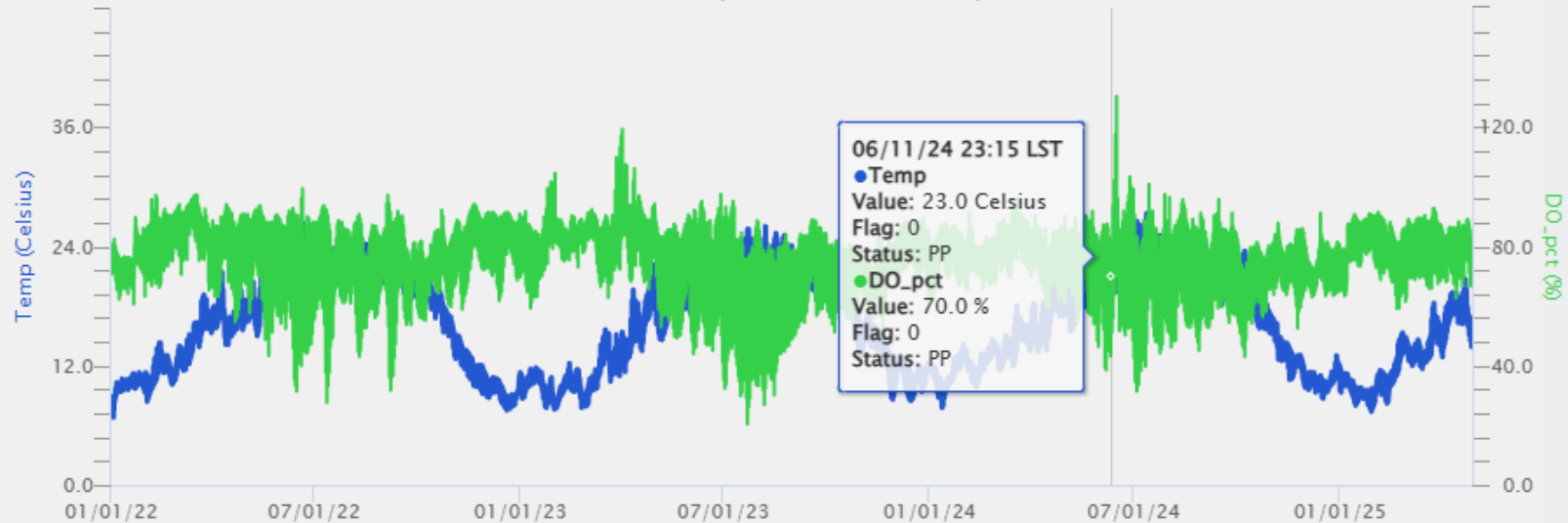
All

From

Jan 1, 2022

To

Apr 28, 2025



1. Choose Reserve

✓ San Francisco Bay

2. Choose Station

🔥 Second Mallard

3. Choose Data

4. Get Data



Please note the active dates for this station and choose a date range for your data request. There is a 5 year maximum request limit with the Data Export System, for larger and more complex query options please use the [Advanced Query System](#) also found on the [Get Data](#) page. Note that all appropriate metadata will be included with your download package.

📅 Active dates for station: ?

May 2008 - Present

📅 Select dates:

01/01/2022



04/28/2025



📄 Choose dataset type: ?

Best Available Dataset ▼

Proceed to download >>



1. Choose Reserve

✓ San Francisco Bay

2. Choose Station

🔥 Second Mallard

3. Choose Data

📄 Export Data

4. Get Data

We require a valid email address in order to deliver your data files. In an effort to ensure data integrity and provide our users with authenticated data, the Centralized Data Management Office will contact you via email in the event of data correction with detailed information regarding the issue. These corrections occur infrequently. For statistical and accuracy purposes the Centralized Data Management Office tracks all users that download data from our website. We will use this information to help develop and improve our online services and data delivery. This information, including your email address, will not be shared with outside parties.

First Name: ✓

Email Address: ✓

Organization: ✓

Data Purpose: ✓

NERRS Staff: ▼

Last Name: ✓

Verify Email: ✓

Occupation: ✓

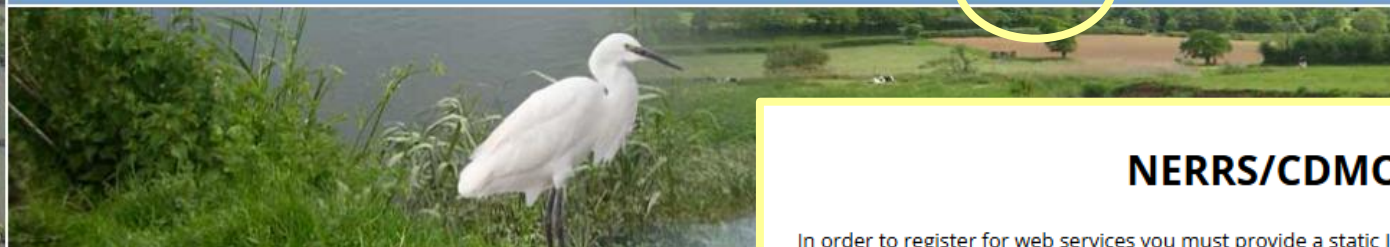
Comments (optl.):

[Submit request to CDMO >>](#)





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NERRS/CDMO Web Services Request

In order to register for web services you must provide a static IP address and valid contact information. You must also acknowledge and agree to the following NOAA Office for Coastal Management (OCM) / National Estuarine Research Reserve System (NERRS) data usage, distribution and documentation requirements:

- ☐ I/we agree to properly acknowledge ownership of the data. The NOAA OCM/NERRS retains the right to be fully credited for having collected and processed NERRS data. Data access from the Centralized Data Management Office (CDMO) must also be acknowledged.
- ☐ I/we agree to provide OCM/NERRS CDMO QAQC flags associated with all the data. QAQC flag definitions may be found here: cdmo.baruch.sc.edu/data/qaqc.cfm.
- ☐ I/we agree to refer third party users to the CDMO website for parameter definitions, QAQC protocols, and more in depth metadata which are critical for data interpretation (www.nerrsdata.org).
- ☐ I/we agree that we will not re-distribute or otherwise provide access to NERRS data beyond a period of three (3) months from time of collection, at which point the data become obsolete due to ongoing QAQC activities. Any data temporarily held onsite for re-distribution will be purged after three (3) months. Requests for third party access to NERRS data beyond the three (3) month window will be referred to the CDMO website (www.nerrsdata.org/get/landing.cfm) for the most up-to-date QAQC'd data.

Registration for three accounts/addresses may be completed at the same time. Please provide as much information as possible to ensure that you or your organization may be contacted should we ever have to make changes to our web services.

**NODC, NDBC, NWS
IOOS RAs
Universities
State offices
NERRS displays**

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Questions?

melissa@baruch.sc.edu

