

# Center for Operational Oceanographic Products and Services (CO-OPS) Updates and Outlook

**Marian Westley, Director**

March 5, 2023



# Overview

- National Tidal Datum Epoch Update
- NCOP Tidal Current Surveys
- Coastal Forecasting - OceansMap
- Coastal Inundation Dashboard
- Observing System Improvements
- PORTS Program Updates



*Newly Relocated National Water Level Observation Network Station Charleston, SC (8665530).*

# National Tidal Datum Epoch (NTDE) Update

*The NTDE is a 19-year time period used by NOAA to collect water level observations and calculate tidal datums, and it must be revised every 20-25 years to account for Sea Level Rise (SLR) changes.*



Current NTDE spans **1983-2001**



NTDE 2002-2020 will be released after **2026**



Around **2,100** active & historic stations



## Outreach

- NTDE training videos
- Regional webinars
- NTDE overview presentations



## Anticipated Impacts

- NOAA PORTS
- CO-OPS water level webpages
- NOAA Forecast Systems
- NOAA SLR Viewer

Visit <https://tidesandcurrents.noaa.gov/datum-updates/ntde/> for more

# NCOP Tidal Current Survey Update

## Delaware Bay

- Predictions updated at 32 locations
- Conductivity, temperature and density data collected and shared with USGS partners.

## Columbia River

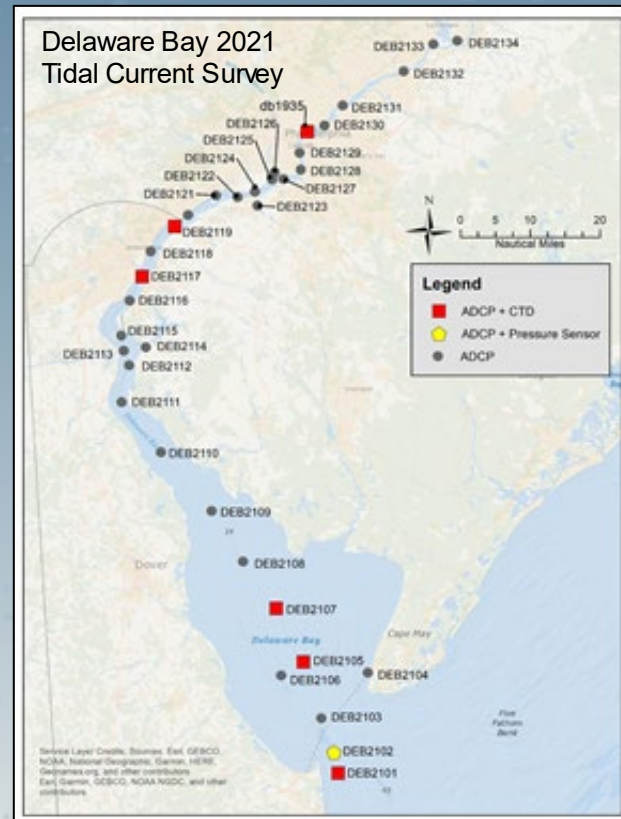
- Currents observations collected in 2022 and 2023
- Predictions will be updated at 32 locations in the Lower Columbia River (2025)

## Savannah River

- Pilots have been requesting updated currents information for over 10 years
- Observations were collected in 2023 at 26 locations. Analysis will commence soon

## Charleston Harbor

- Survey is planned at 36 locations starting in May and continuing through September.
- Requirements based primarily on navigation needs.
- Data will also support model validation and coastal circulation analyses.





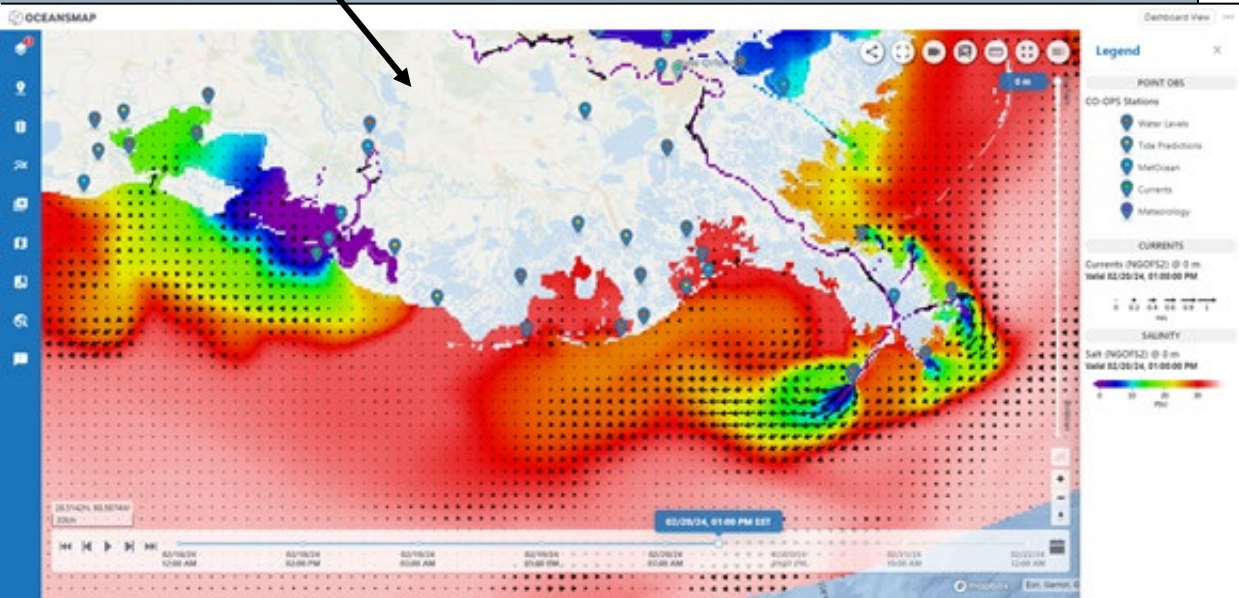
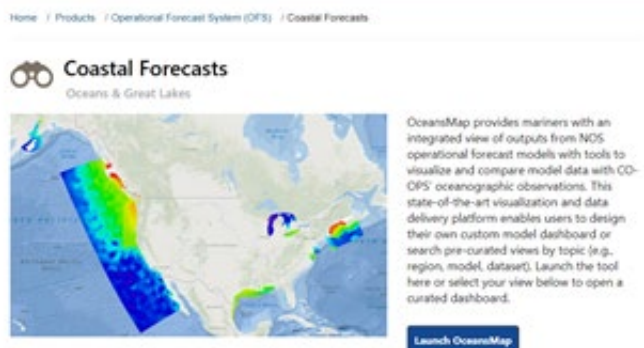
# Coastal Forecasting - OceansMap

OceansMap is a new tool that integrates real-time observations with OFS forecasts to provide up-to-date assessments of ocean conditions.

Launch on Tides & Currents is planned for March, 2024

Close up view of the salinity and currents from the Northern Gulf of Mexico model

View of the OceansMap landing page



### Curated Views

Access custom maps and data views by region / model.

[About](#) [Resources](#)

OceansMap is a dynamic data visualization tool integrating near real-time observational data with computer model predictions to provide up-to-date assessments of ocean conditions. OceansMap provides stakeholders, partners, and the public free and open access to high quality data and information products to enable informed decision-making regarding emergency planning, commercial, and recreational activities in the ocean environment.

Packaged in an interactive online map environment, OceansMap includes the following features and tools to make data visualization intuitive and quick for its users:

- Point and click access to data layers and data products
- Hover tool tip for instant data access
- 3D data visualization capabilities
- Data validation tool for directly comparing model and observed data
- Traffic light tool for identifying safe sea conditions based on user-defined thresholds
- User-created virtual stations to extract model output at any location of interest
- Side-by-side map layer comparisons
- User-generated permissions to save desired views and settings

The user also can select the date and time of the displayed data and predictions; choose from numerous base map options; create, import, and export custom shape layers on the map; save or print a screenshot of the active data on the map; measure distances on the map; and change the data display units.

We encourage you to explore the data on OceansMap and try out the powerful tools and capabilities. Look for the information icon when additional help is needed.

 <b>Chesapeake Bay</b> Model Status	 <b>Columbia River Estuary</b> Model Status	 <b>Cook Inlet</b> Model Status
 <b>Delaware Bay</b> Model Status	 <b>Gulf of Maine</b> Model Status	 <b>Lake Erie</b> Model Status
 <b>Lake Michigan</b>	 <b>New York &amp; Northern Gulf</b>	

# Coastal Inundation Dashboard Updates

Recently implemented two significant enhancements to [Coastal Inundation Dashboard](#).

1. Added the National Weather Service (NWS) text associated with active coastal flood watches, warnings and advisories to the map.
2. Improved the layout of the station pages by adding the Tides and Currents station footer to the bottom, allowing users to easily navigate to other products for the station including Datums, Tide Predictions and the Station Home Page.



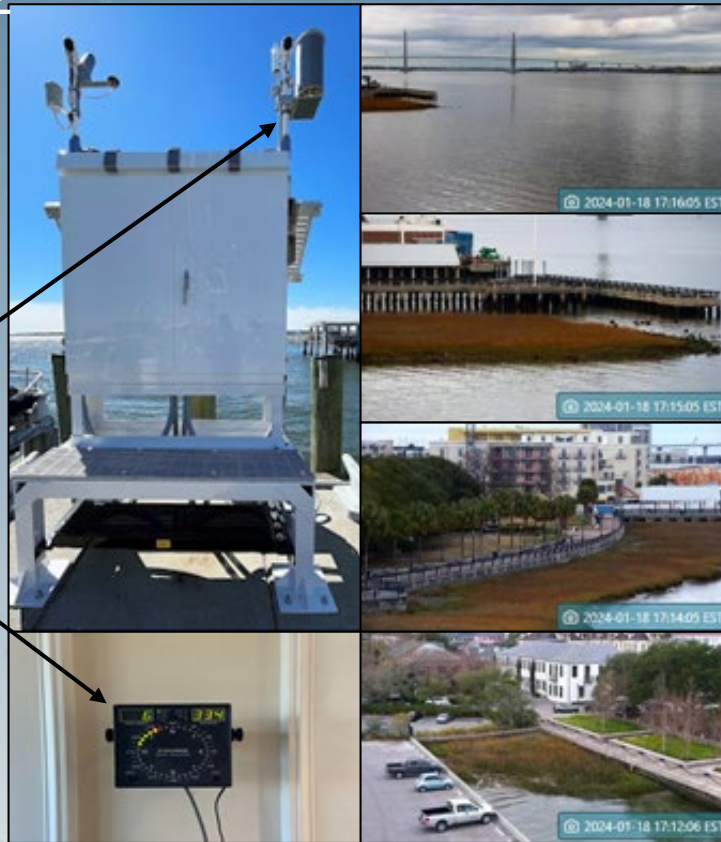
# Observing System Improvements

## Invested in critical upgrades to NWLON infrastructure:

- Rebuilt the Charleston, South Carolina station
- Installed Microwave Water Level sensor technology at an additional 14 NWLON stations

## New Charleston Station:

- Fabricated a custom NWS - WFO Rain Gauge mount that could be secured to our station and wired to the NWS weather station.
- Hardwired a redundant RM Wind Monitor directly to the DCP and installed a Wind Tracker for the bar pilots command center.
- A **new high-resolution WebCOOS webcam** located at the station supports improved risk communications and coastal planning in Charleston Harbor
  - Every minute the camera switches between **6 different viewing angles** while capturing a still image.





# Observing System Improvements

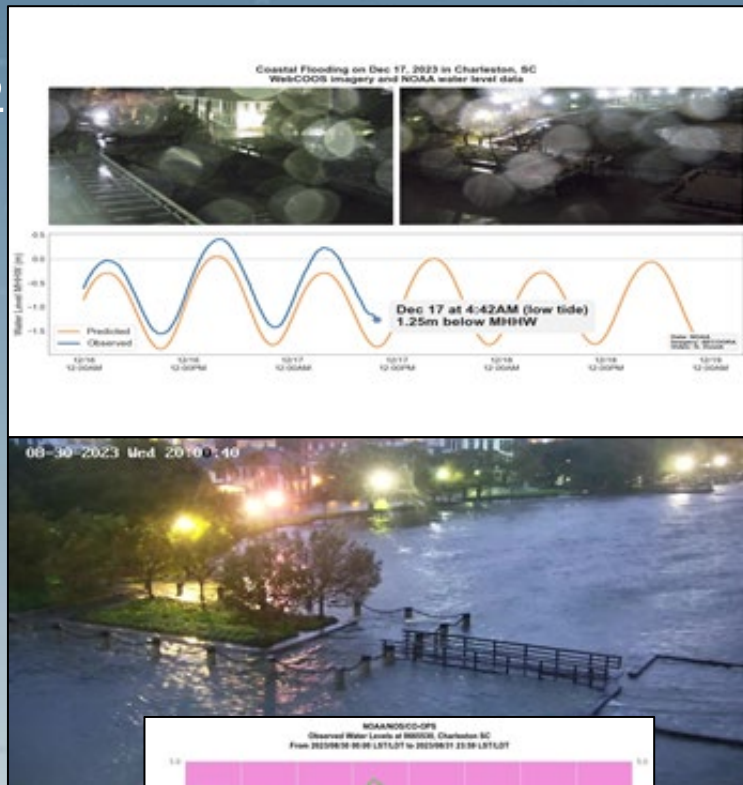
NOSNOAA/CO-OPS  
Top-10 Highest Water Levels  
8665530, Charleston SC

Units: Standard Datum: MHHW

JSON Link XML Link

Date	Height (Feet above MHHW)	Event Category	Event	Source
<a href="#">September 22, 1969</a>	5.68	Tropical	Hurricane Hugo	Observed Peak Water Level
August 11, 1940	4.47	Tropical	1940 South Carolina Hurricane	High Water Mark
<a href="#">September 13, 2017</a>	4.15	Tropical	Hurricane Irma	Observed Peak Water Level
<a href="#">December 17, 2023</a>	4.05	Other	December East Coast Storm	Observed Peak Water Level
<a href="#">October 8, 2016</a>	3.52	Tropical	Hurricane Matthew	Observed Peak Water Level
<a href="#">August 31, 2023</a>	3.46	Tropical	Hurricane Idalia	Observed Peak Water Level
<a href="#">November 24, 2018</a>	3.00	Extra Tropical	Overcast Low Pressure & Onshore Winds	Observed Peak Water Level
<a href="#">January 1, 1987</a>	2.97	Extra Tropical	New Years Day Storm	Observed Peak Water Level
<a href="#">October 27, 2015</a>	2.92	Other	Above Normal Tides & Onshore Winds	Observed Peak Water Level
<a href="#">September 5, 1979</a>	2.87	Tropical	Hurricane David	Observed Peak Water Level

2 of the Top 10 Water Levels recorded on camera in 2023!



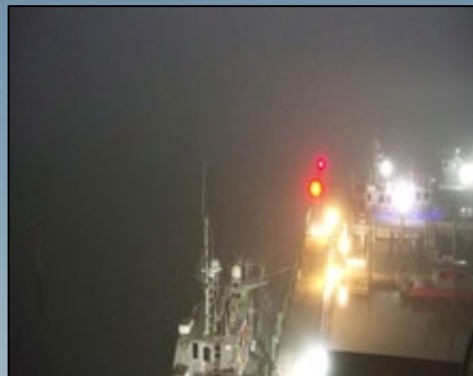


# Observing System Improvements

## User Testimonial

"The recently-added live web cam on the Charleston, SC tide gage has been an excellent addition, particularly when we are monitoring for sea fog which has an enormous impact on shipping traffic. It has always been difficult to find high-quality, reliable webcams with good views of Charleston Harbor when we need to quickly see what is going on during rapidly-changing fog events. **We absolutely love the NOS webcam and use it regularly on the forecast shift.**"

Jonathan Lamb  
Meteorologist - NWS - Charleston, SC

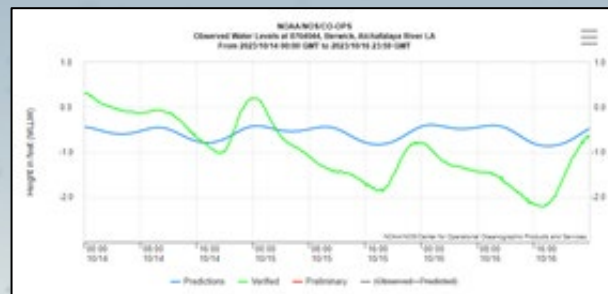
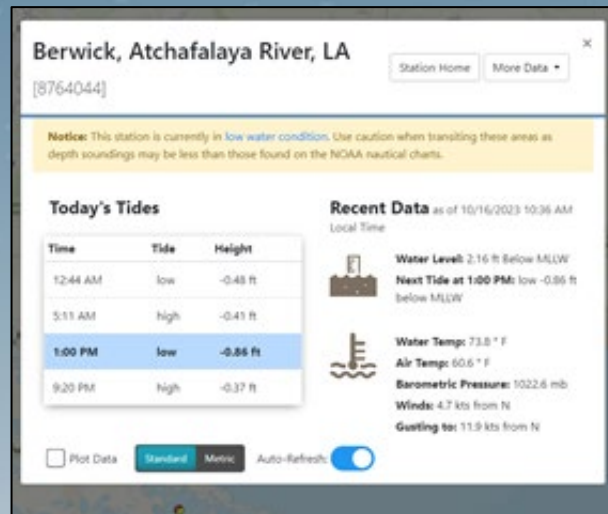


# Observing System Improvements

## Improved visibility of Low Water Condition on CO-OPS products

- Previously, stations where water levels drop below low water criteria\* were highlighted on the [High and Low Water Conditions](#) page with a small note on the water level plot.
  - Water level stations were manually placed in low water condition by CORMS watchstanders when criteria was met
- Website updates were implemented to now display a low water message on the station pop-up and expand the message on the water level plot page to highlight the navigational impact up front.
  - *Use caution when transiting these areas as depth soundings may be less than those found on the NOAA nautical charts.*
- Stations will also now automatically be placed in low water condition.
  - This will decrease the lag between observed low water conditions and the low water alert appearing on CO-OPS website.
  - Opens the door to custom low water alert criteria for stations in the future

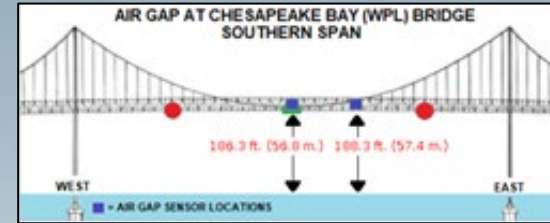
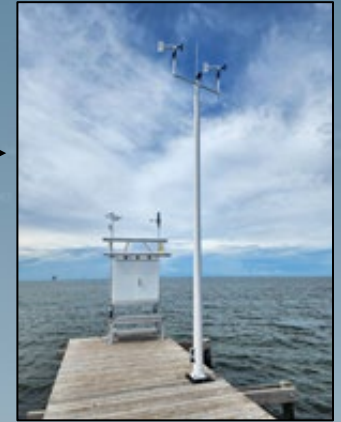
\*Low water criteria for tidal stations is 18 consecutive minutes where water levels drop lower than 1.5 feet below MLLW. For Great Lakes stations, the criteria is 12 consecutive hours below LWD.



# PORTS<sup>®</sup> Program Updates

## FY24 Enhancements

- Fort Morgan, AL - Visibility + Wind Station
- Kalama, WA - Water Level Station
- Port Everglades, FL - 2 Current Meters
- Jacksonville, FL - Current Meter
- Mobile Bay, AL - Current Meter
- Port Fourchon, LA - Upgraded Water Level Station
- Chesapeake Bay North - Bay Bridge (170ft East of Ctr) Air Gap \*\* Second system on the same span



## New PORTS in the works

### Pearl Harbor, HI (FY24)

- Partnership with the U.S. Navy
- Integrate 1 NWLON, install 1 water level with meteorological station, 2 current meters, and integrate CDIP wave buoy

## Upcoming new PORTS

### Seattle, WA (FY24)

- Partnership with Northwest Seaport Alliance
- Integrate 1 NWLON, add a current meter and stand-alone meteorological station

Questions?

