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

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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

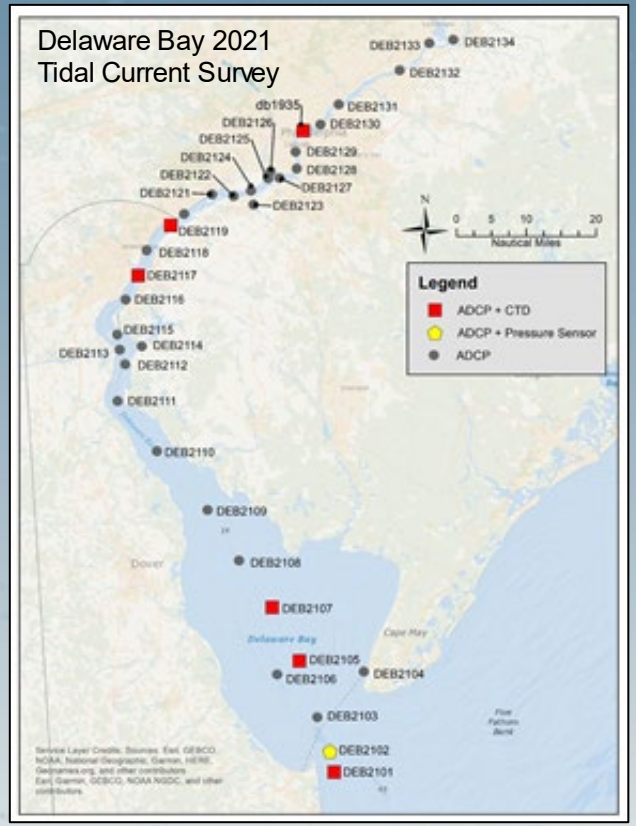
- Currents observations collected in 2022 and 2023
- Predictions will be updated at 32 locations in the Lower Columbia River (2025)

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 staring in May and continuing through September.
- Requirements based primarily on navigation needs.
- Data will also support model validation and coastal circulation analyses.



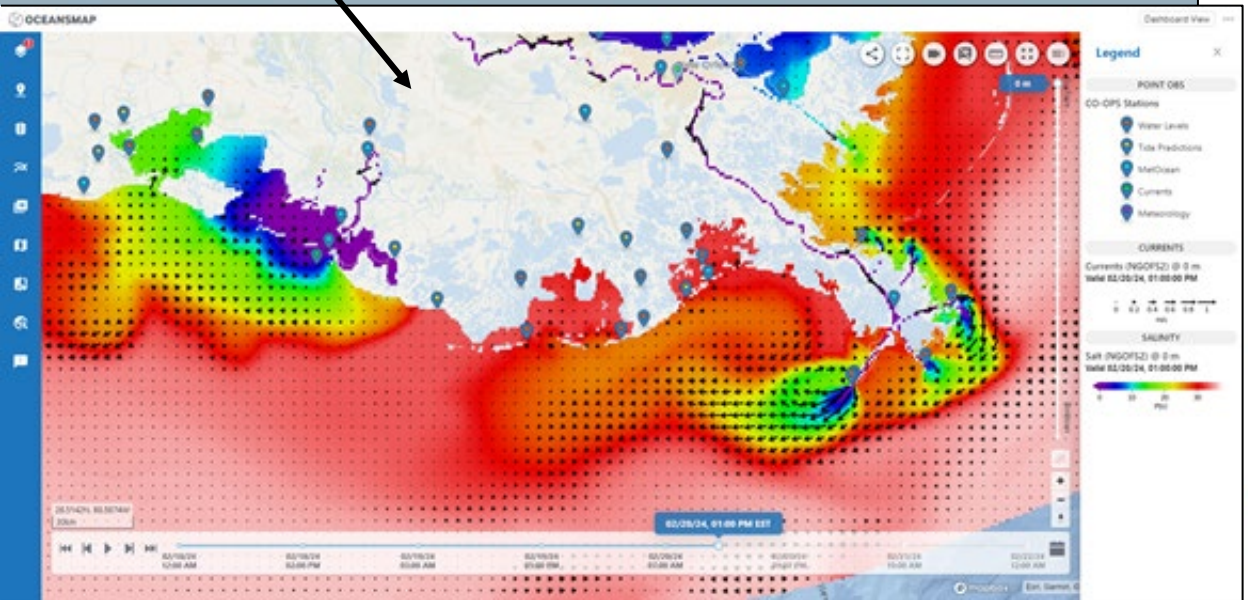
Coastal Forecasting - OceansMap

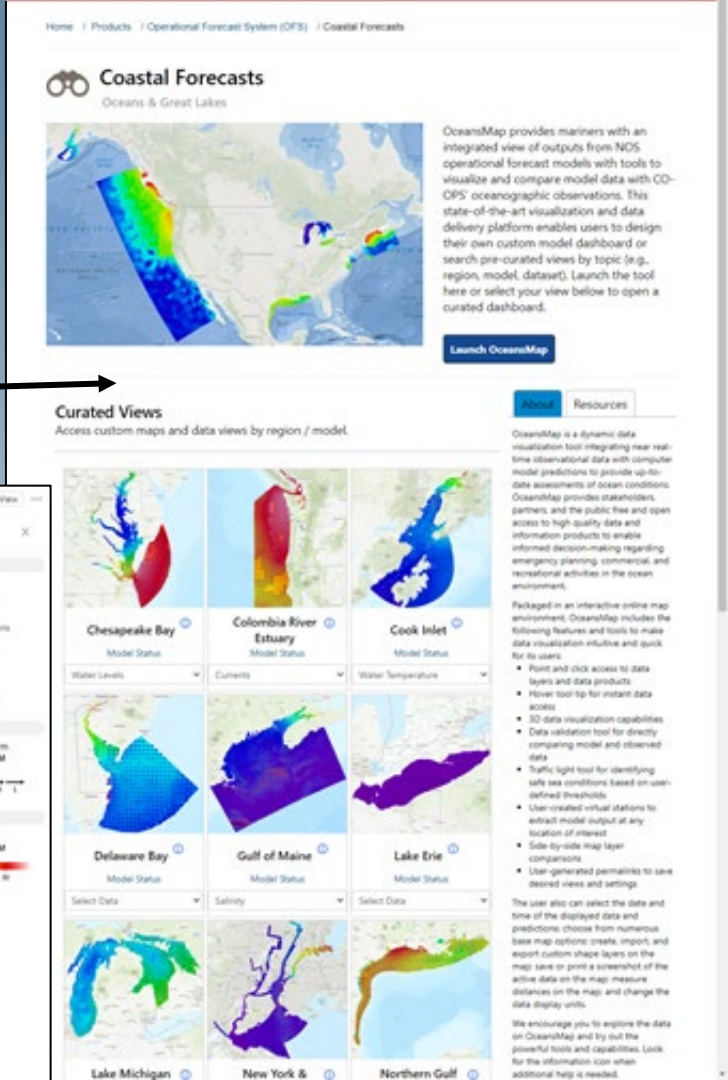
OceansMap is a new tool that integrates real-time observations with OFS forecasts to provide up-to-date assessments of ocean conditions.

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



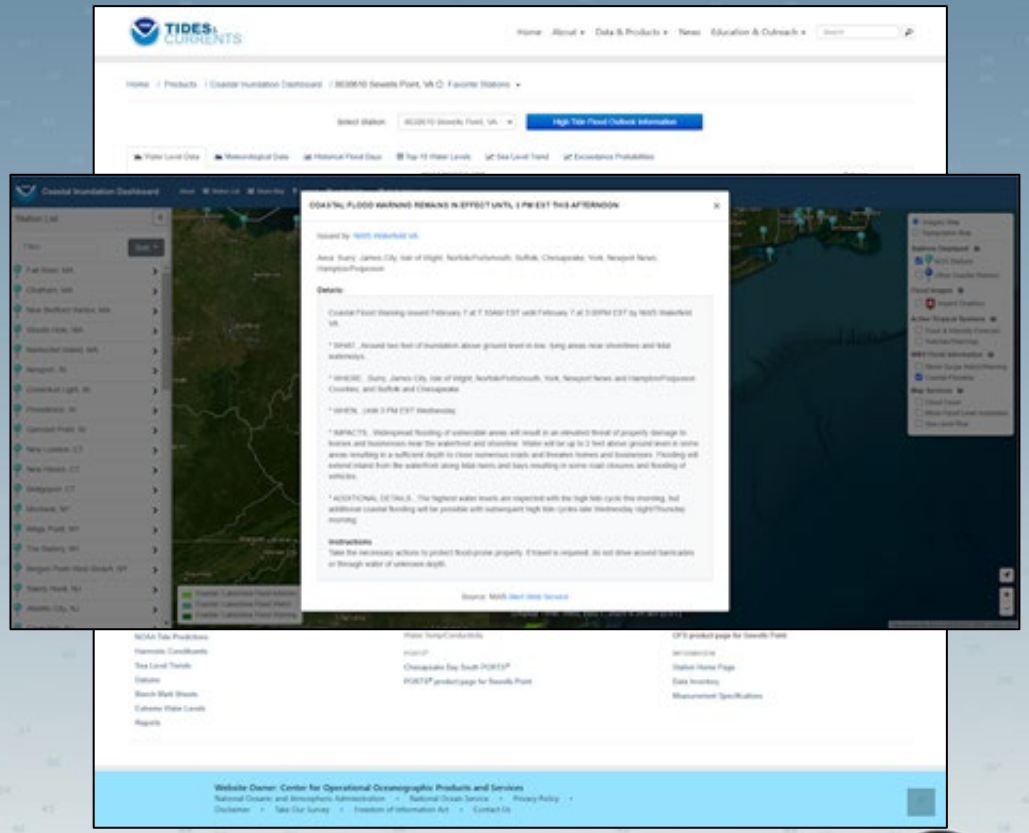


Coastal Inundation Dashboard Updates

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.



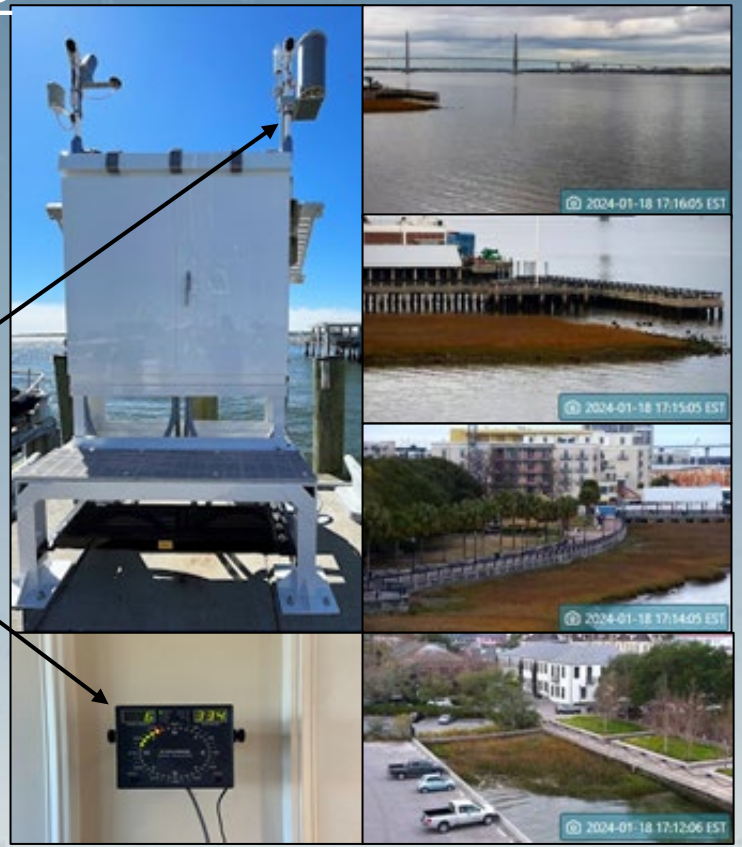
Observing System Improvements

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.

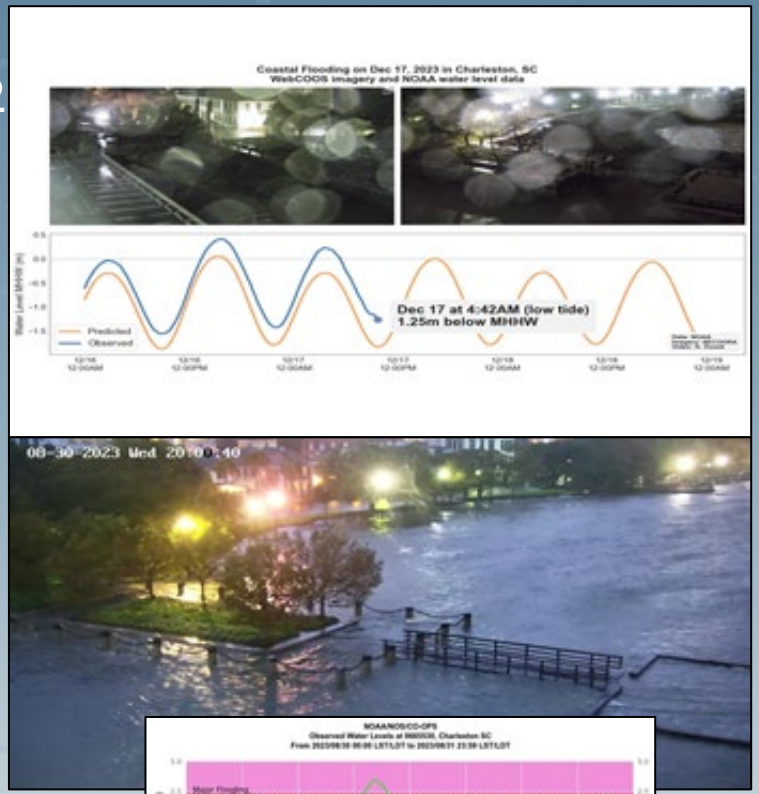


Observing System Improvements

NOS/NOAA/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
September 22, 1989	5.68	Tropical	Hurricane Hugo	Observed Peak Water Level
August 11, 1940	4.47	Tropical	1940 South Carolina Hurricane	High Water Mark
September 11, 2017	4.15	Tropical	Hurricane Irma	Observed Peak Water Level
December 17, 2023	4.09	Other	December East Coast Storm	Observed Peak Water Level
October 8, 2016	3.52	Tropical	Hurricane Matthew	Observed Peak Water Level
August 31, 2023	3.46	Tropical	Hurricane Idalia	Observed Peak Water Level
November 24, 2018	3.00	Extra Tropical	Coastal Low Pressure & Onshore Winds	Observed Peak Water Level
January 1, 1987	2.97	Extra Tropical	New Years Day Storm	Observed Peak Water Level
October 27, 2015	2.92	Other	Above Normal Tides & Onshore Winds	Observed Peak Water Level
September 5, 1979	2.87	Tropical	Hurricane David	Observed Peak Water Level



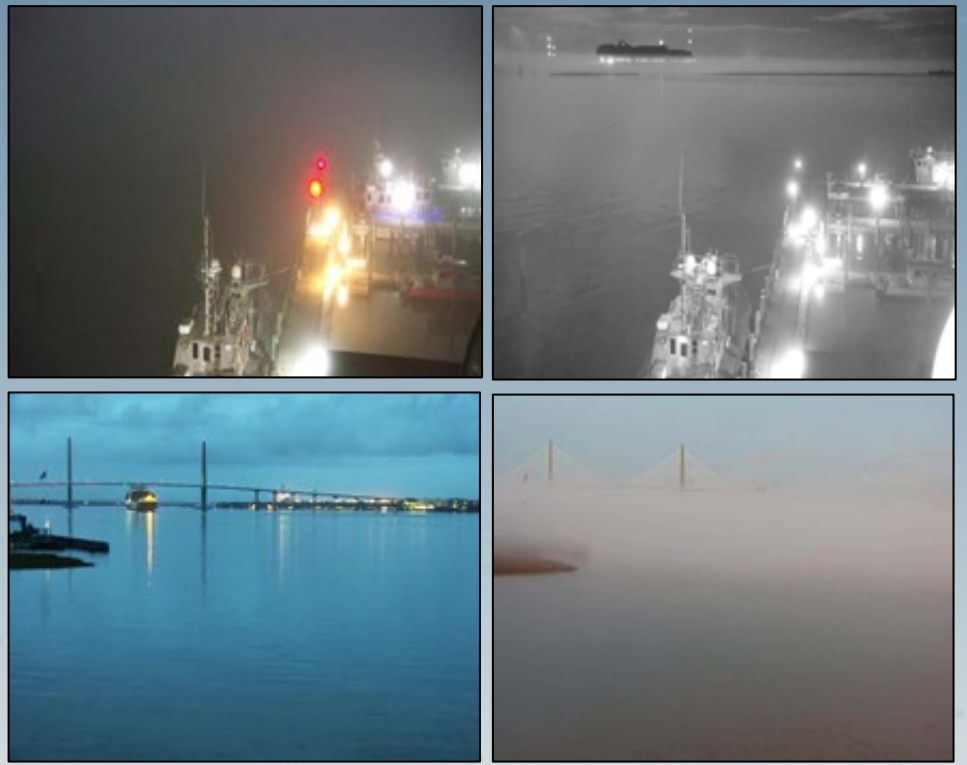
2 of the Top 10 Water Levels recorded on camera in 2023!

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

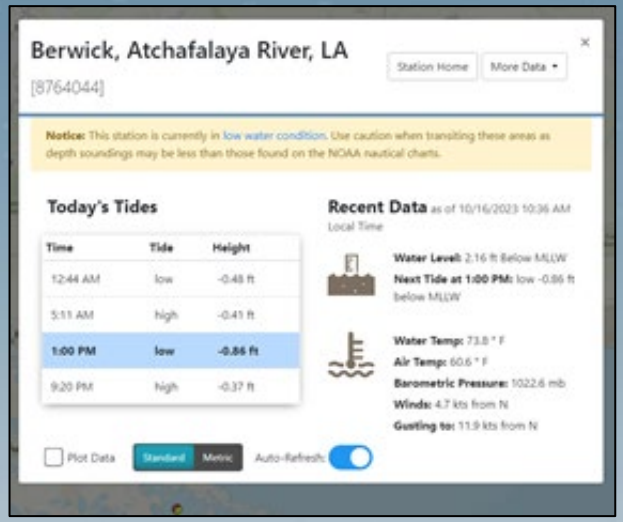


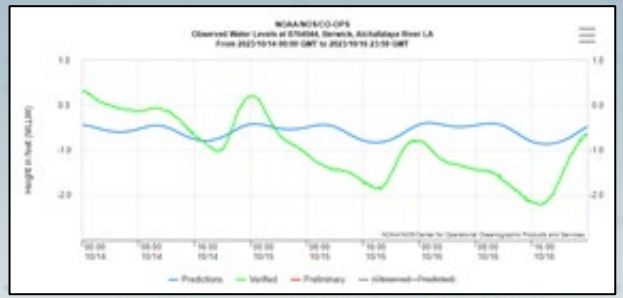
Observing System Improvements

Improved visibility of Low Water Condition on CO-OPS products

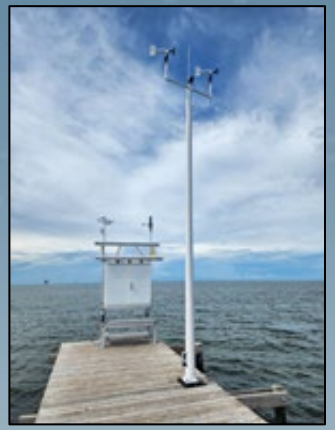
- Previously, stations where water levels drop below low water criteria* were highlighted on the High and Low Water Conditions page with a small note on the water level plot.
    - Water level stations were manually placed in low water condition by CORMS watchstanders when criteria was met
- Website 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.



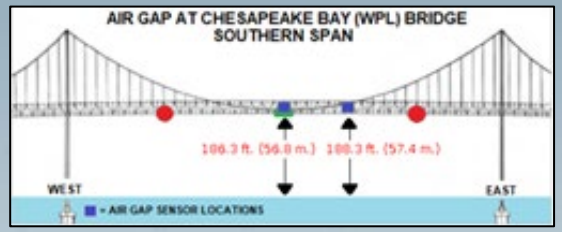


PORTS® Program Updates



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?