

# Water Level Monitoring in the Northeast

NROC Annual Meeting  
November 30, 2023



**NROC**  
Northeast Regional  
Ocean Council

*Regional Solutions for New England's  
Coastal and Ocean Future*



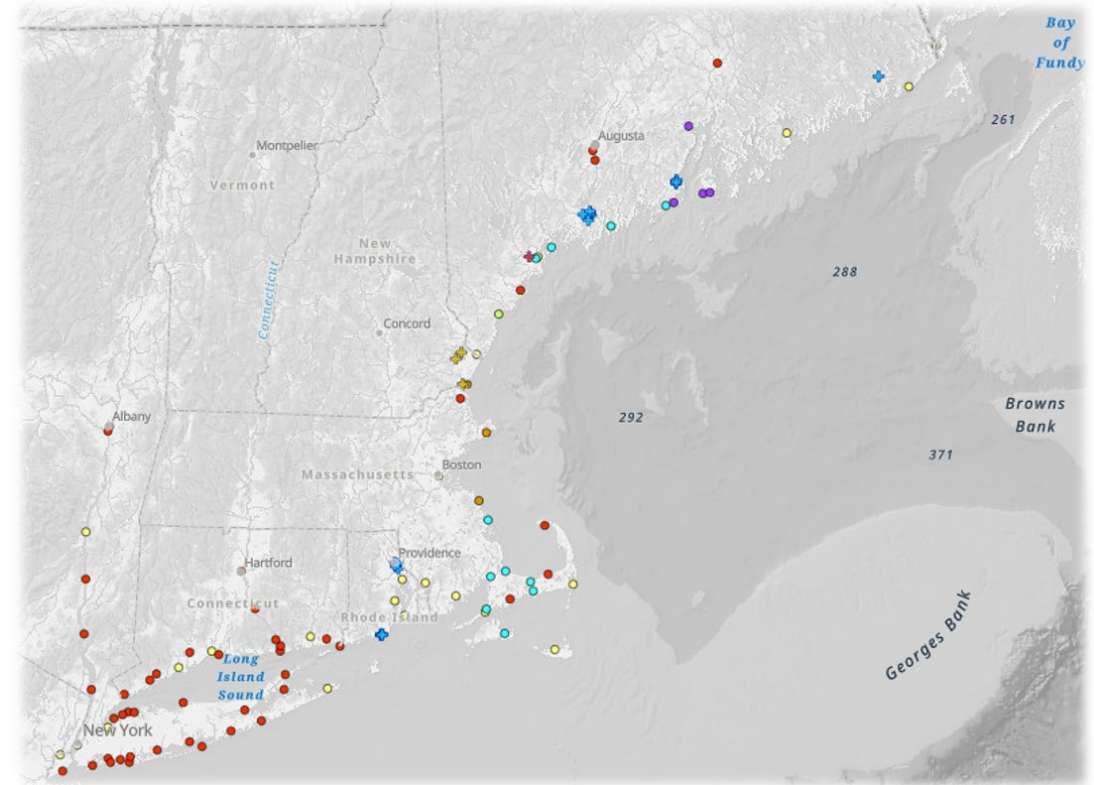
# Northeast Coastal Water Level Monitoring

## Long term monitoring

- NOAA's National Water Level Observing Network (NWLON)
- USGS Monitoring
- NERACOOS water level network

## New networks

- 3-CRS EPSCOR (ME, RI)
- CIRCA (CT)
- NSF Civic Challenge (ME)
- CDS (NH)
- NROC + NERACOOS (regional)



# New England (NE) Community-Driven Coastal Climate Climate Research & Solutions (3CRS) Hub



## EPSCoR JURISDICTIONS & SELECTED WORKING WATERFRONT COMMUNITIES

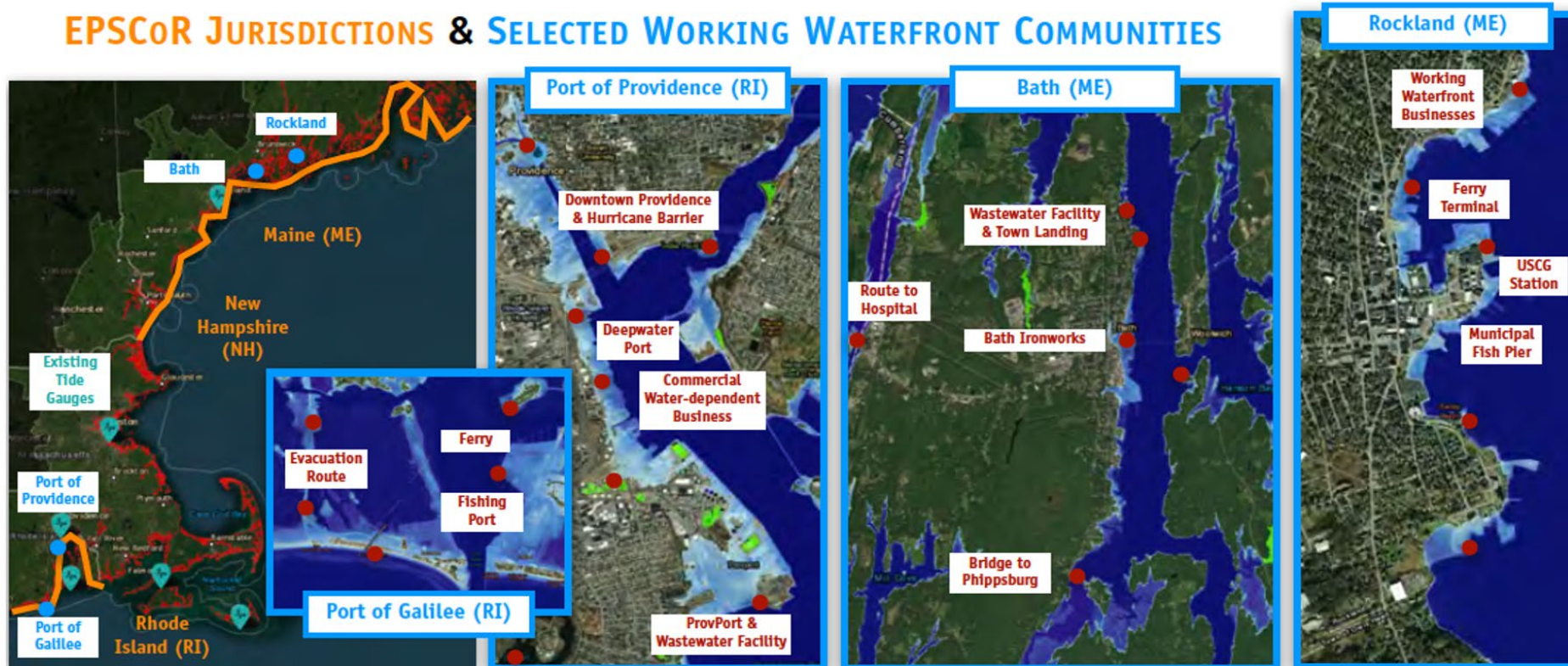


FIGURE 1

■ Flooding Area (5ft water level)

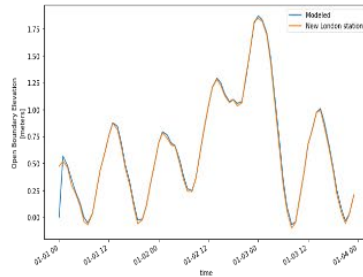
● Sensor Locations Draft (e.g., Water-level, Air-Quality, Temperature)



# CIRCA Water Level Sensors



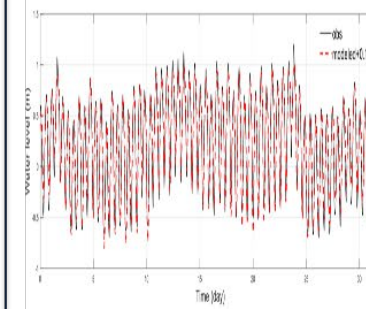
Losses due to frequent flooding on the roads



Provide accurate tidal variability



Sea level estimation on the marsh mitigation



Improve the calibration of the flood models



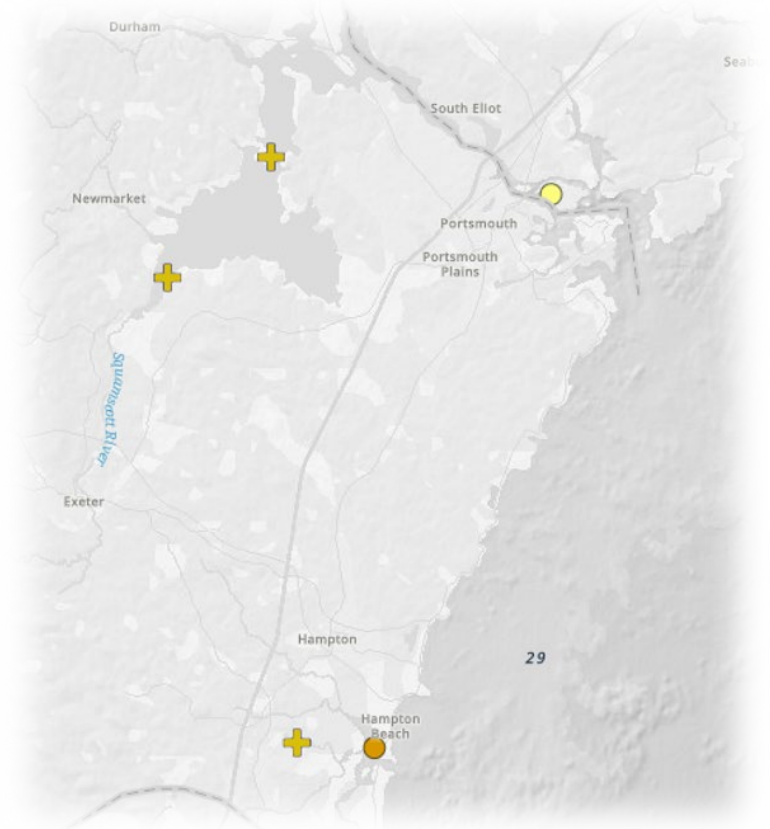
Assist in flood adaptation method designs



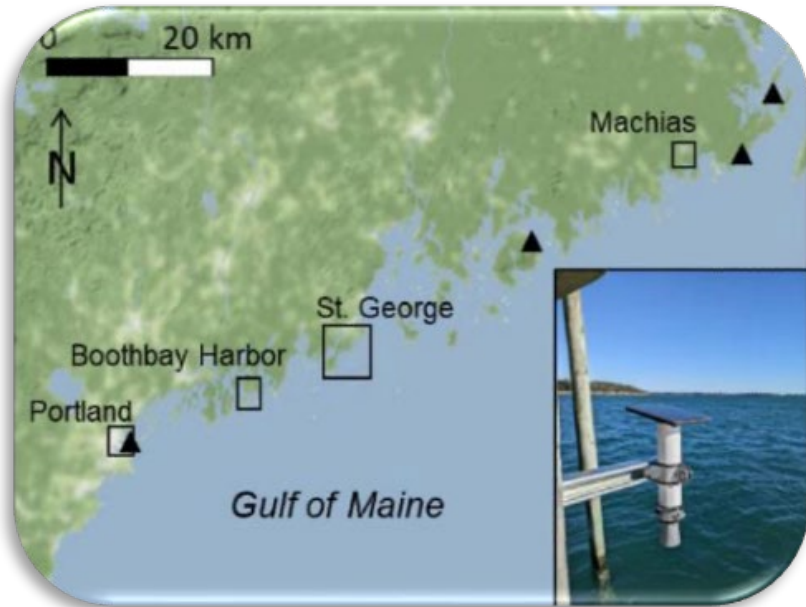
RT 146 Flooding

# NH Coastal Resilience Partnership

- **Water level monitoring network: Install up to 6 water level gauges in coastal NH**
- Partnership between NH SeaGrant, NERACOOS, NH DES, PREP, Great Bay NERRS, UNH
- Congressionally directed funding from Senator Shaheen
- Coastal monitoring, research and analysis, outreach, engagement and public education



# NSF Civic Innovation Challenge



- Water level monitoring network: Install 6 Hohonu gauges
- **Develop data integration backend and data product**
- Develop framework for siting gauges based on simply-determined physical coastal characteristics
- Develop flood thresholds
- Develop coastal flooding curriculum
- Collaborate with partners to leverage data for resilience



# NROC-NERACOOS BIL Sensors

- BIL funding to test and deploy ~20-30 water level sensors in Northeast coastal region
- Locations are TBD
- Sensors are TBD
- All data will be available through NERACOOS
- Use existing standard operating procedures

## **Workshop hosted in September**

Steering Committee members

Joan LeBlanc, NROC

Jaime Carter, NOAA/OCM

Dani Boudreau, NOAA/OCM

Julia Knisel, MA CZM

Tom Shyka, NERACOOS

Emily Silva, NERACOOS



# Water Level Monitoring Workshop

## Day 1: Tech Showcase

- Improve our understanding of water level sensors that are cost-effective and suitable for New England coastal environments.
- Strengthen the connections between professionals in the field of water level monitoring and applications.

## Day 2: Priorities, Community, and Data Management

- Increase our awareness and understanding of Northeast water level monitoring activities, priorities, and gaps.
- Gather information to inform the identification of priority locations and associated parameters for future water level sensors.
- Strengthen the connections between professionals in the field of water level monitoring and applications.





# Water Level Workshop

## Participants

- State Agencies – Coastal Management, DOT
- Federal Agencies – NOAA (NWS, CO-OPS, OCM), USGS, EPA
- Regional Ocean Observing – Systems: SECOORA, NERACOOS
- Academic/Research Institutions – Brown, GMRI, UConn, UNH
- Community Members from Block Island, Vinelhaven



# Water Level Workshop

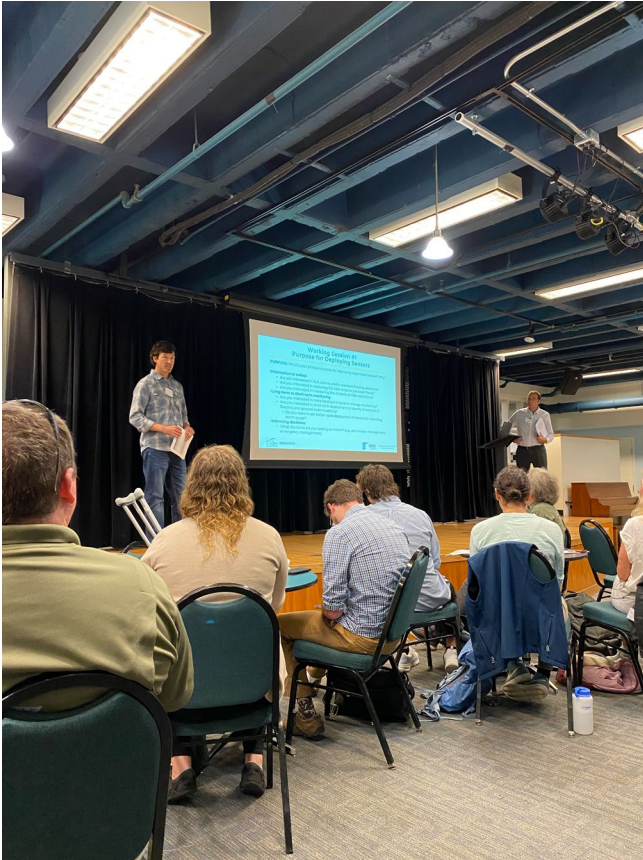
## Tech Showcase Participants

- Hohonu
- Hyfi
- USGS
- Charybdis Group
- NYC Floodnet
- NOAA CO-OPS
- Independent, Dave Sprague
- Independent, Vitalii Sheremet

Use the information **to decide what sensors to deploy** as part of the water level monitoring network



# Water Level Workshop - Highlights



- Support is really needed in terms of human infrastructure and funding to install, maintain water level sensors
- Building and maintaining relationships is key
- Poor understanding of the interaction between freshwater influx and ocean inundation
- Considering how to use data for parallel needs
- Need data from different representative locations
  - Eg. evacuation Routes, tidal marshes, infrastructure (eg. culverts, bridges)



# Sensor Location Selection Process

1. Engagement throughout the region
  - Water level monitoring workshop bringing together key stakeholders throughout the region- Sept 2023
  - NROC/NERACOOS engagement and outreach with Tribes, NERRs, NOAA NWS, State and County Emergency Management, and others
2. Identify and map requested locations
3. Use tools such as the EPA's EJScreen and Justice40 Mapping tool to identify priority areas
4. Prioritize Locations (next slide)
5. Identify capacity and make plan for operations and maintenance

# Sensor Location Selection Process

## Prioritize locations with these considerations

- Site addresses a key priority issue (e.g., coastal flooding, compound flooding, infrastructure or ecosystem resilience concerns)
- Site is located in an environmental justice community as defined by recognized tools such as the EJ Screen, or Justice40 Mapping Tool. Communities designated by states as Environmental Justice, or other recognized EJ criteria will also be prioritized.
- Site has been identified as a Tribal priority
- Selection of site helps promote a balanced and equitable geographic distribution in the region

# Next Steps

- We want your feedback
  - Criteria for selecting locations for the water level sensors
- Add proposed locations for new sensor via the storymap
- To be considered for the first round of site selection, please add sites **before December 15, 2023**
  
- IRA funding opportunities – NROC will continue as a partner
  - Longer term projects
  - Maintain what exists already
- Contact: Anna Simpson [\*\*anna@neracoos.org\*\*](mailto:anna@neracoos.org)

