



University of
New Hampshire

Keeping History Above Water Conference
Portsmouth, NH

Environmental Monitoring of Natural and Developed Coastal Environments Leading to Collaboration with SBM and Portsmouth, NH

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May 9th, 2023



Topics for Today's Talk:

Coastal Project Work Related to:

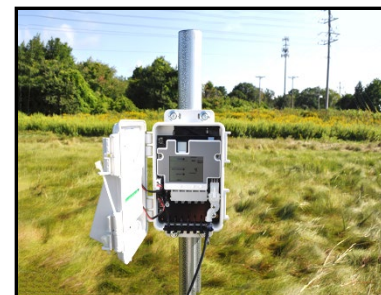
- Remote Sensing Applications

Remote sensing is the act of sensing something from a distance such as with the use of UAV, Aerial, or Satellite imagery



- Sensor Deployments

Sensor Deployments are networks of remote devices that measure environmental conditions such as water level, temperature, and humidity.

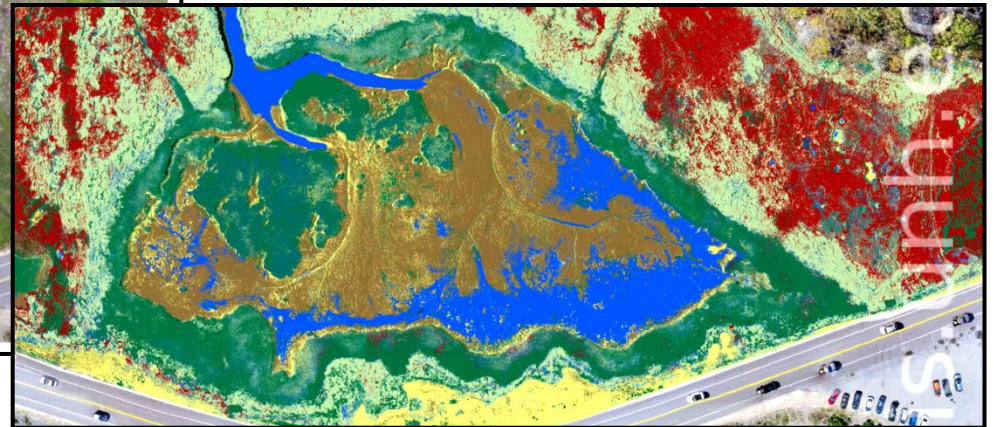


- Web Mapping Applications

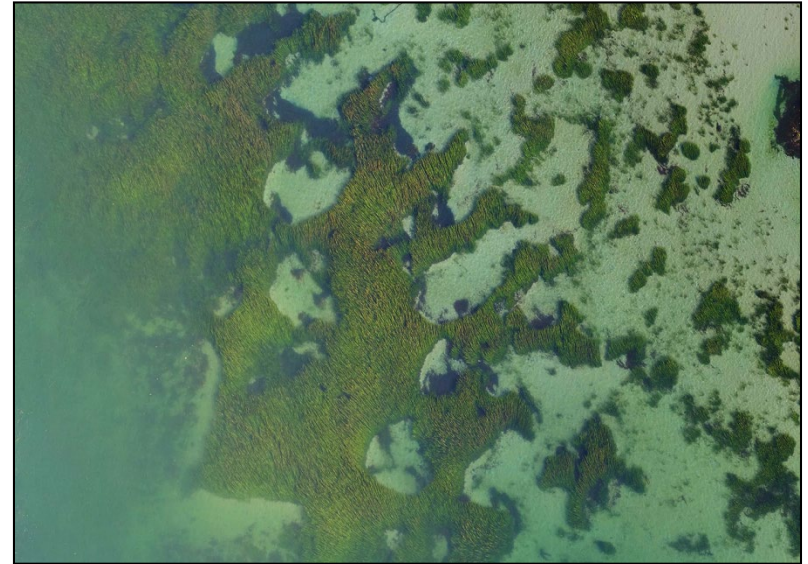
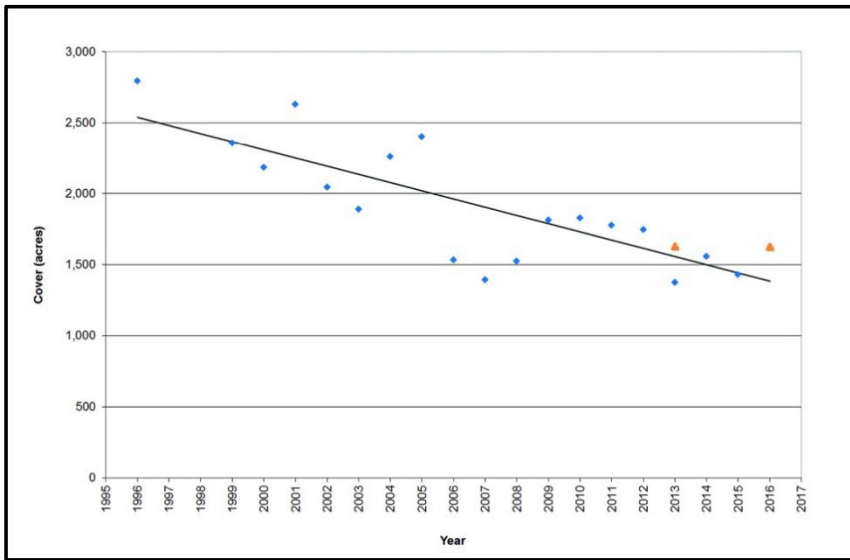
Web enabled mapping interfaces for the query, mapping, visualization, and dissemination of the streaming data.



Salt Marsh Vegetation Remote Sensing and Mapping:



Submerged Eelgrass Vegetation Remote Sensing and Mapping :

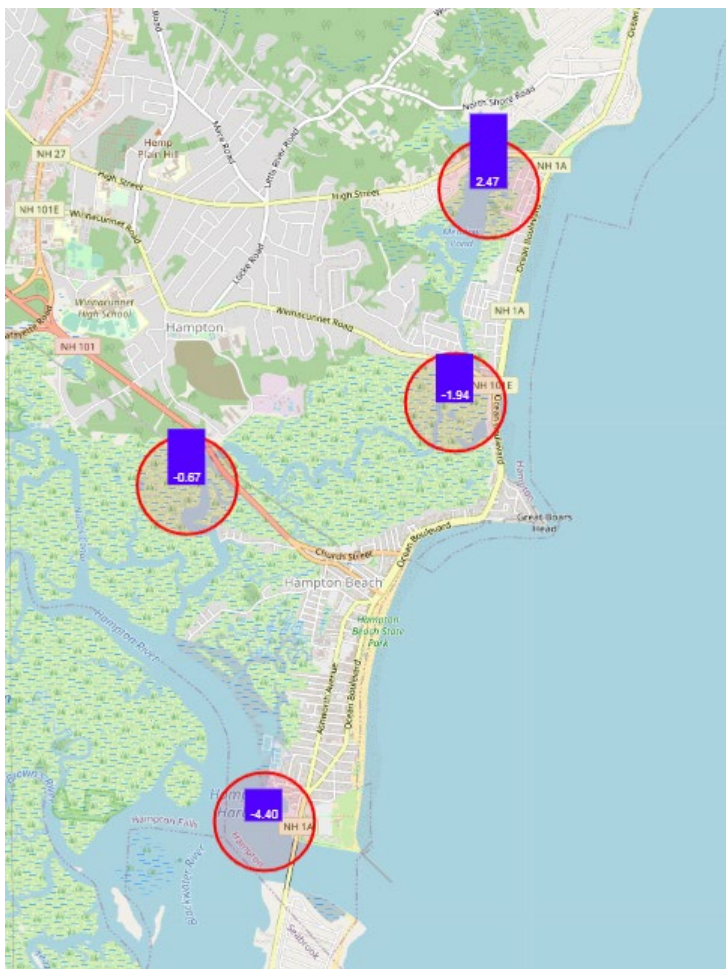


Remote Sensing of Coastal Flooding



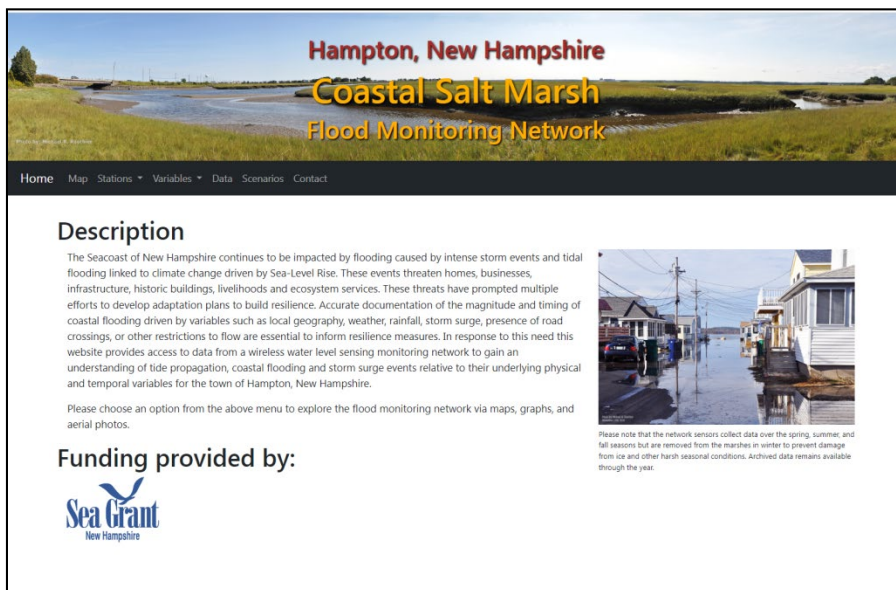
Sensor Deployments

- Hampton NH 2019



Web Mapping Applications

- Hampton NH Salt Marsh Flooding Network



**Hampton, New Hampshire
Coastal Salt Marsh
Flood Monitoring Network**



Home Map Stations Variables Data Scenarios Contact

Description

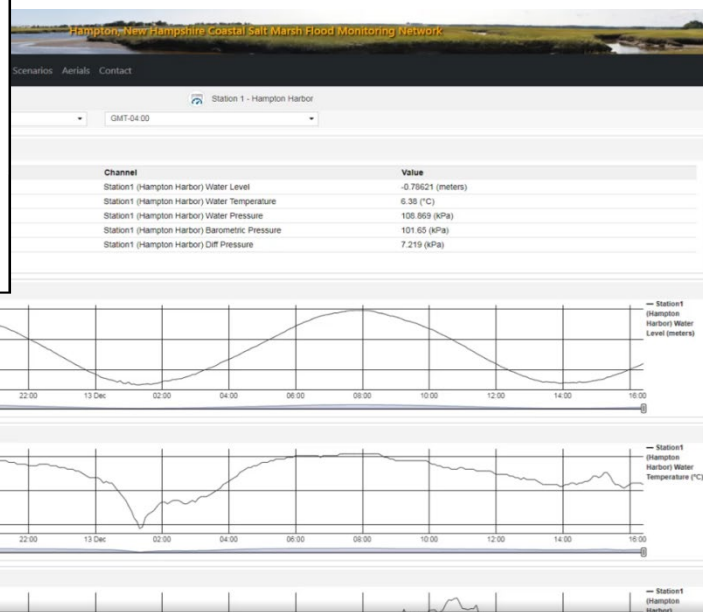
The Seacoast of New Hampshire continues to be impacted by flooding caused by intense storm events and tidal flooding linked to climate change driven by Sea-Level Rise. These events threaten homes, businesses, infrastructure, historic buildings, livelihoods and ecosystem services. These threats have prompted multiple efforts to develop adaptation plans to build resilience. Accurate documentation of the magnitude and timing of coastal flooding driven by variables such as local geography, weather, rainfall, storm surge, presence of road crossings, or other restrictions to flow are essential to inform resilience measures. In response to this need this website provides access to data from a wireless water level sensing monitoring network to gain an understanding of tide propagation, coastal flooding and storm surge events relative to their underlying physical and temporal variables for the town of Hampton, New Hampshire.

Please choose an option from the above menu to explore the flood monitoring network via maps, graphs, and aerial photos.

Funding provided by:



Please note that the network sensors collect data over the spring, summer, and fall seasons but are removed from the marshes in winter to prevent damage from ice and other harsh seasonal conditions. Archived data remains available through the year.




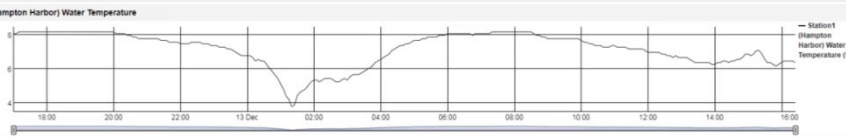
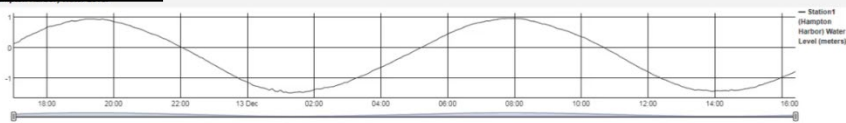
Hampton, New Hampshire Coastal Salt Marsh Flood Monitoring Network

Scenarios Aerials Contact

Station 1 - Hampton Harbor

GMT-04:00

Channel	Value
Station1 (Hampton Harbor) Water Level	-0.78621 (meters)
Station1 (Hampton Harbor) Water Temperature	6.38 (°C)
Station1 (Hampton Harbor) Water Pressure	108.869 (kPa)
Station1 (Hampton Harbor) Barometric Pressure	101.65 (kPa)
Station1 (Hampton Harbor) Diff Pressure	7.219 (kPa)



Remote Sensing of Developed Landscapes



Sensor Deployments

- Strawberry Banke Museum Deployment 2022-23



Web Mapping Applications

- SBM Water Level Monitoring Network

Strawberry Banke Sensor Network

Current Conditions
The local dynamics of ground water at Strawberry Banke are affected by tides in the nearby Piscataqua River. Click the play button below the map to review two days of current readings for water levels within two of the local historic houses.

Science

Research

Current **King Tide** **Storm Surge**

03:10 AM
05/05/2023

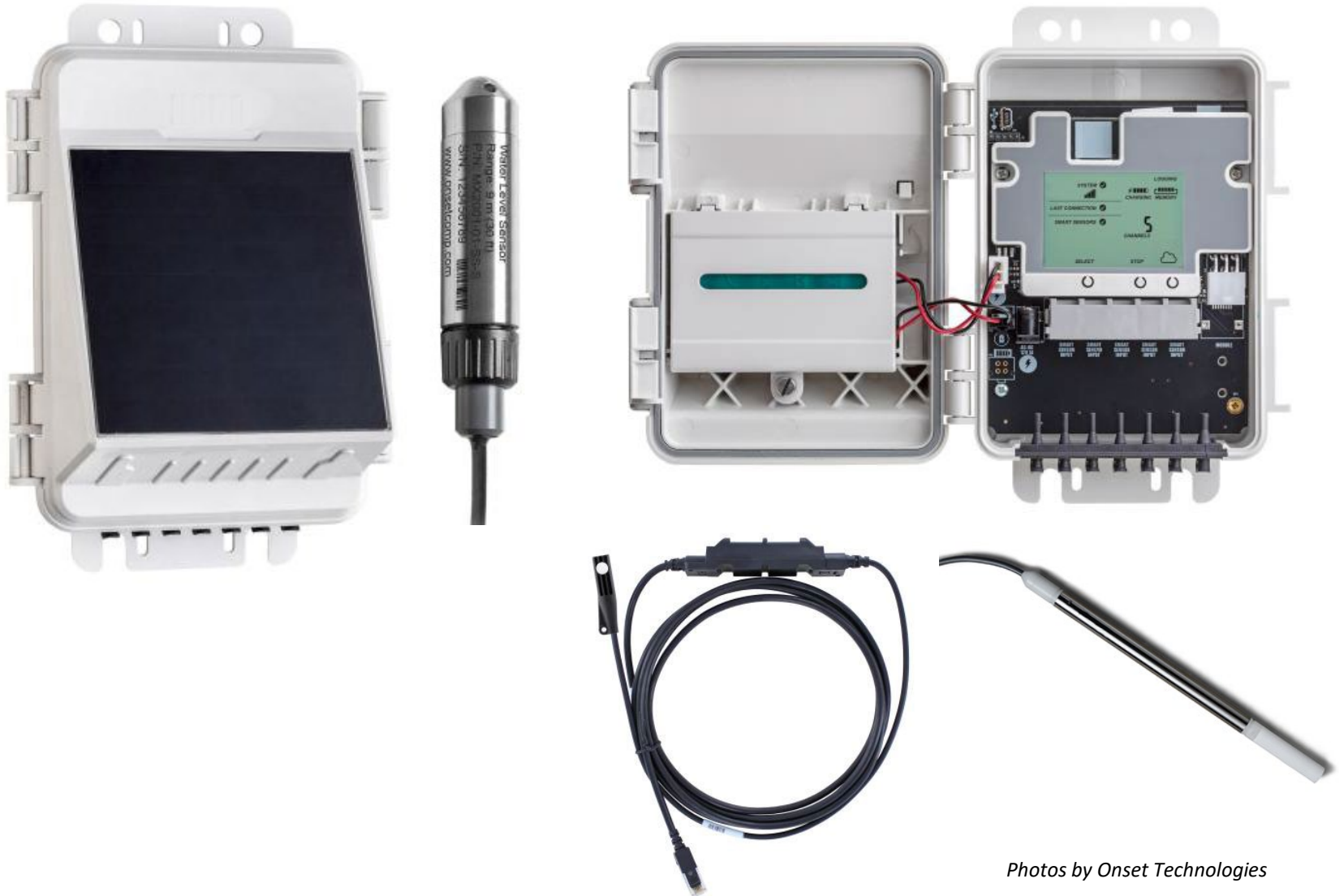
The Museum Exhibit
In 2021 the Strawberry Banke Museum opened a new major exhibit called "Water Has a Memory" for public viewing. As of 2022, a new interactive touch-screen kiosk was added to this exhibit to allow users to view current, king tide, and storm surge readings from water level sensors across the museum's water monitoring network. Data drawn from the system's cloud database via a Wi-Fi connection are graphed and mapped in real-time or historically via a user-operated time slider.

Continued Research
Long-term water level data collected at the Strawberry Banke Museum will be used to better understand the hydrodynamics of local flooding, tides, precipitation, storm surge events, and future increases in local sea levels. These data will also be used to better understand the effects that long-term flooding and humidity have on the deterioration of the museum's historic buildings. By coming to better understand the results of this research, the museum looks to mitigate better the effects of the local and global drivers affecting this historic site.

System design and implementation by University of New Hampshire, Geospatial Science Center (<https://gis.unh.edu>)



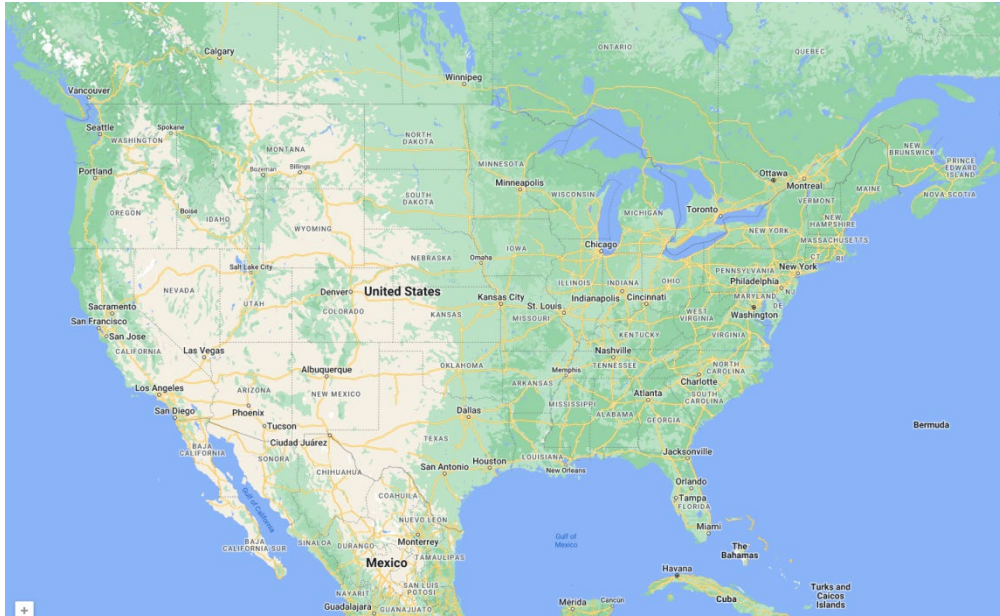
Hands On Example of a Water Level Logger and Sensor



Photos by Onset Technologies

Future Deployments

- Future Deployments in Portsmouth, NH
- Collaborations ?
- Combined Network ?



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