

# CSI SHORELINE STABILIZATION

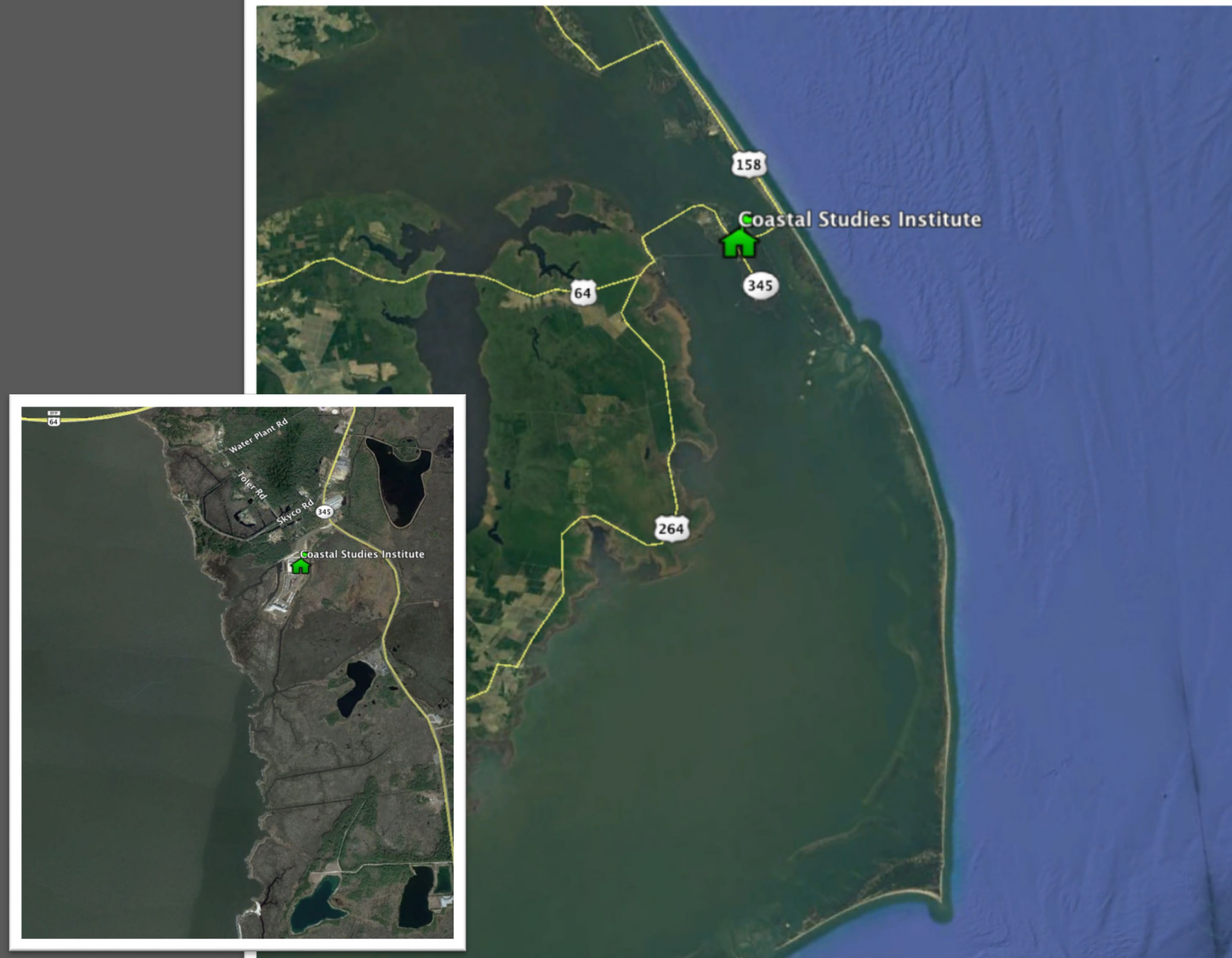
DAVID SYBERT

CSI K-12 EDUCATION SPECIALIST

GRADUATE STUDENT, DR. CORBETT'S LAB

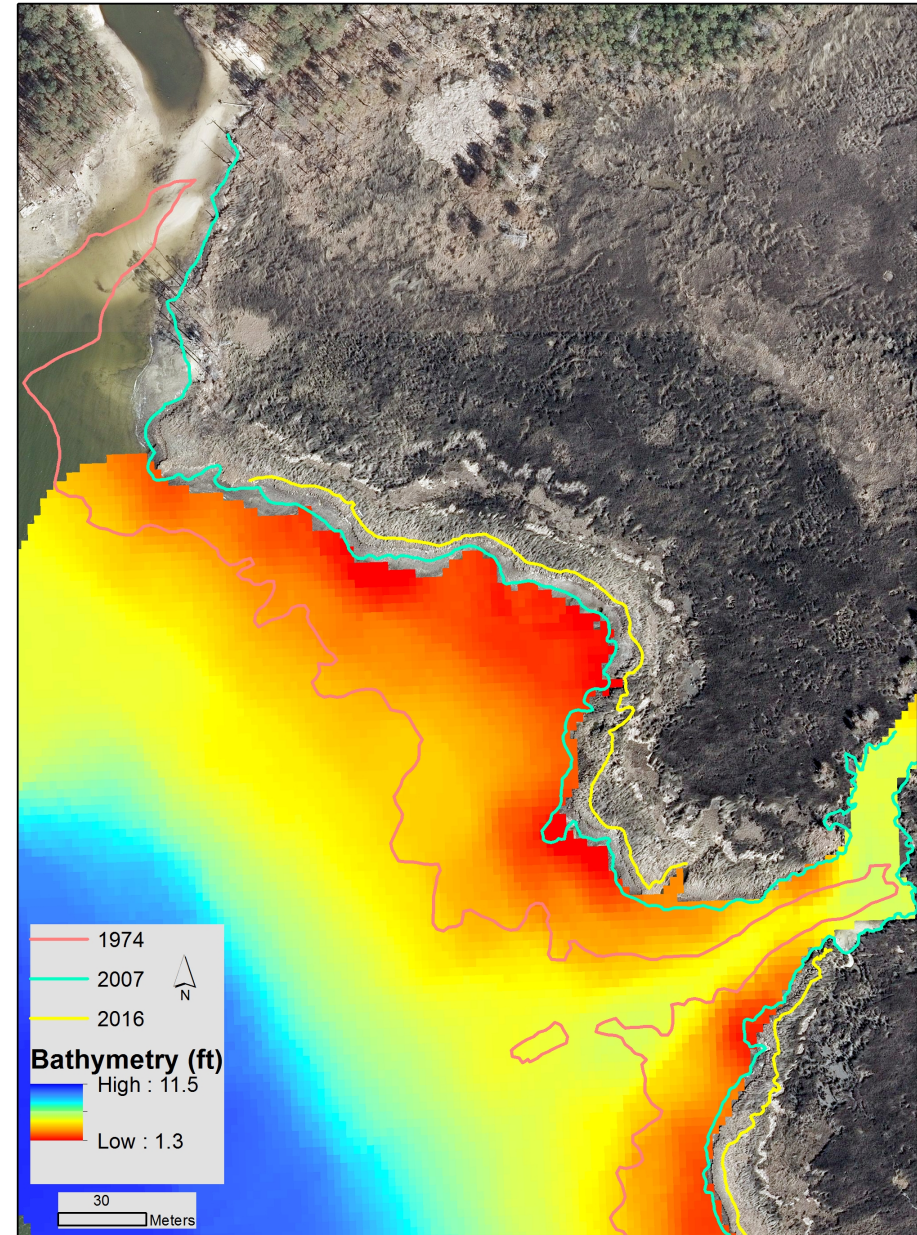
# STUDY SITE

- WEST SIDE OF ROANOKE ISLAND
- LARGE FETCH AREA
- MINIMAL TIDAL CHANGE
- DEPTH
- SALINITY VARIATIONS



# SHORELINE EROSION

- INCREASE FREQUENCY AND SEVERITY OF STORM AND WIND EVENTS ALONG WITH SEA LEVEL RISE.
- SHORELINE EROSION HAS BEEN CALCULATED BETWEEN 6-10FT PER YEAR
- SHORELINES MONITORED FROM 1974, 2007, 2016



# PROJECT DETAILS

- PROJECT IS A PARTNERSHIP WITH THE NATURE CONSERVANCY
- FUNDING THROUGH NOAA GRANT - PARTNERSHIP OF NC COASTAL FEDERATION AND THE NATURE CONSERVANCY
- PERMITTED FOR 1000FT OF OYSTER REEF BREAKWATERS
  - ATTENUATE WAVE ENERGY AND REDUCE EROSION
  - CREATE CONDITIONS FOR SHALLOW WATER HABITAT
  - RESTORE NATIVE OYSTER HABITAT
- CLASS C RIPRAP LIMESTONE ROCK AT 4FT CONTOURS
- CONSTRUCTION DONE WITH A SHALLOW WATER BARGE



Proposed Oyster-Marl Reef Sills (10)  
 (Each sill shown 100' x 20'  
 with 10' separation)

Water depth  
 (See drawing 2 for  
 cross-section of sills and water depth)

Croatan Sound

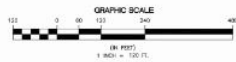
Research Platform  
 NTS  
 35°52'9.84"N 75°39'48.13"W

(WETLAND AREA  
 +/- 26.76 ACRES)

(WETLAND AREA  
 +/- 46.27 ACRES)

NIP  
 Luggert, Terry W  
 Luggert, Cris W  
 4401 Long Ridge Rd  
 Plattsboro, NC 27865

NIP  
 Dera Pitts, LLC  
 P.O. Box 8049  
 Greensboro, NC 27419



EAST CAROLINA UNIVERSITY  
 UNC COASTAL  
 STUDIES INSTITUTE  
 850 NC 345  
 Wanchese, NC 27981

CAMA Major  
 Permit 24-08

Permit Modification  
 Drawing 1 of 2  
 for the Construction of  
 Oyster-Marl Reef Sills

Base Drawing by:  
 Mike Morway

SE20



CDR/ALL/001



CAMA Permit Modification  
 drawing by Robert McClendon  
 August 11, 2017  
 (252) 475-5407

Proposed Oyster-Marl Reef details  
 by G. Rende Corbett and Brian Scoulin.

DRAWING 1 of 2

Used TNC decision based mapping tool for location of reef.

<https://maps.coastalresilience.org/northcarolina/>

## UNC Coastal Studies Institute offshore oyster reef breakwater

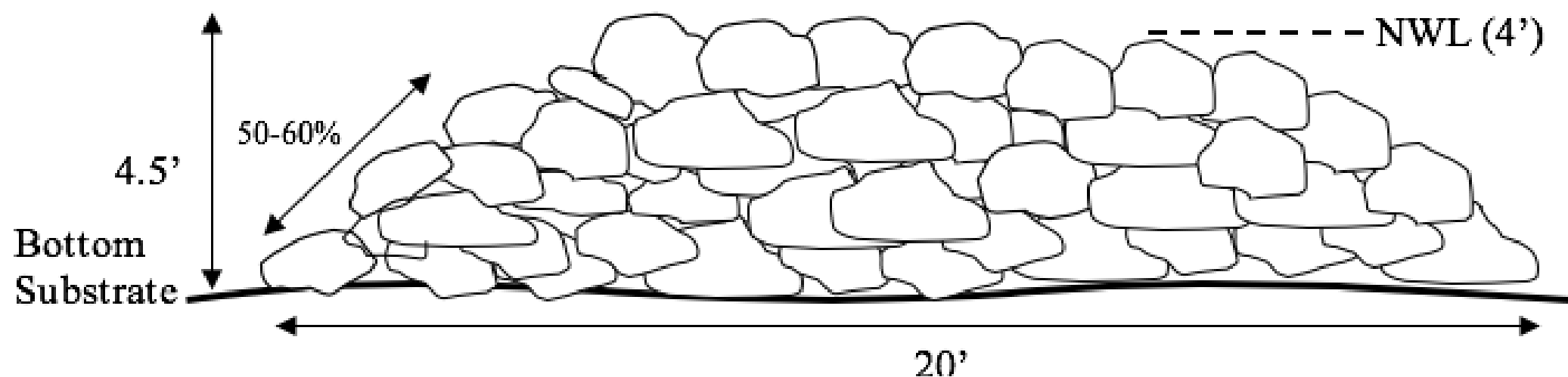
Offshore oyster reef breakwater design: side-view

Drawing: 2 of 2

Applicant: UNC Coastal Studies Institute

Date: August 21, 2017

Drawn by: Brian Boutin (The Nature Conservancy)



*Division of Coastal Management  
Proposed Offshore Marl Oyster Reef Sills  
for the  
UNC Coastal Studies Institute*

*Pamlico Sound*

*Coastal Wetlands*

**Legend**

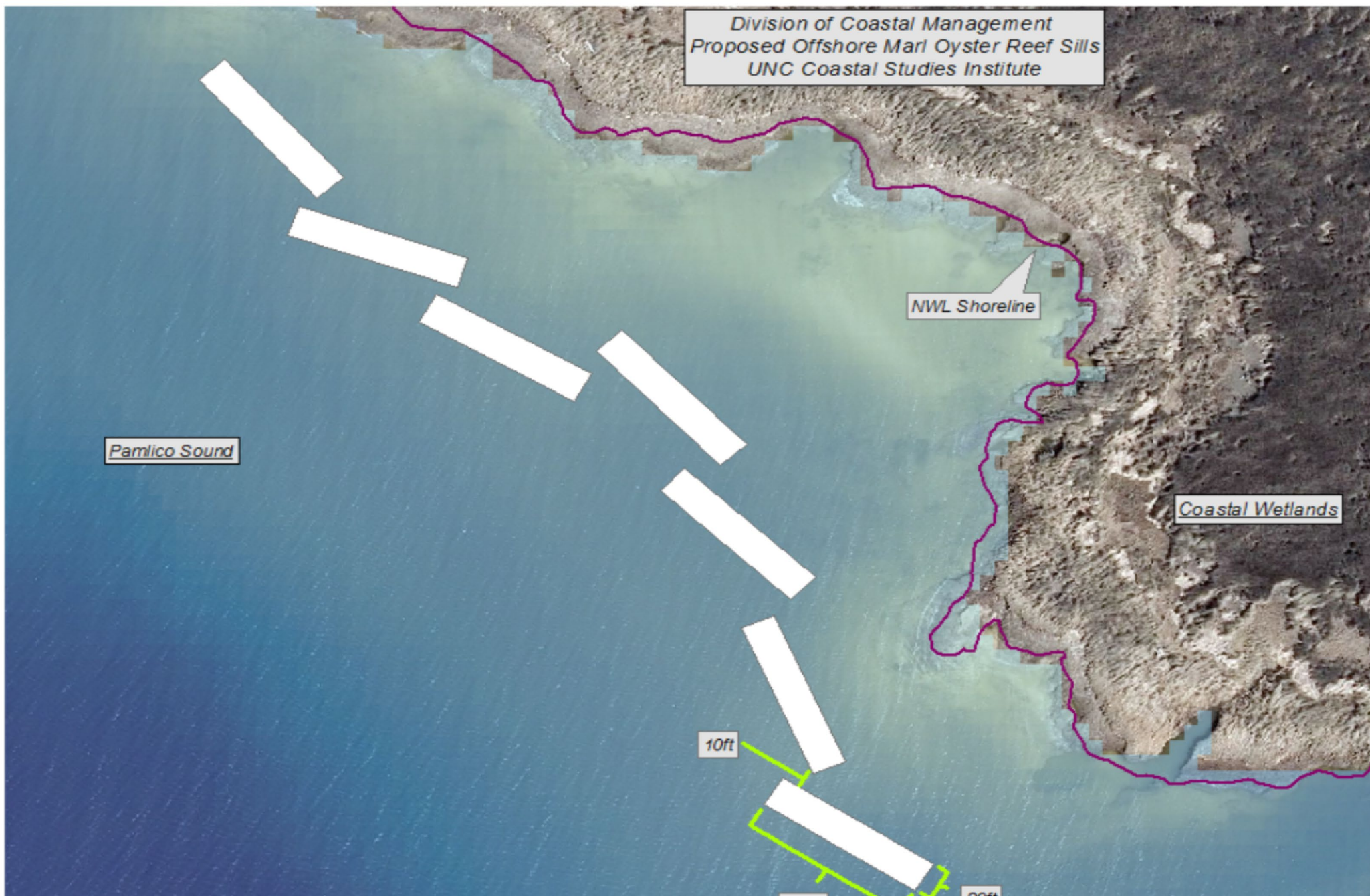
- Proposed Offshore Reefs
- Contourlines (ft)**
  - 2
  - 3
  - 4
  - 5
- Proposed Platform Location
- CSI Channel Depth (ft)**
  - High : 11ft
  - Low : 1ft

June 29th, 2017

By: Dr. Corbett; Talor Galloway; and Anna Poston

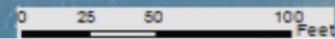


Division of Coastal Management  
Proposed Offshore Marl Oyster Reef Sills  
UNC Coastal Studies Institute



June 29th, 2017

By: Dr. Corbett & Talor Galloway





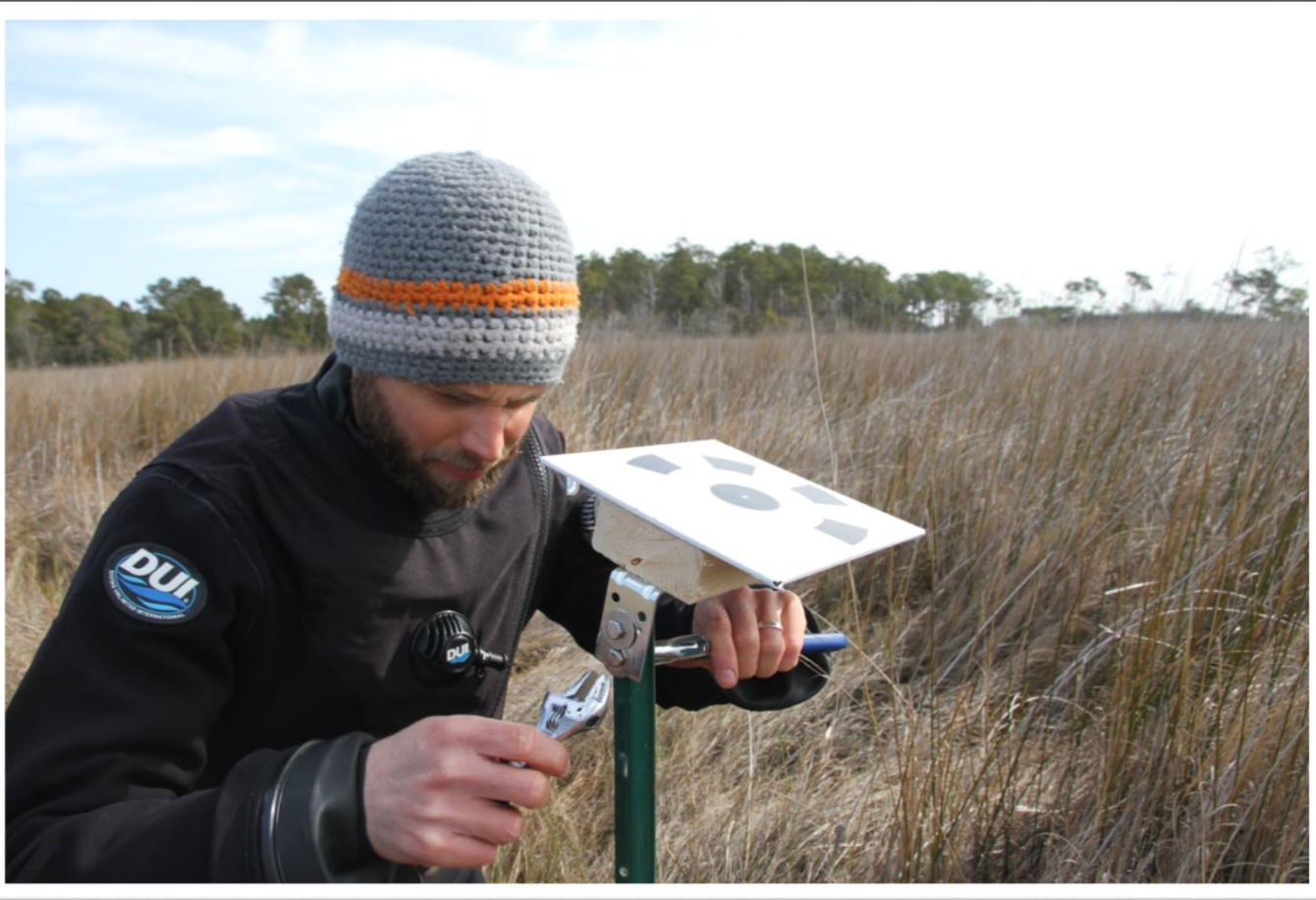
### Proposed Study Area



### Sill Locations

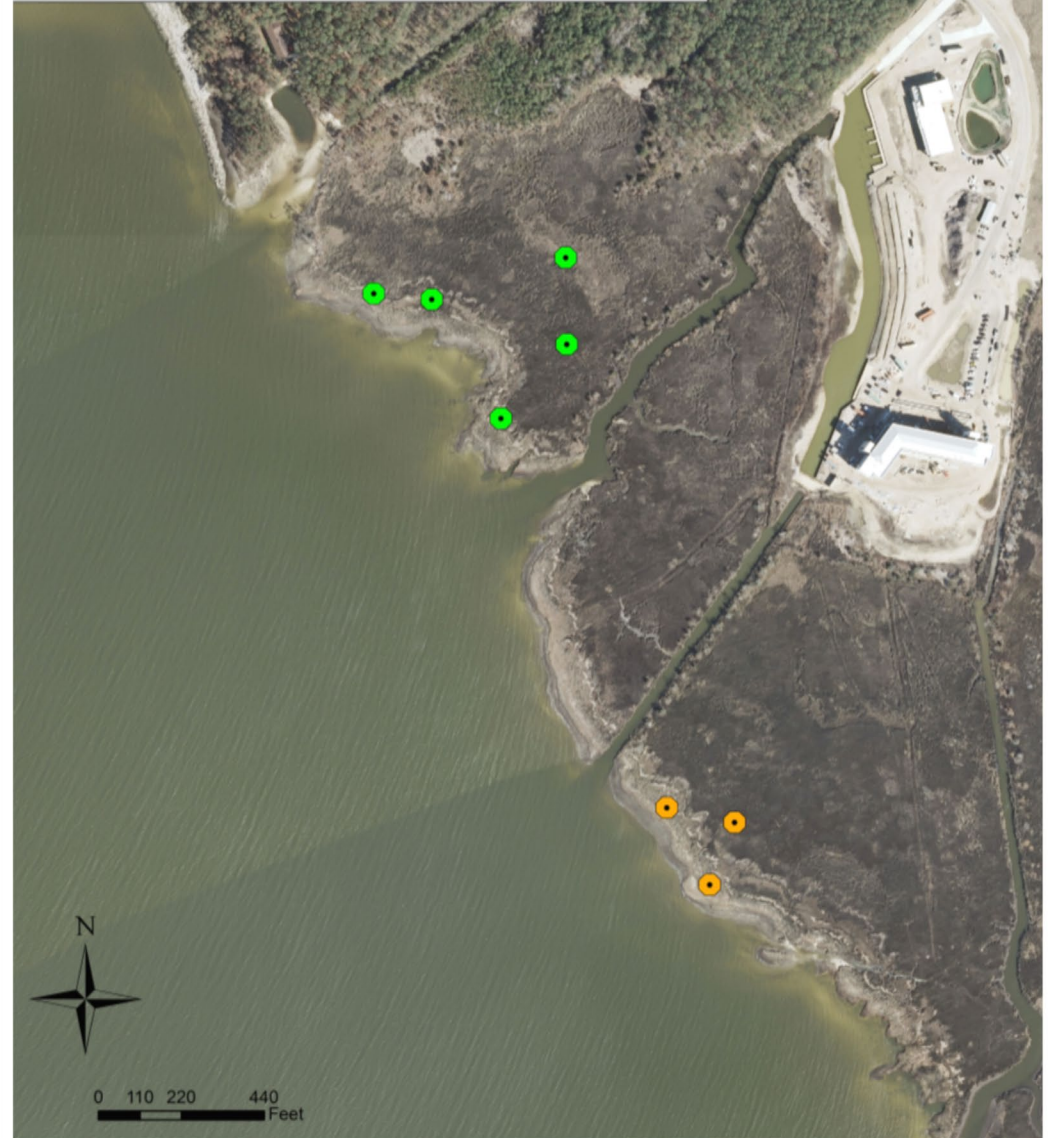


# SHORELINE MONITORING



## Overhead Targets for Drone Surveys

- test overhead targets
- control overhead targets



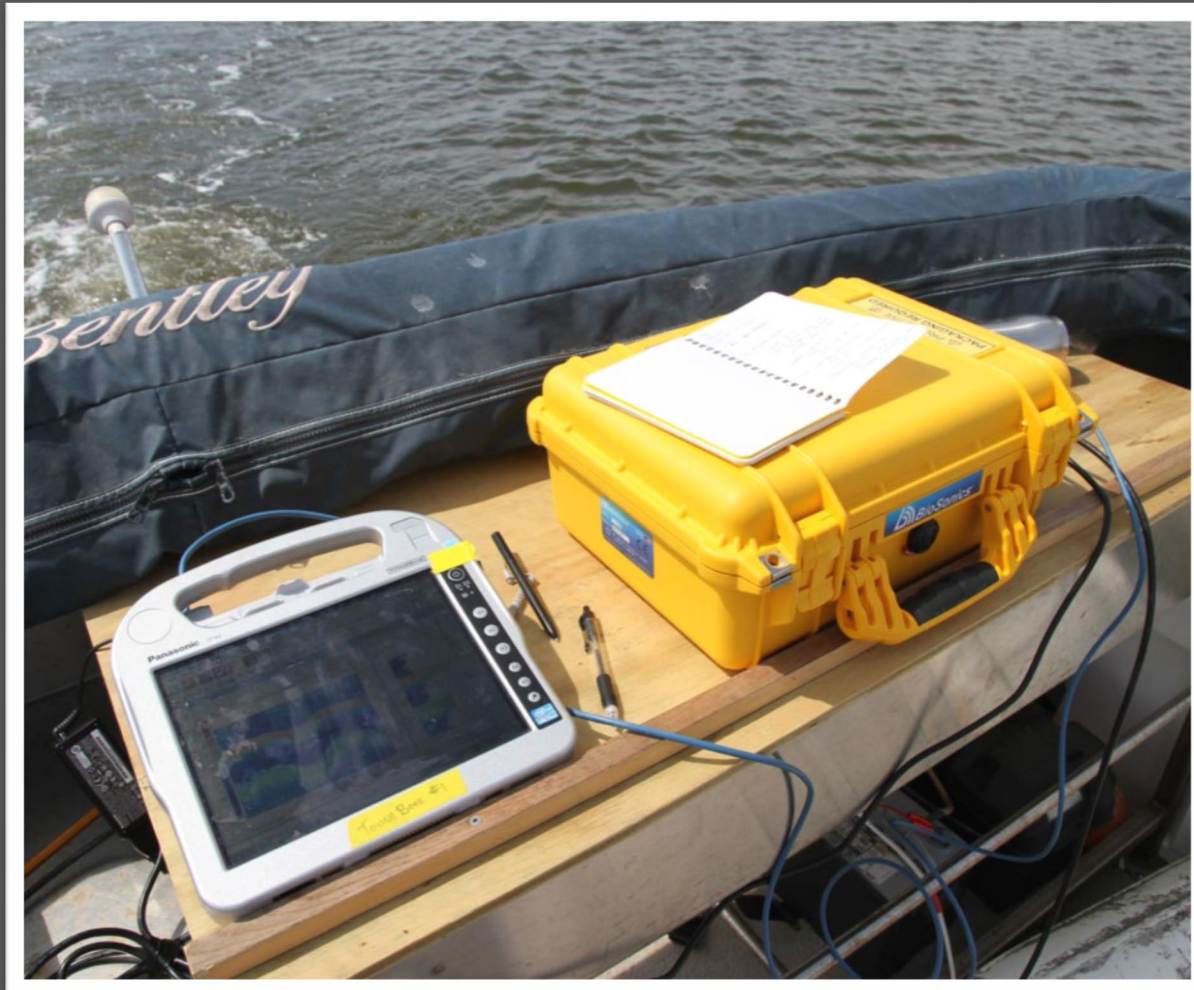
# SHORELINE MONITORING



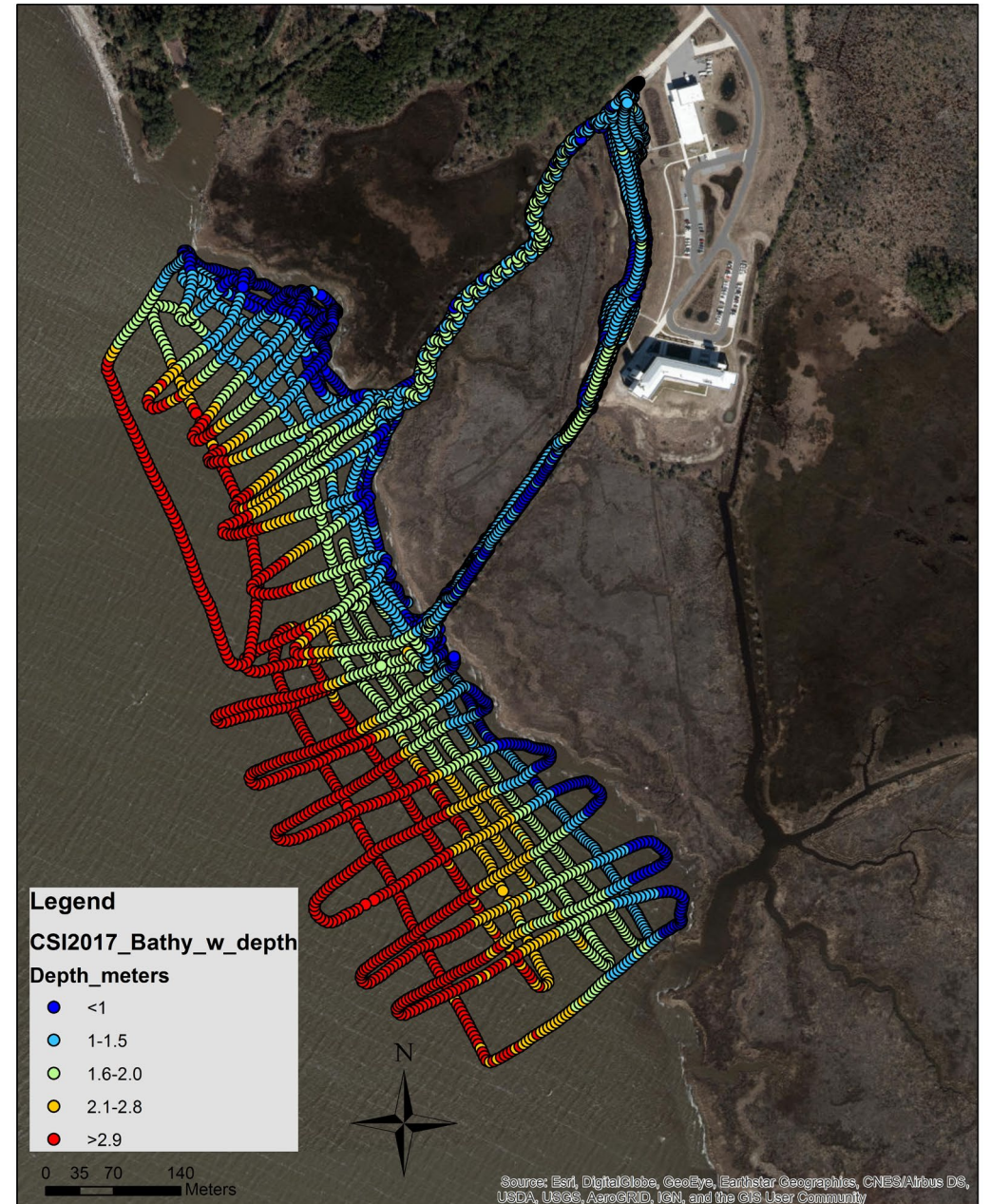
# SEDIMENT TRANSECTS



# BATHYMETRY DATA



## Bathymetry Data

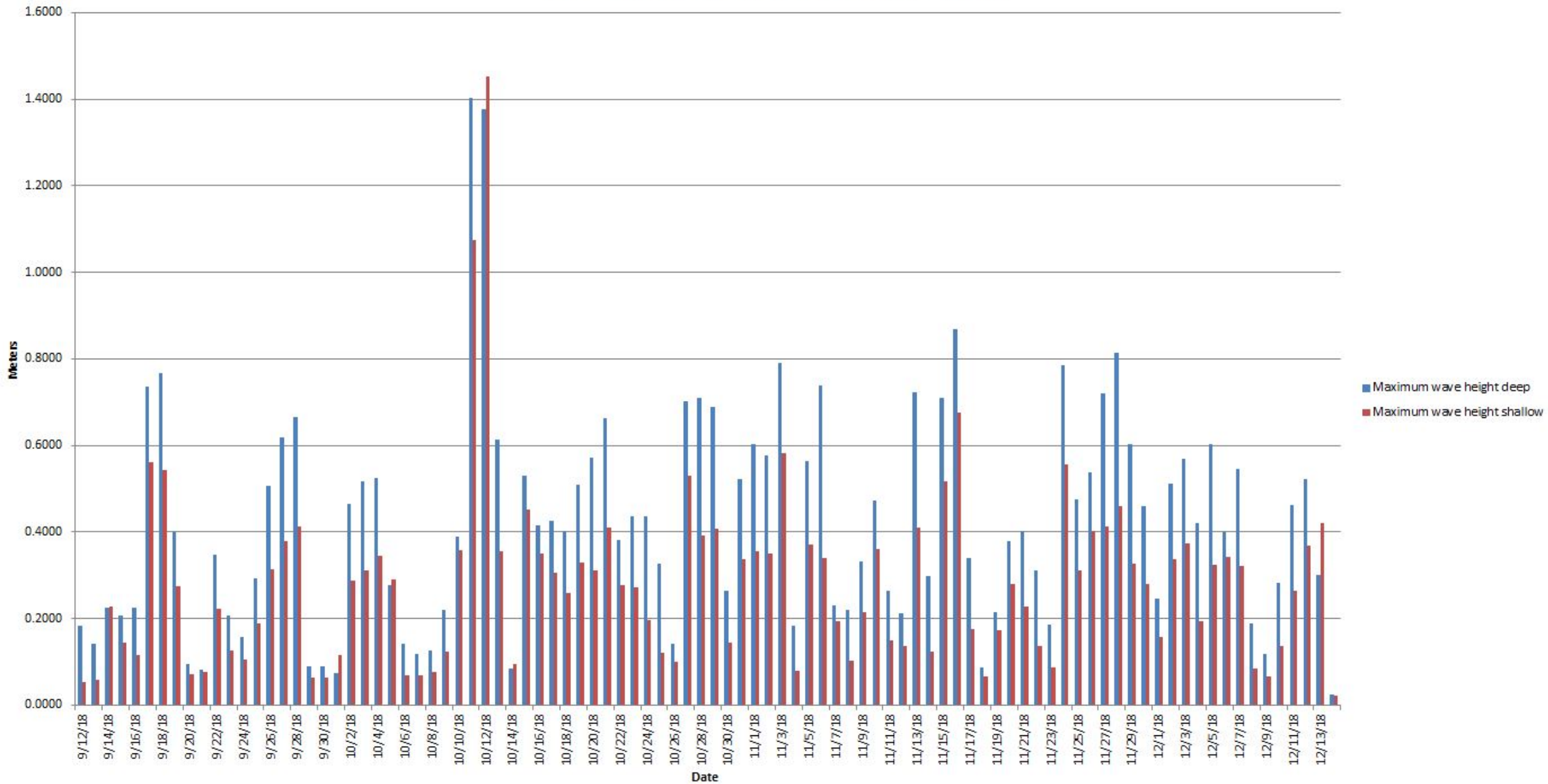


# WAVE GAUGES

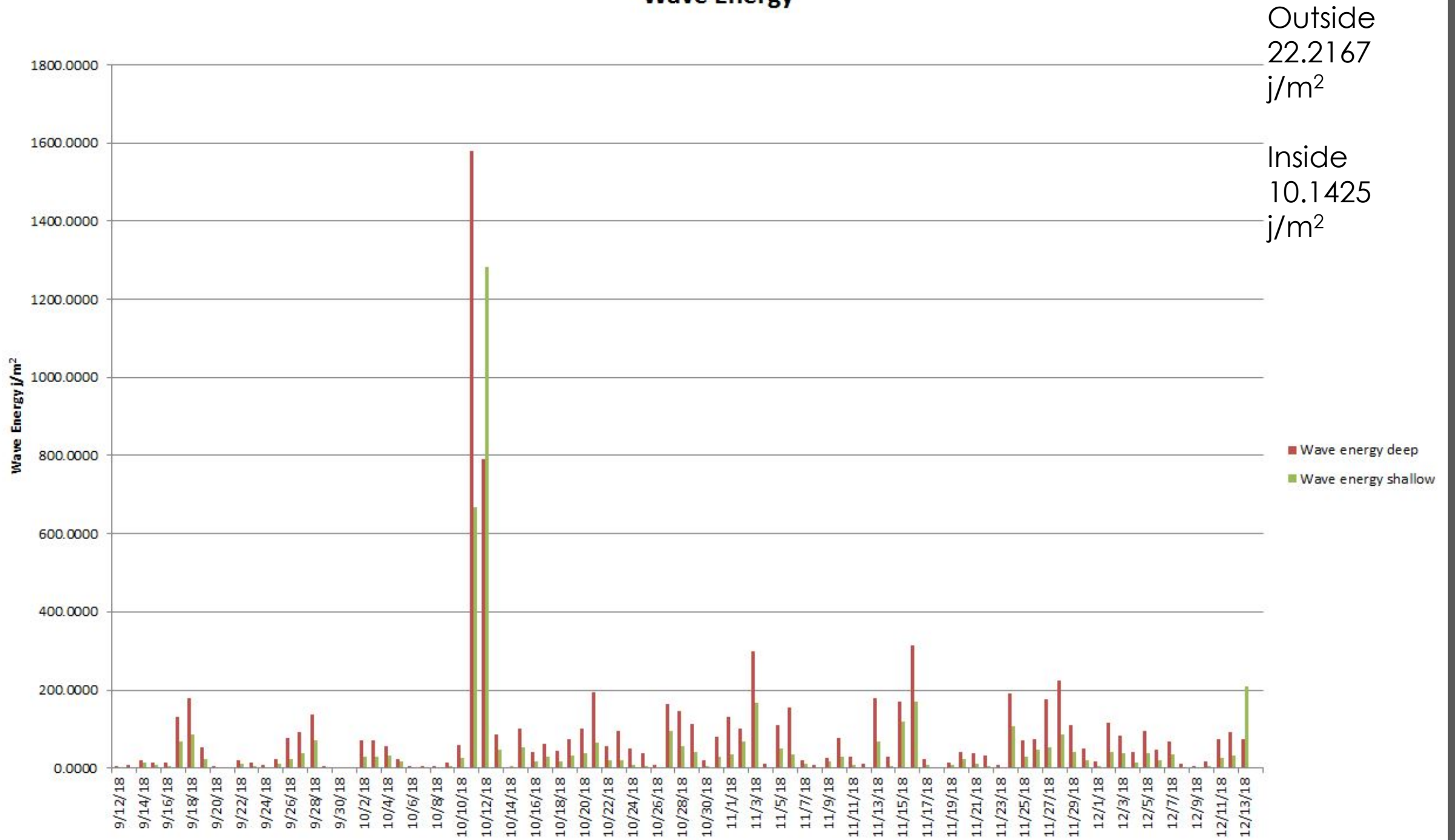
- RBR SOLO 3 LOGGER
- PRESSURE SENSOR RECORDS WAVES PASSING ABOVE
- PLACED SEAWARD AND LANDWARD OF SILLS
- DATA INCLUDES
  - MAX, SIGNIFICANT AND AVERAGE WAVE HEIGHT
  - MAX, SIGNIFICANT AND AVERAGE WAVE PERIOD
  - WAVE ENERGY



# 9/12 - 12/14/18 Maximum Daily Wave Height



# Wave Energy





- CSI SHORELINE PROJECT