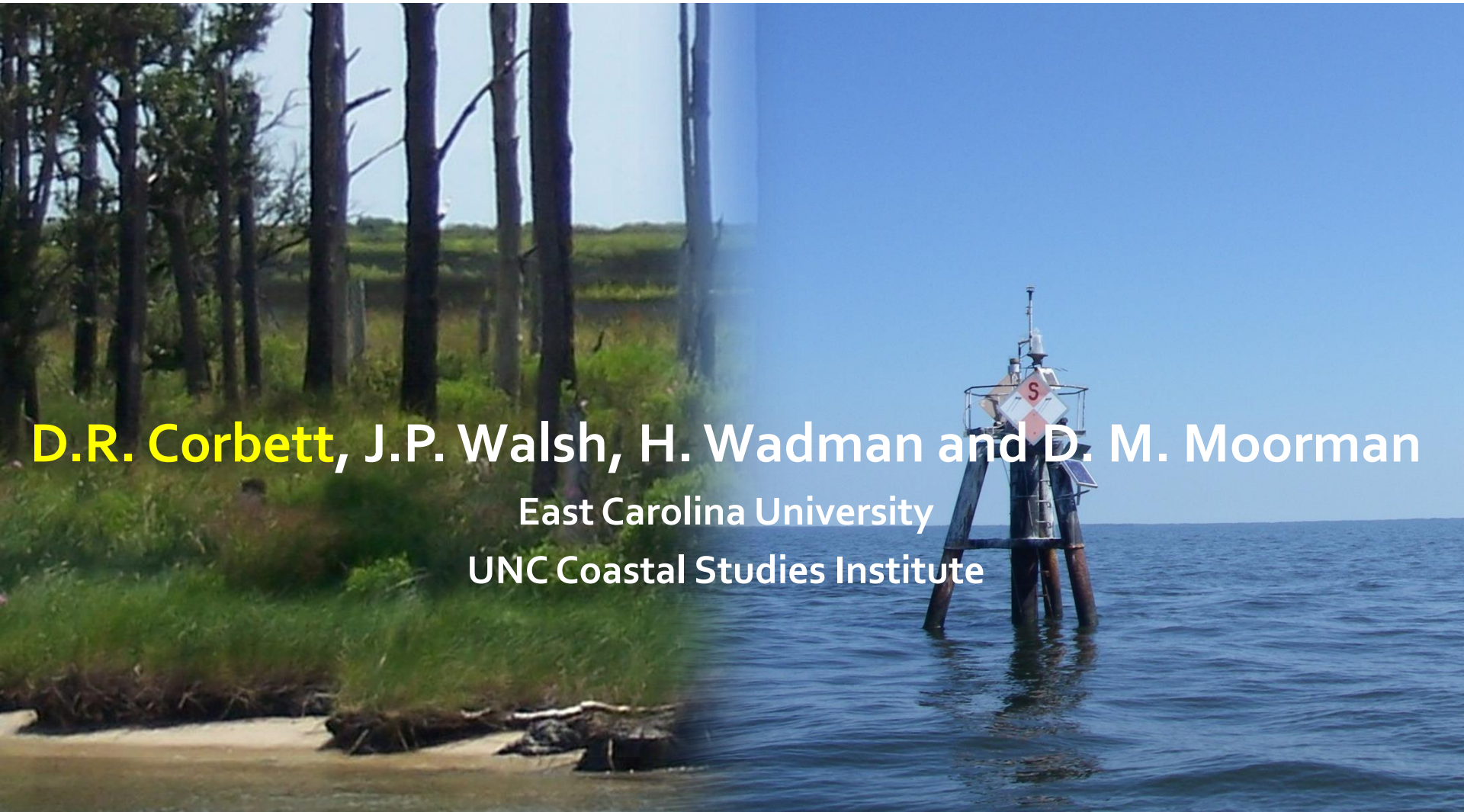
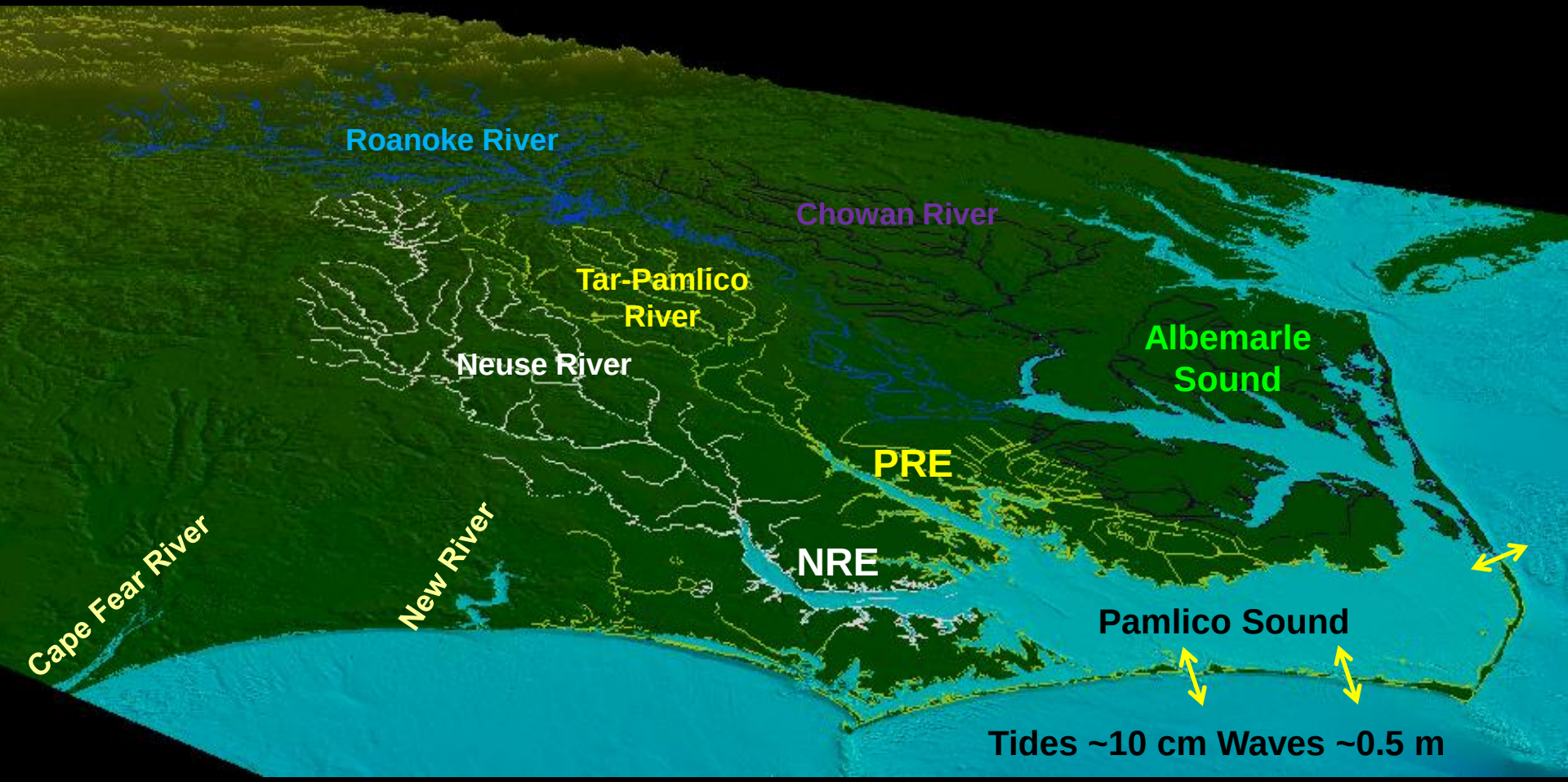
Estuarine Observing in North Carolina Past, Present and Future



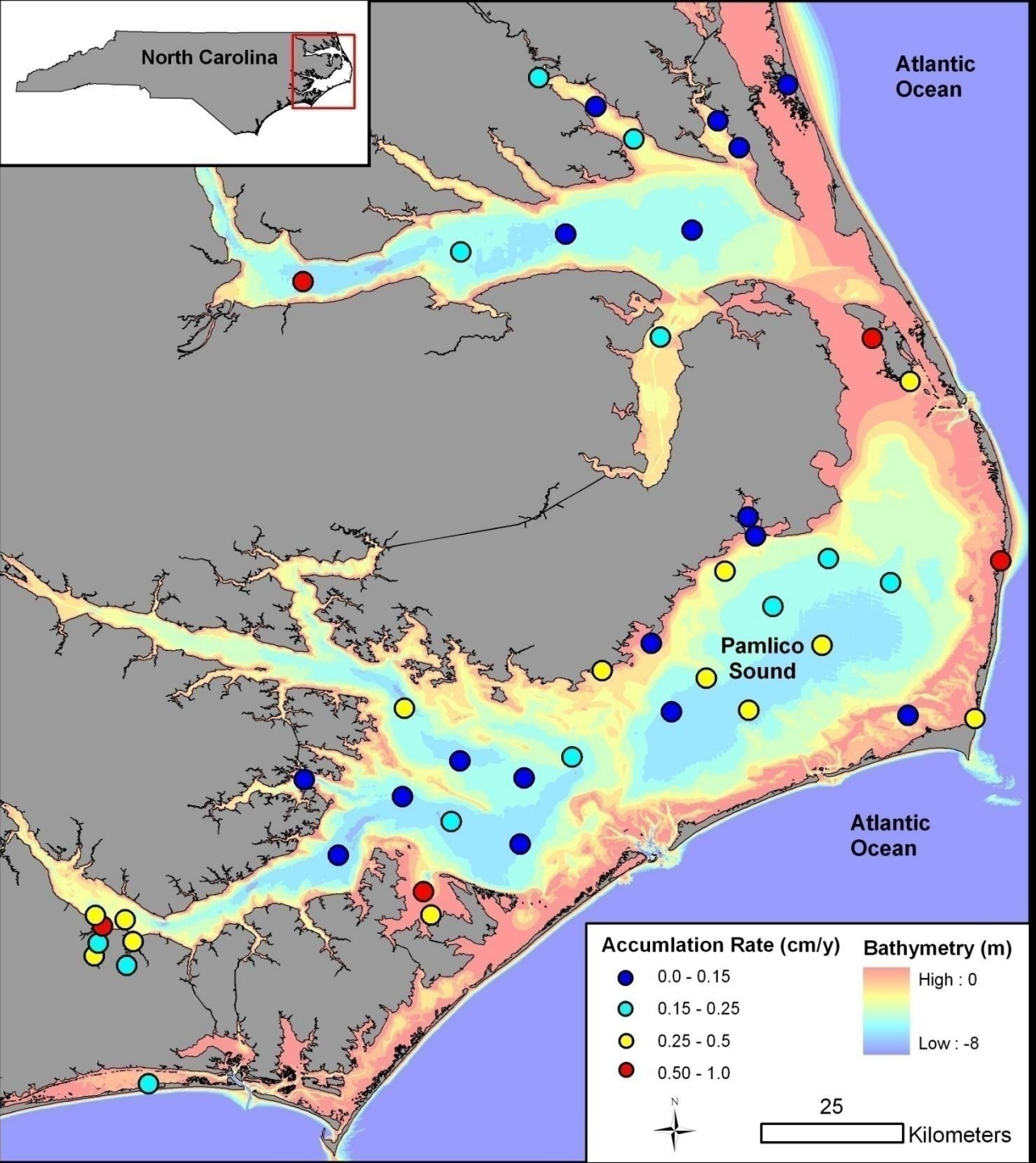
D.R. Corbett, J.P. Walsh, H. Wadman and D. M. Moorman

East Carolina University

UNC Coastal Studies Institute

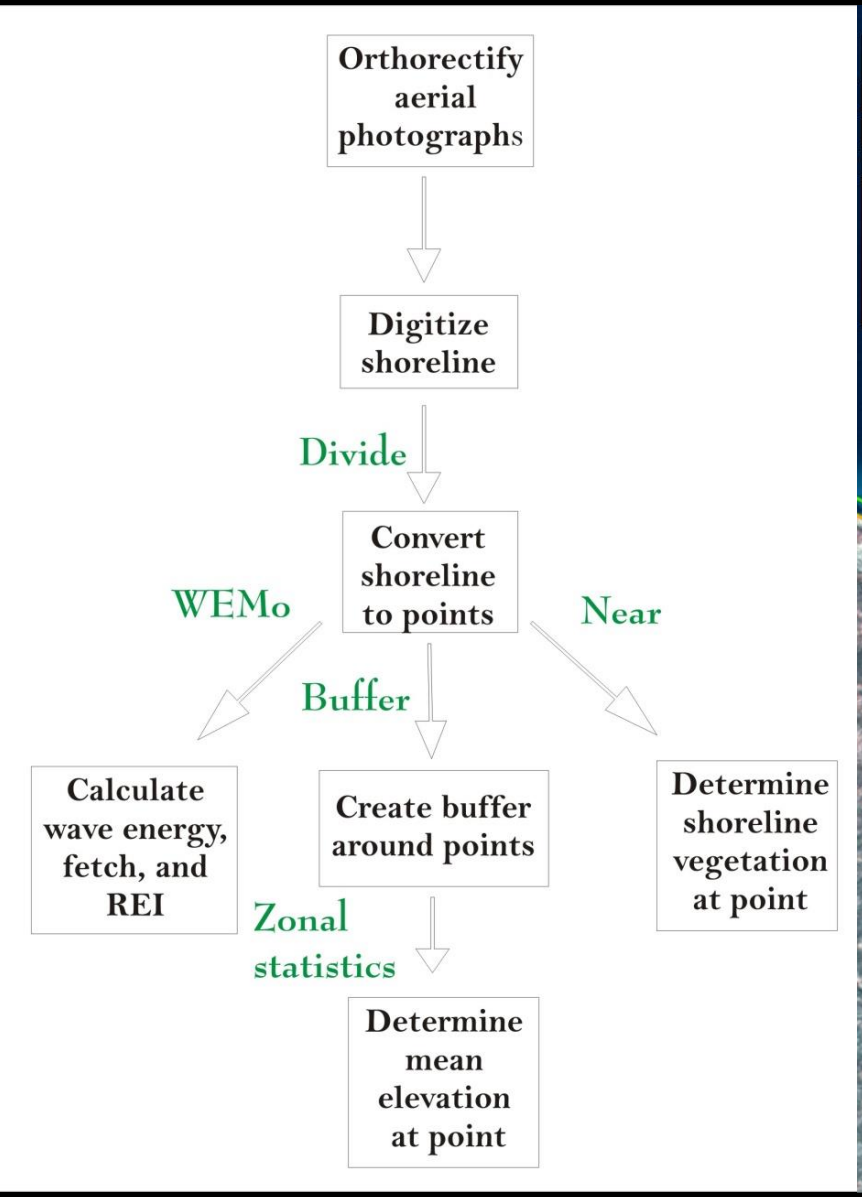


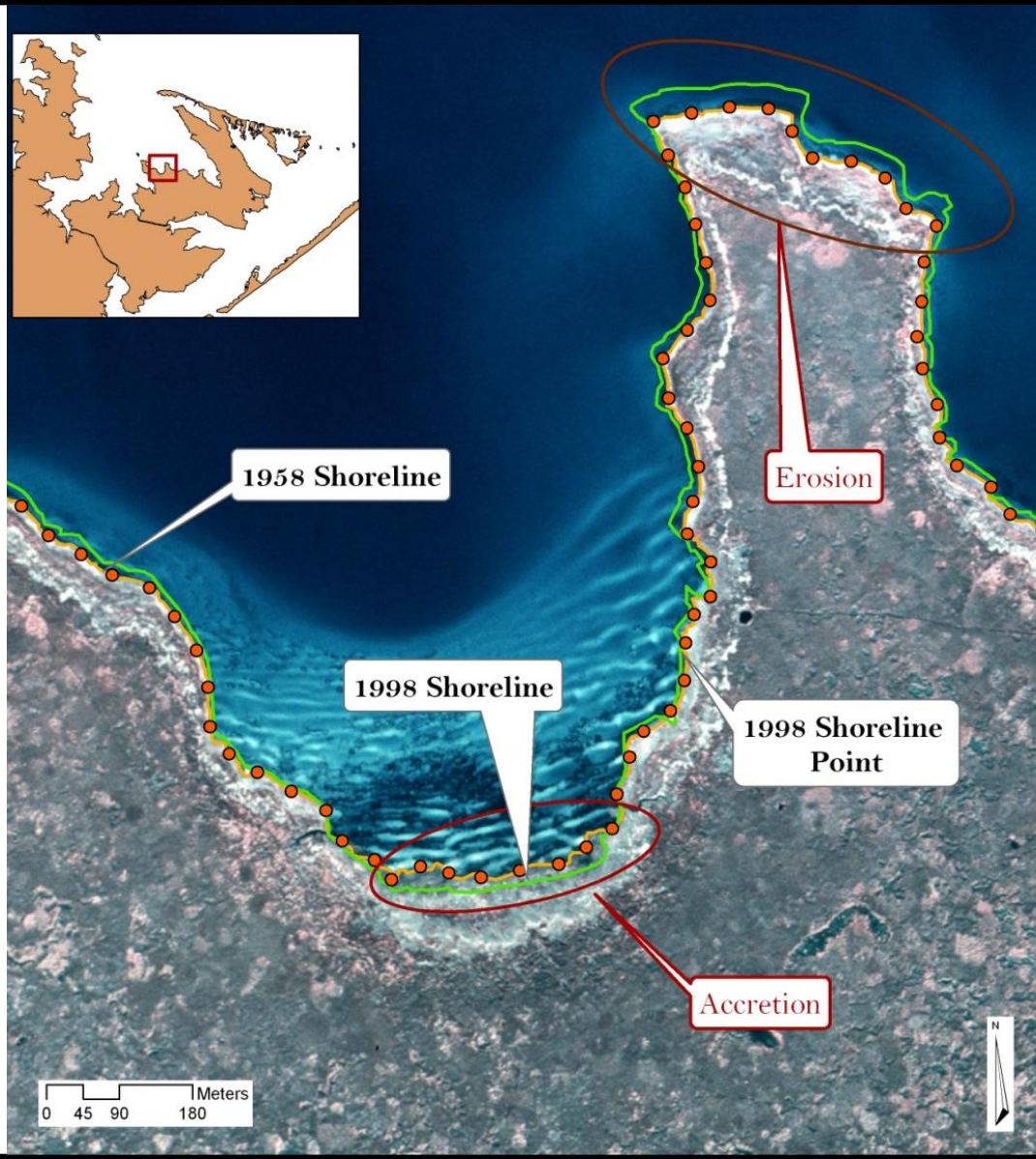
	Water Discharge (m^3/s)	Sediment Load (t/y)	Yield ($t/km^2/y$)
Chowan	130	1.6×10^5	14
Roanoke	251	3.1×10^5	14
Tar-Pamlico	153	1.9×10^5	19
Neuse	173	2.1×10^5	13
	707	8.7×10^5	



- Rates 1 - ~ 10 mm/y
- Highest rates in heads and tributaries
- Budget indicates non-fluvial sources

Quantifying Shoreline Change

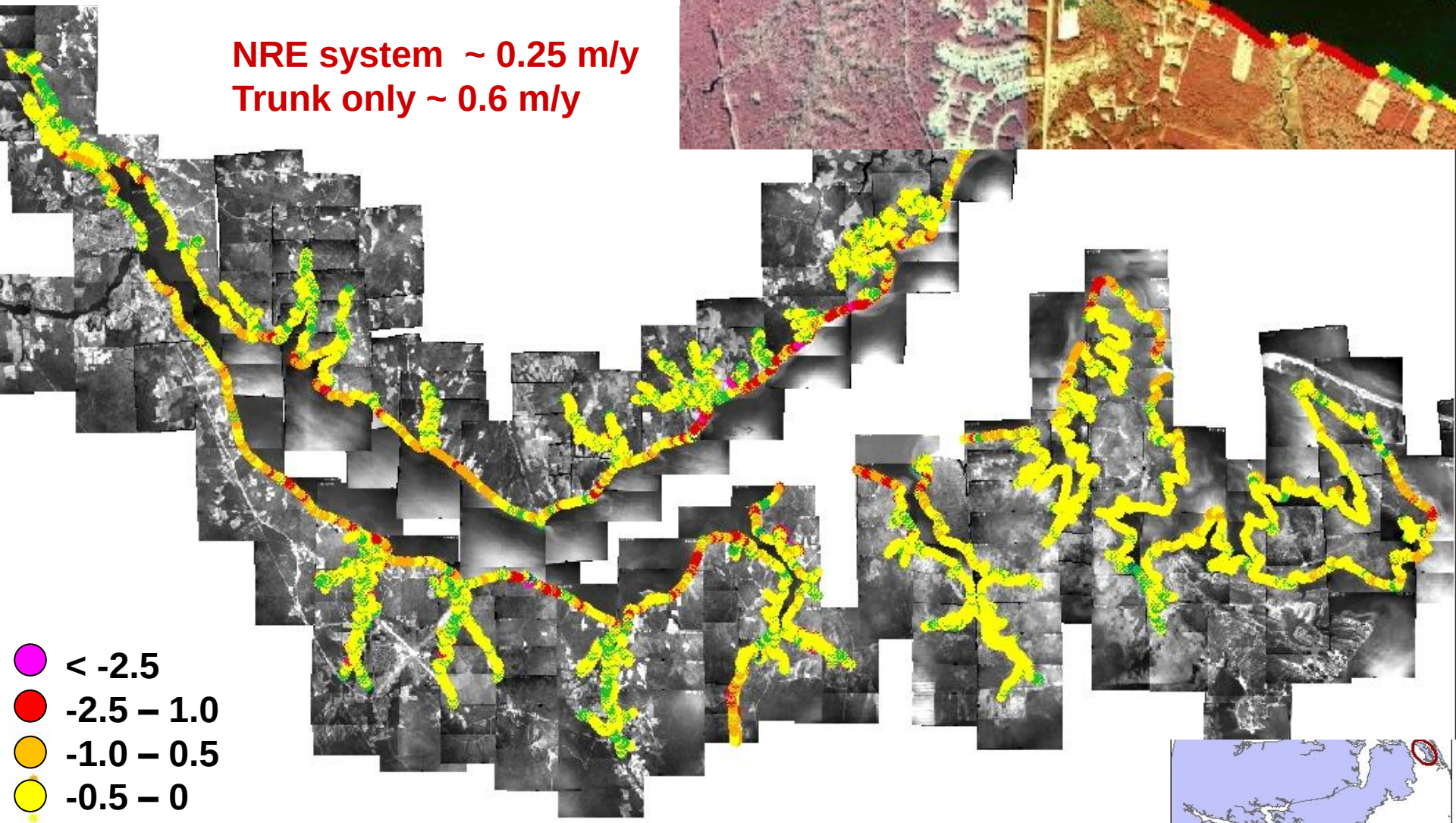




Cowart et al., in press

Shoreline Change Rate (m/y)

NRE system ~ 0.25 m/y
Trunk only ~ 0.6 m/y

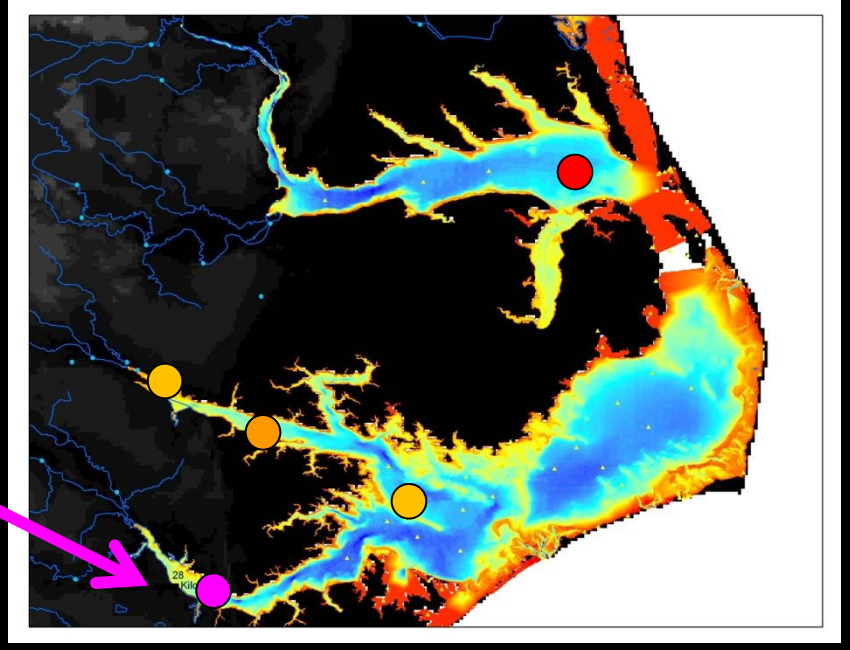


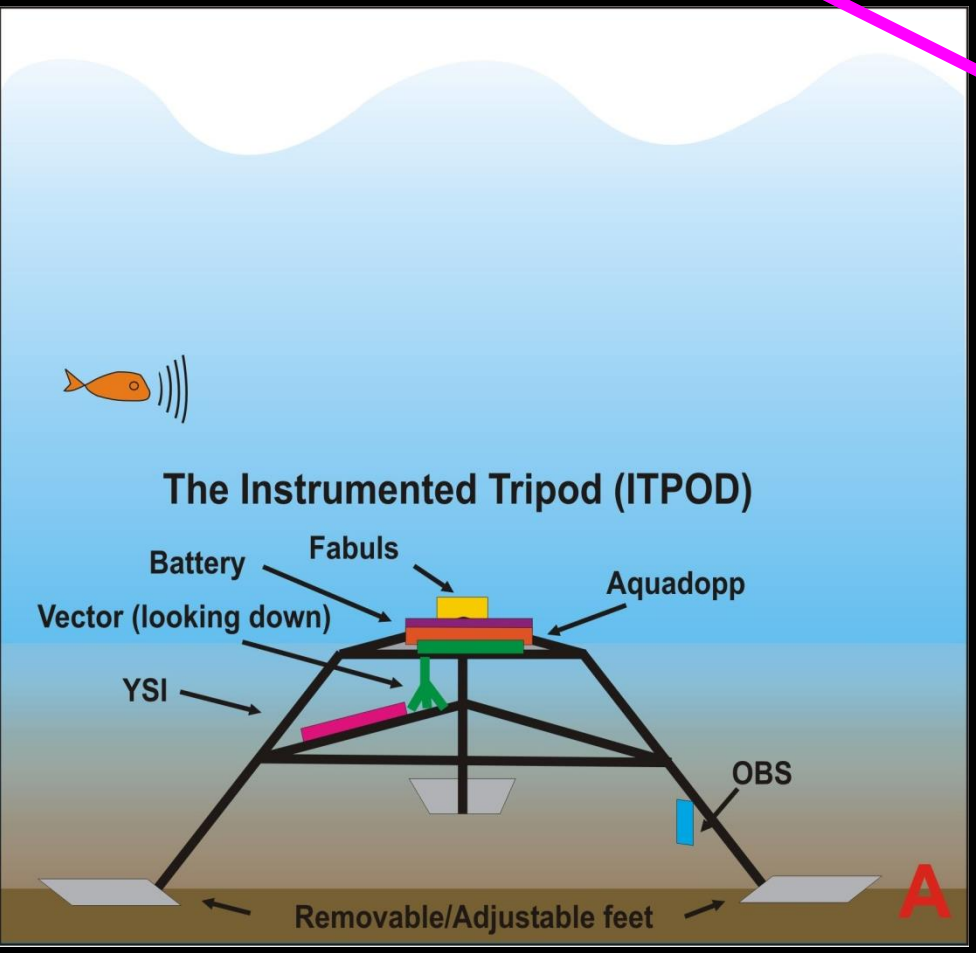
- < -2.5
- -2.5 – 1.0
- -1.0 – 0.5
- -0.5 – 0
- 0 – 0.5
- 0.5 – 1.0
- 1.0 – 2.5

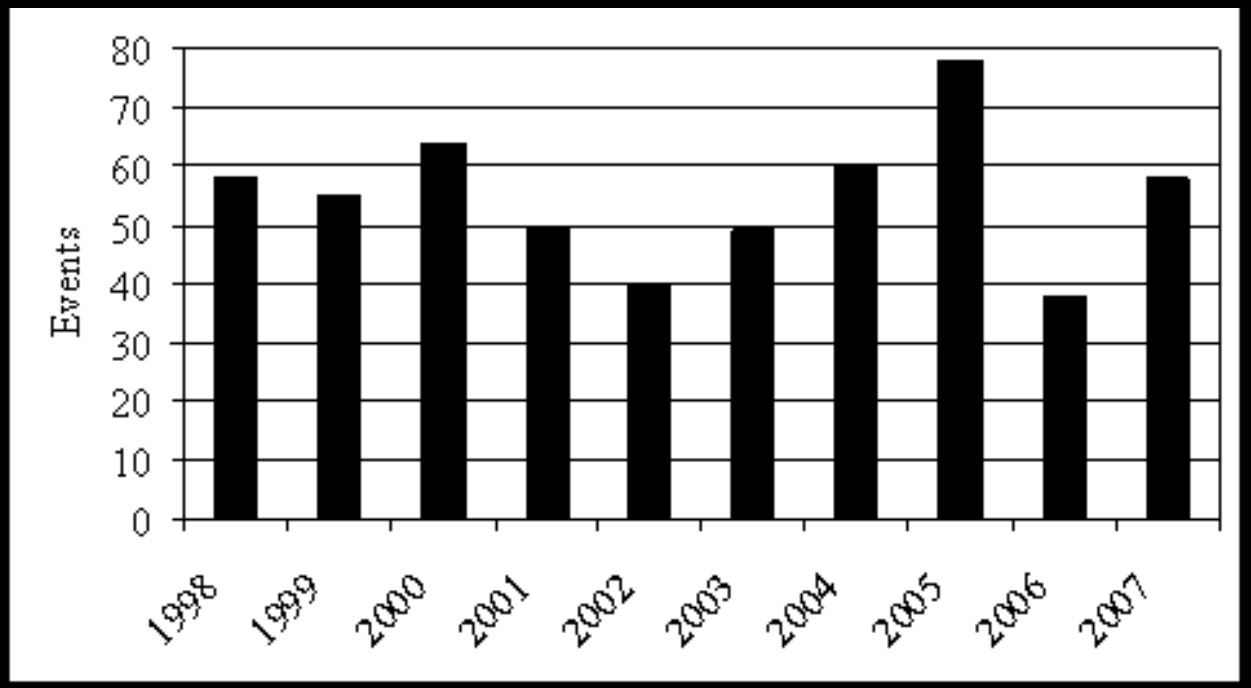
Kilometers

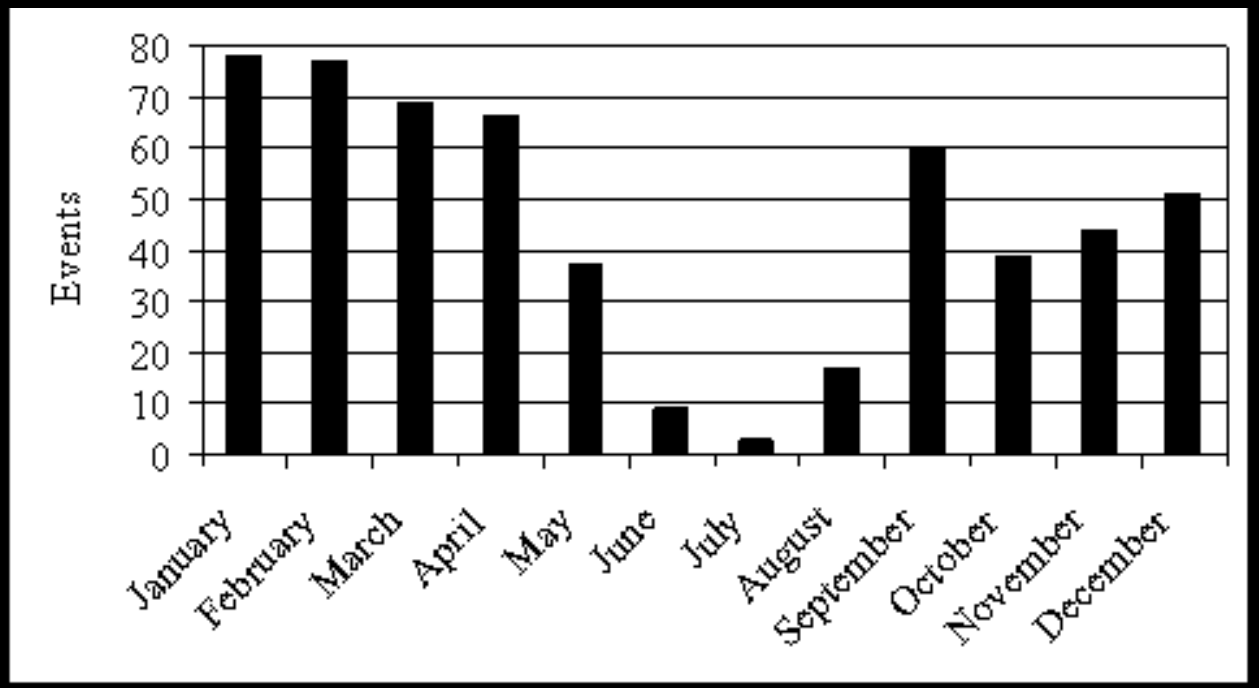
Seabed Dynamics

Neuse River Estuary





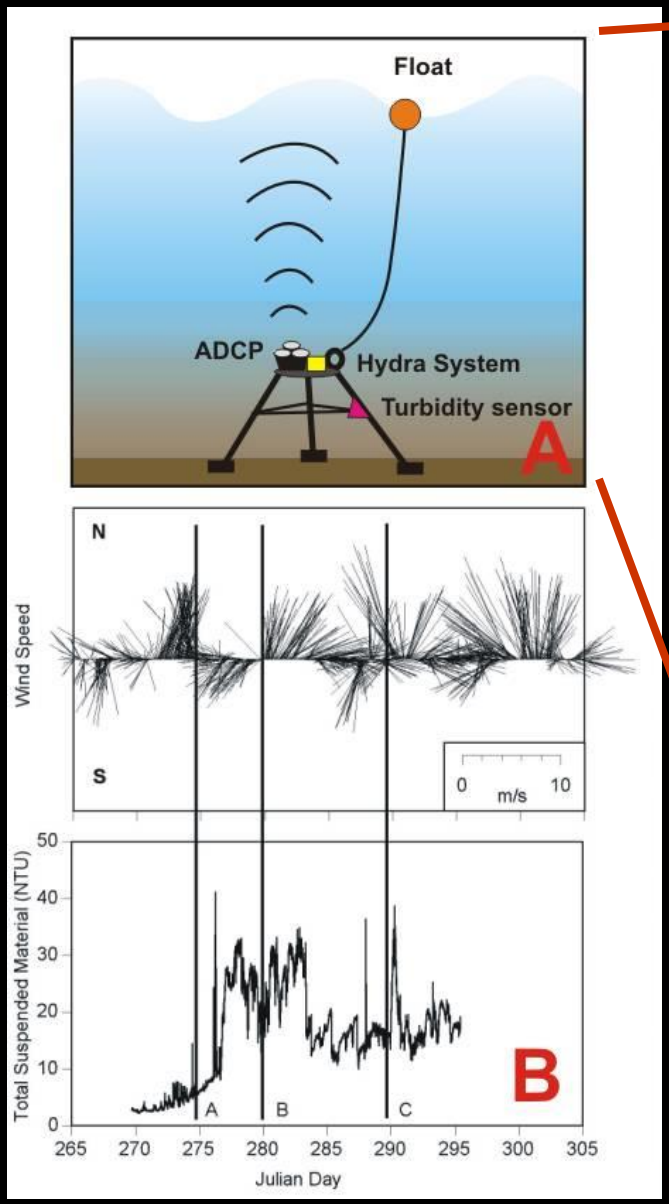


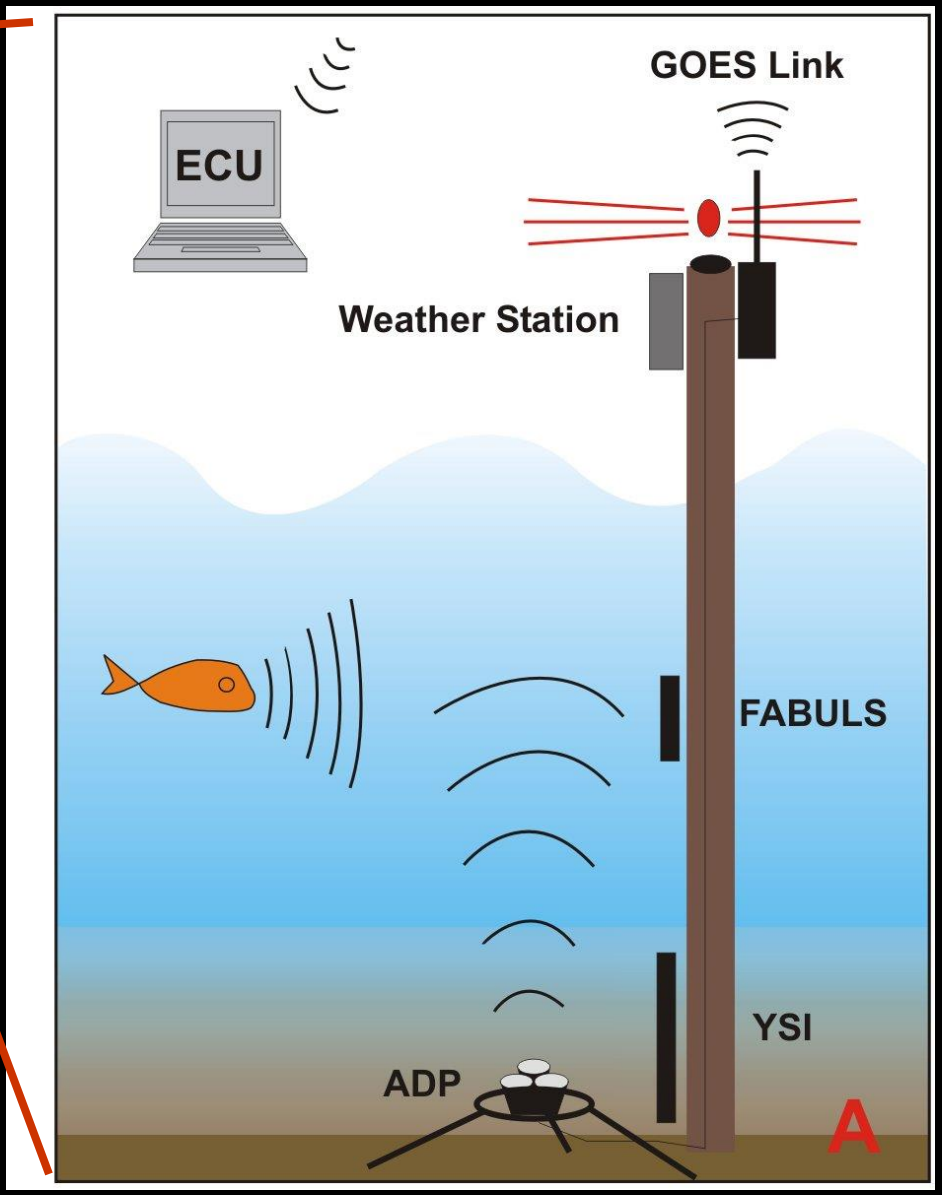


Wave-Driven Resuspension Events

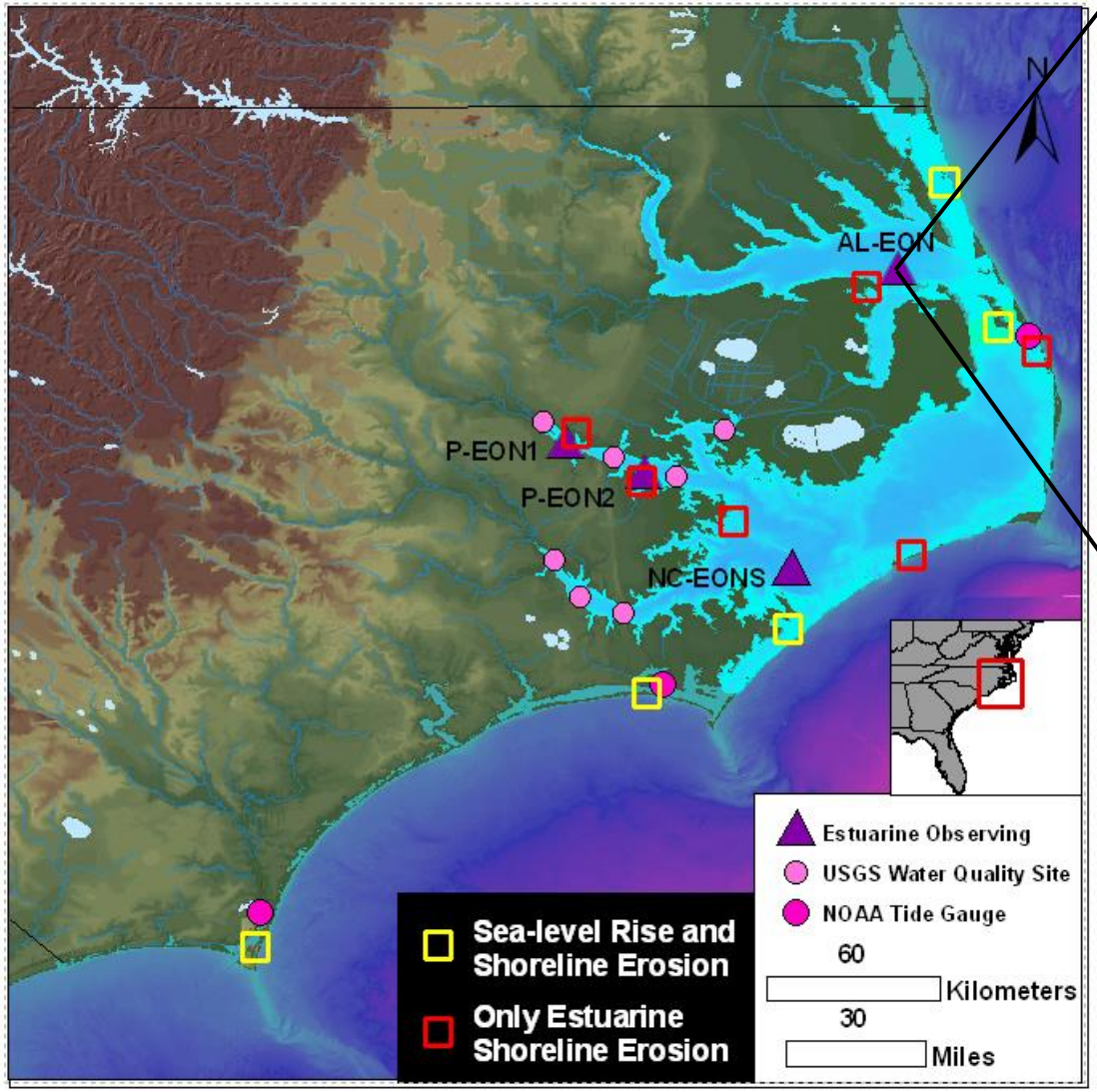
- ~50 events/year
- Considerable interannual variability
- Numerous in winter
- Infrequent in summer

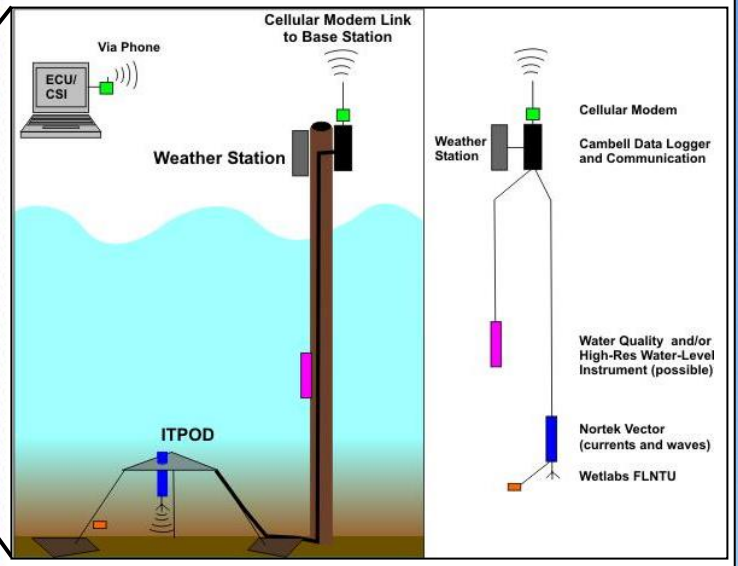
Sediment Dynamics & Water Quality – Need "real-time" data





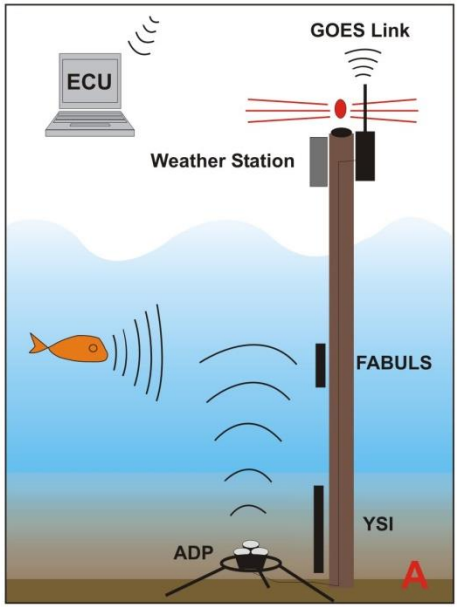
Estuarine Observing – 2008 Map

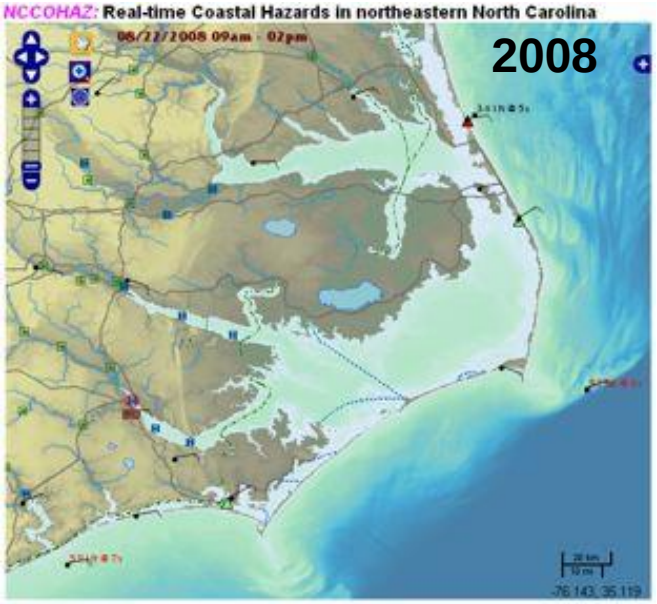




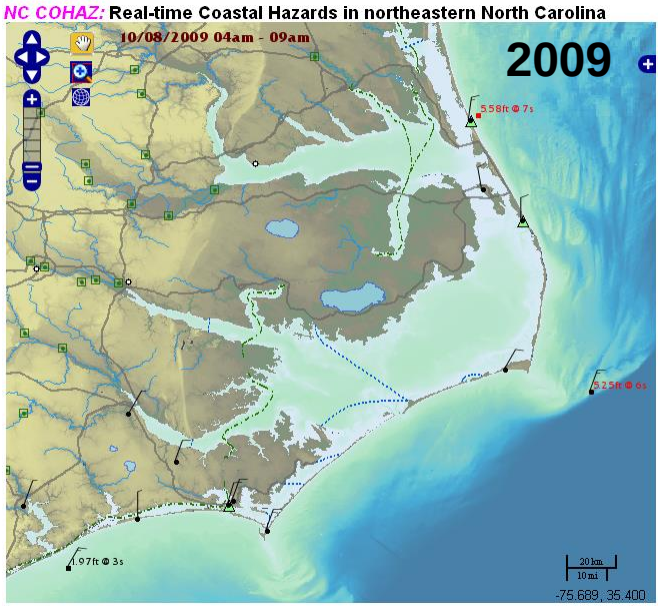
- Multiple observing platforms exists (AL-EON, USGS, US ACE) and are planned (NC EONS, P-EON1) within the APES
- An orchestrated network of instruments can provide invaluable information on the coastal effects of storms or other events in real time.

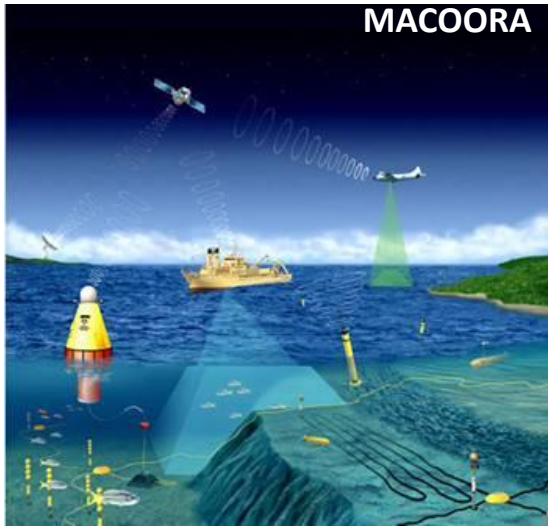
Need to think beyond the norm…methods of linking science and policy!

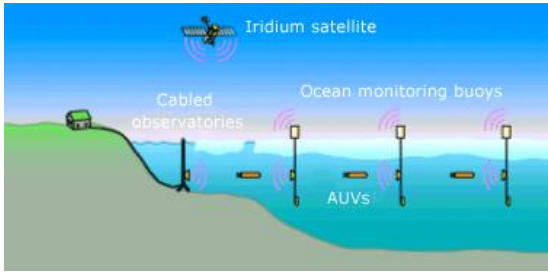


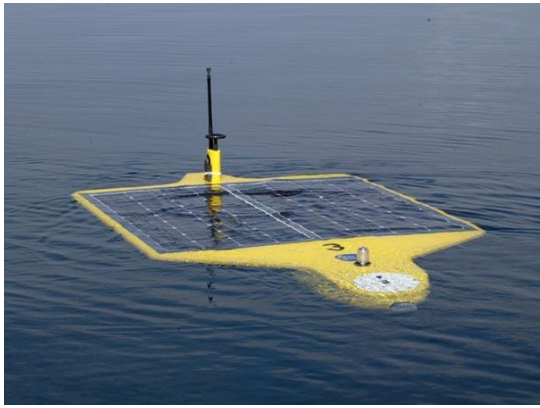


Moving in the wrong direction…









CORMP

Established in 2000

COASTAL OCEAN RESEARCH AND MONITORING PROGRAM

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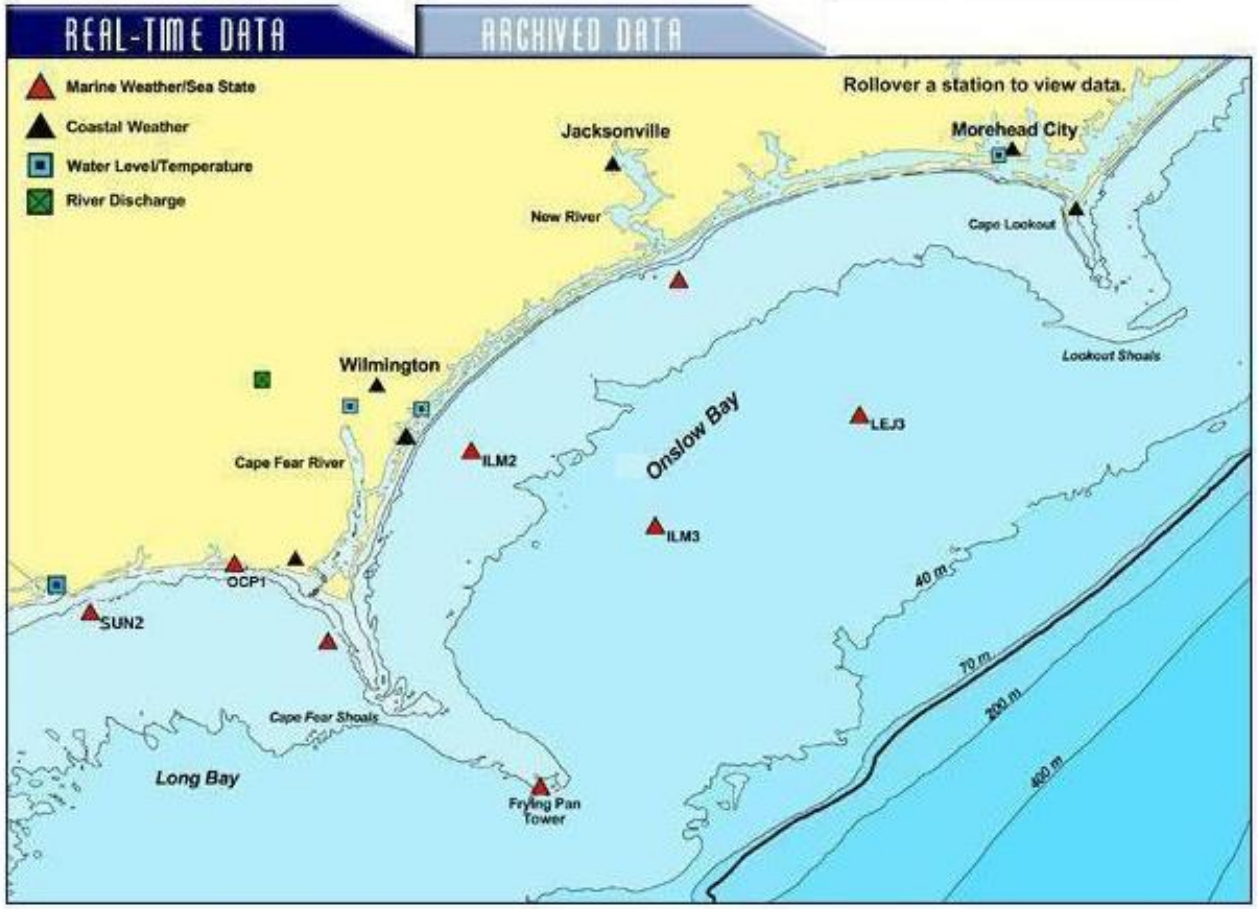
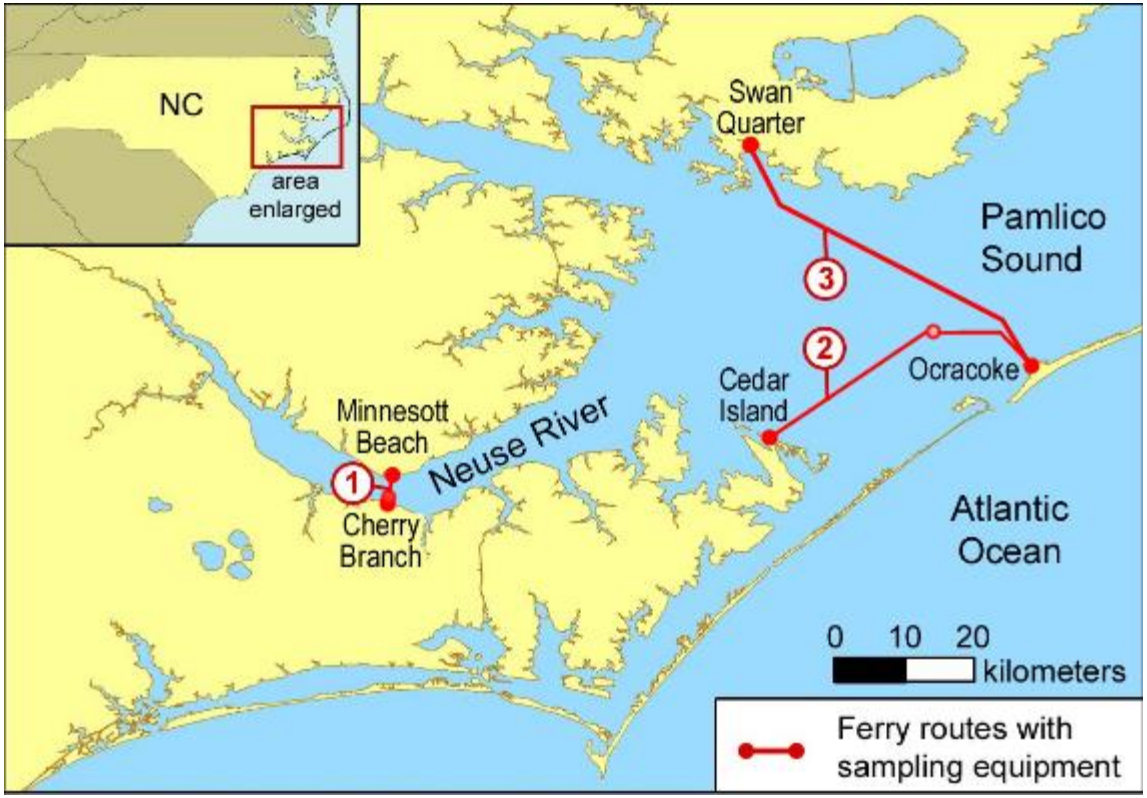


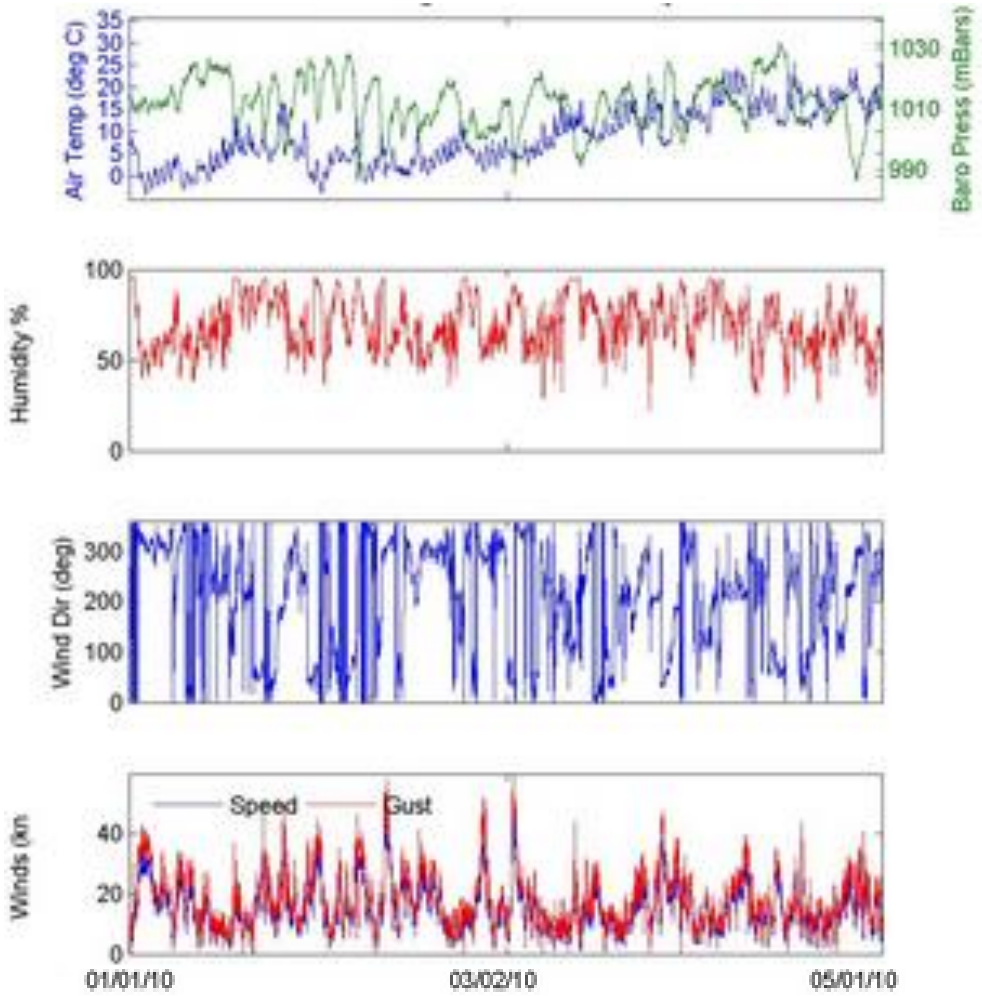
FerryMon…more than a decade of data.



The Albemarle Sound Site

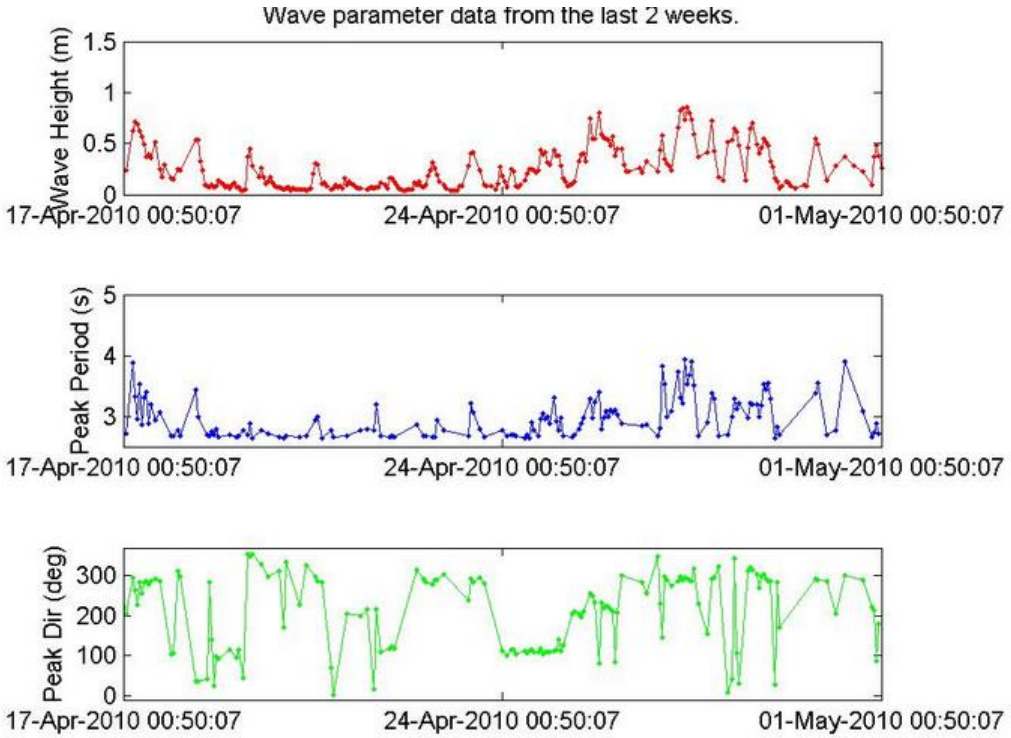
Started in 2007

Meteorological Data



The Albemarle Sound Site

Wave Data

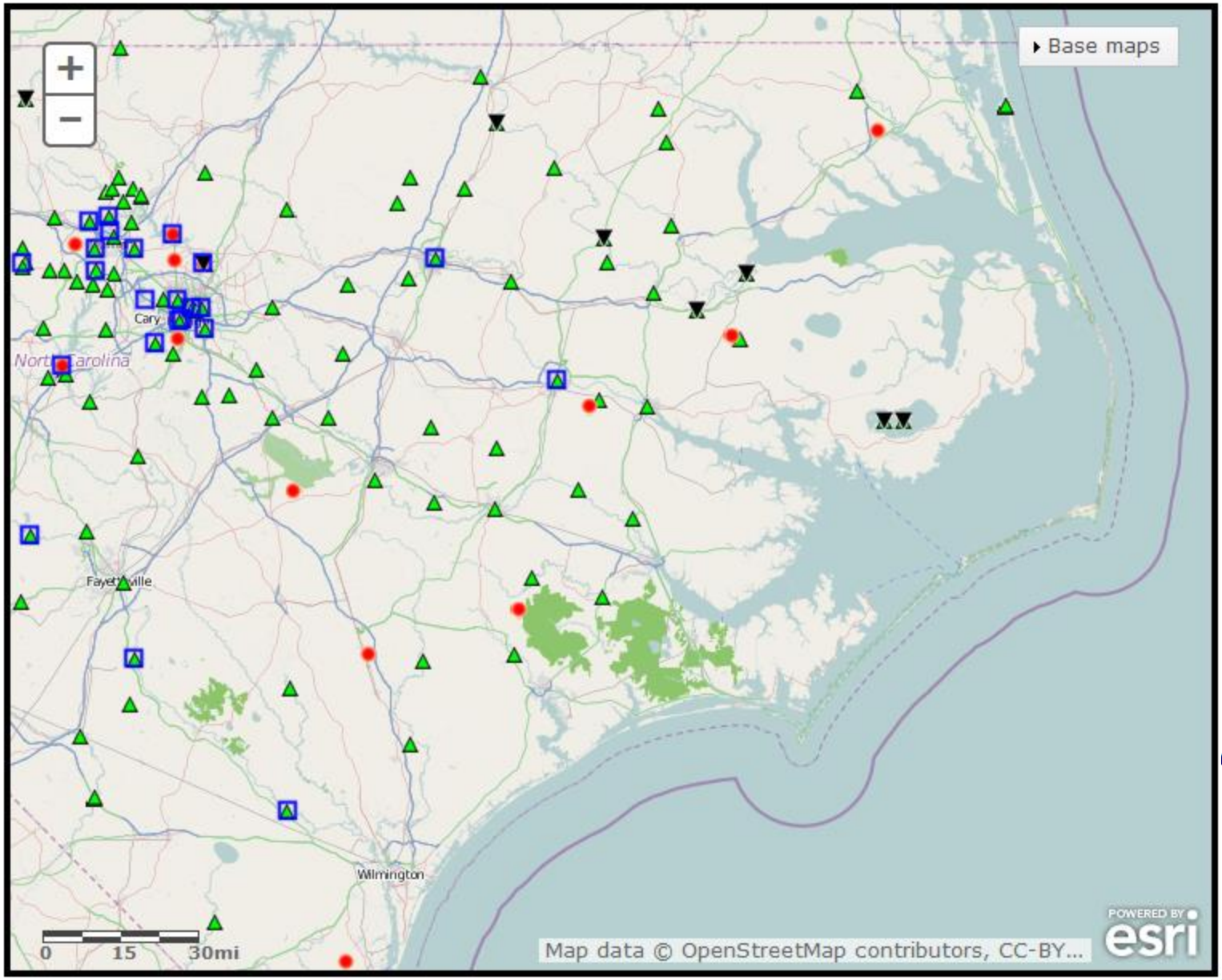


NC EONS Platform

A Multi-Institutional Approach

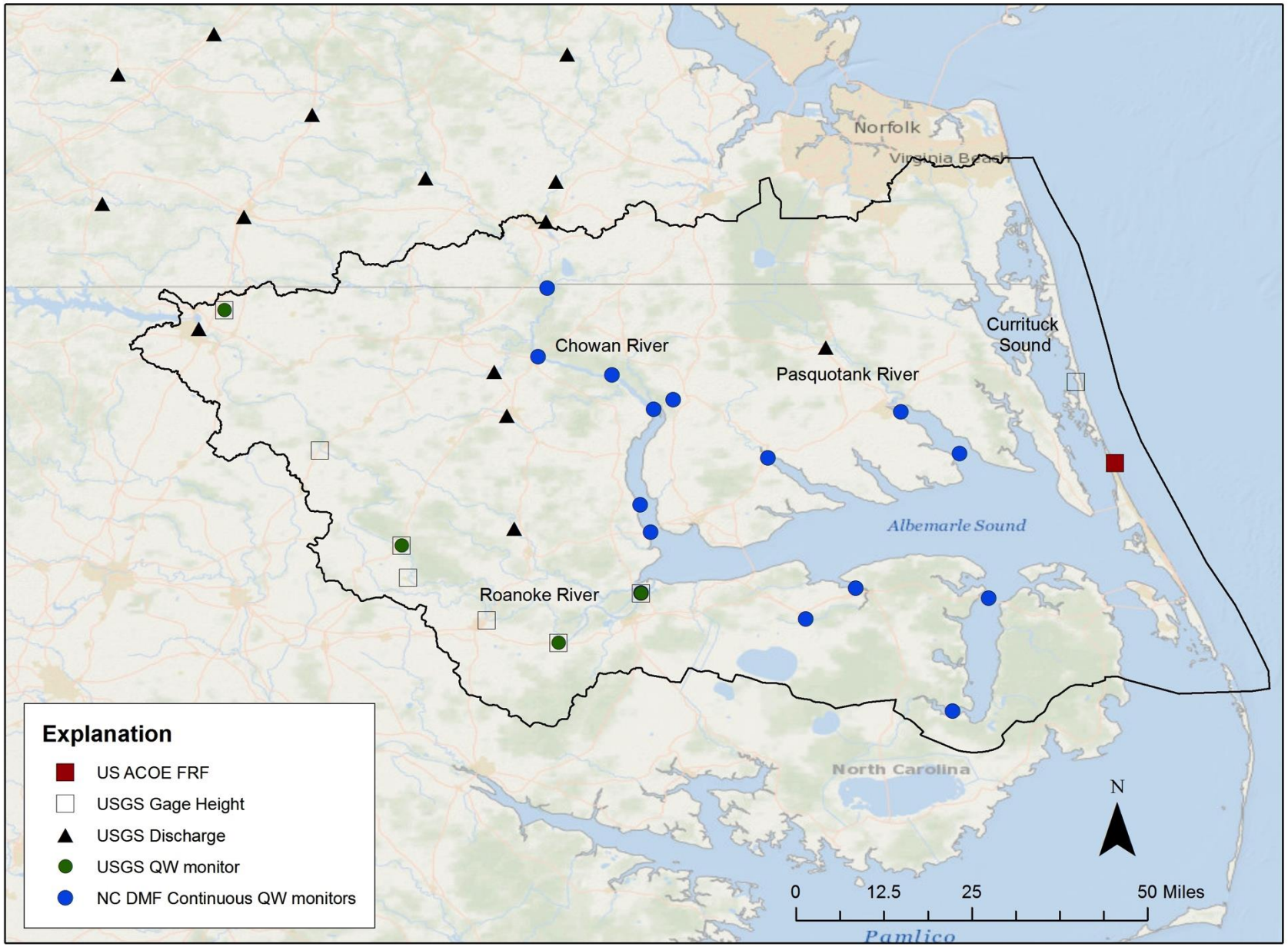
Organizational meeting at IMS
January 9, 2008

Real-Time Water Data for North Carolina



tus:

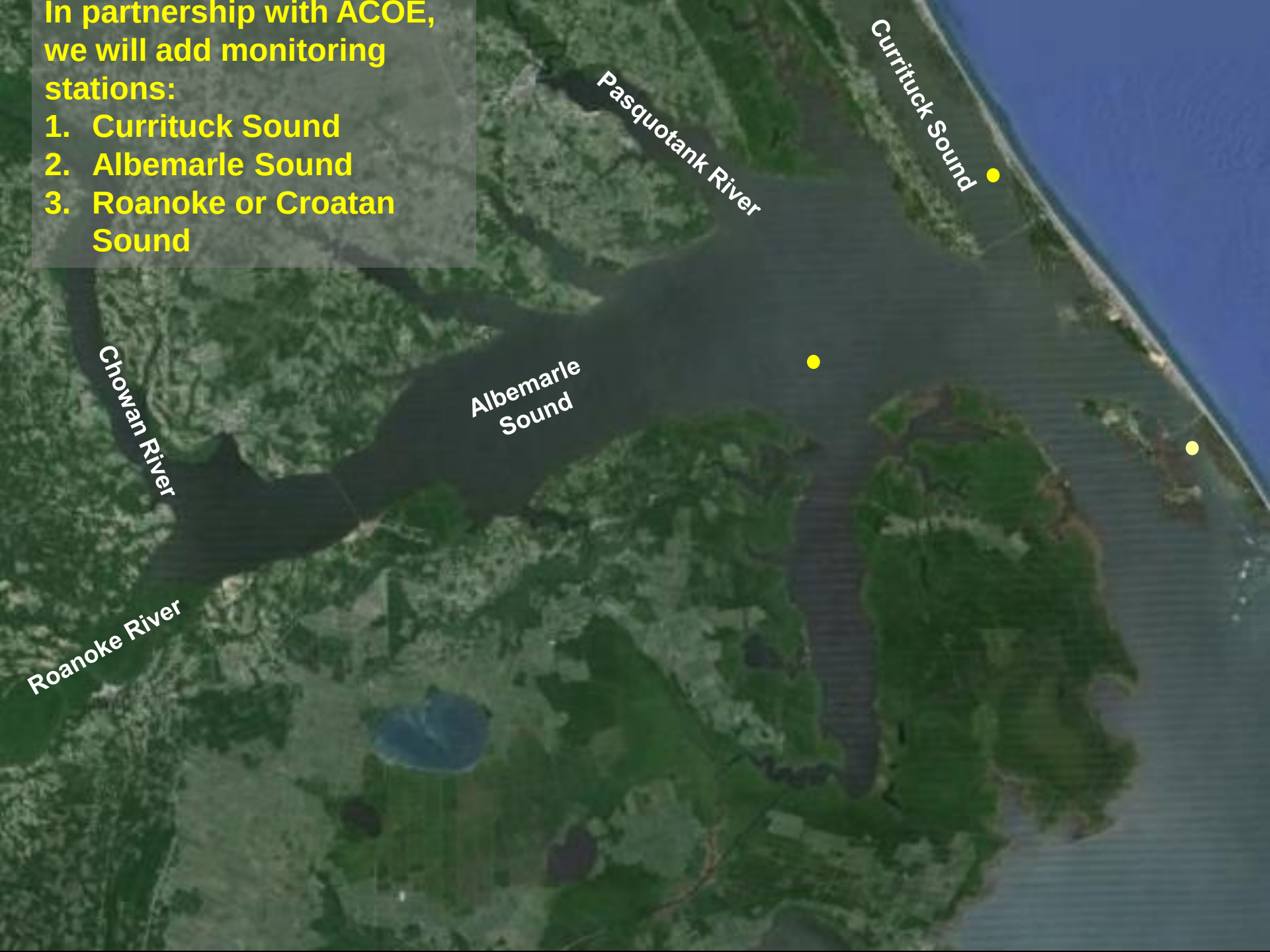
Continuous monitoring of physical parameters in surface waters of the Albemarle Sound Region



So, where do we go from here…

Coastal Studies Institute
University of North Carolina

USGS
science for a changing world


In partnership with ACOE, we will add monitoring stations:
1. Currituck Sound
2. Albemarle Sound
3. Roanoke or Croatan Sound
Pasquotank River
Currituck Sound
Chowan River
Albemarle Sound
Roanoke River

Currituck Sound

Water Level

Instrument Platform

Proposed Gages:

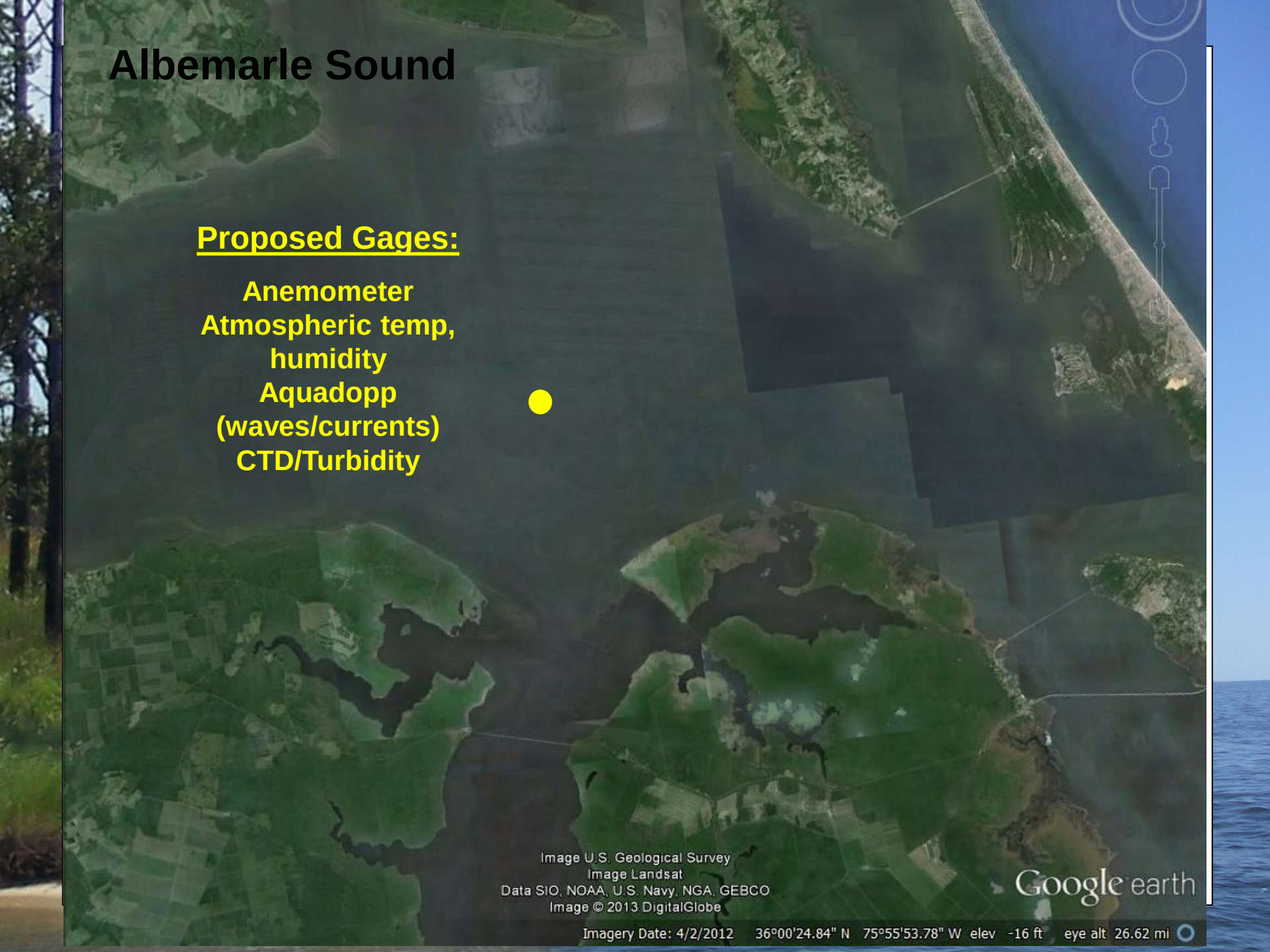
Anemometer
Atmospheric temp, humidity
Aquadopp (waves/currents)
Altimeter
Wet Lab (CTD. Turbidity, DO, Flourescence)

Imagery Date: 4/16/2011 36°10'43.36" N 75°45'33.56" W elev 0 ft eye alt 2123 ft

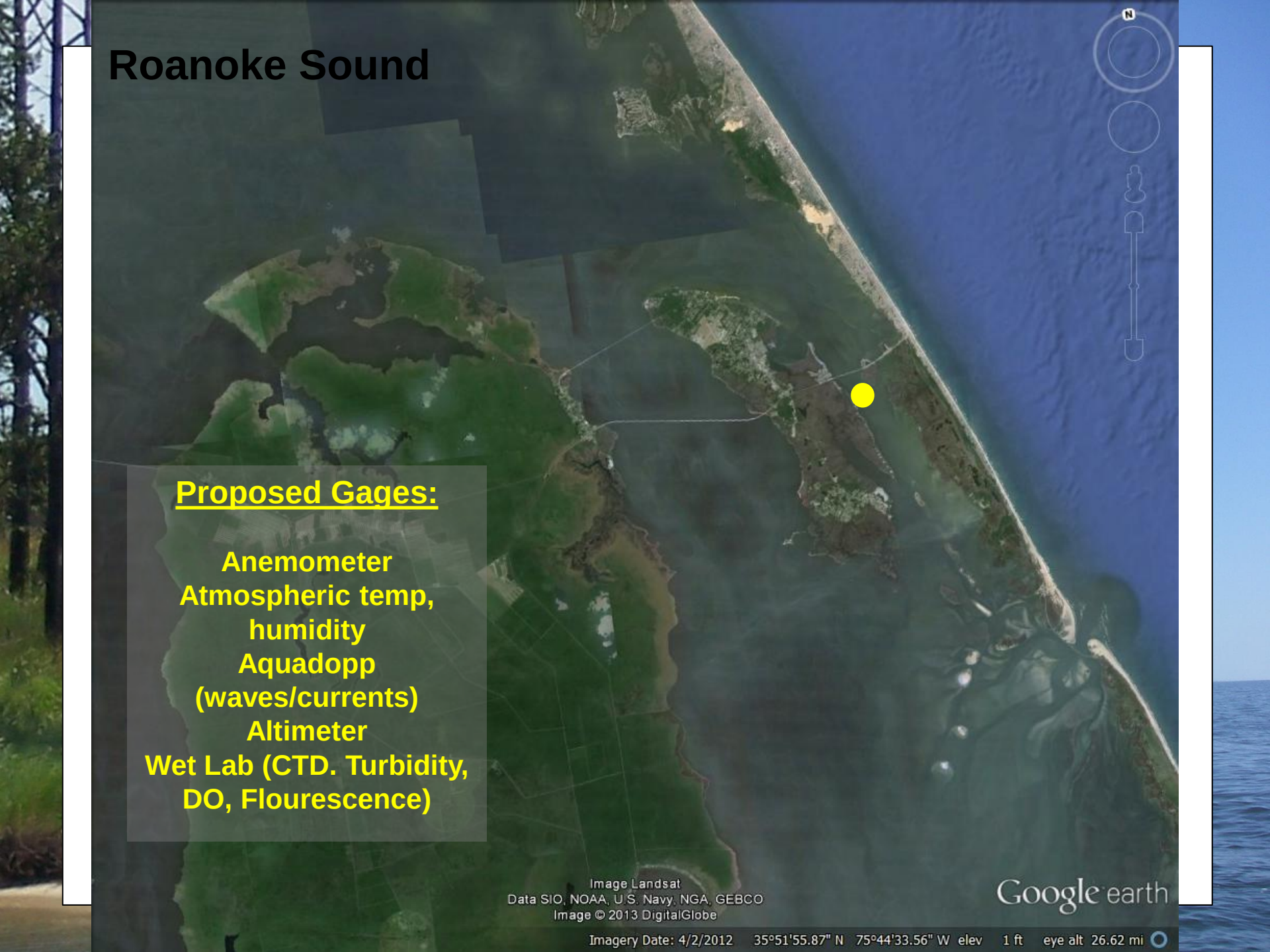
Albemarle Sound

Proposed Gages:

Anemometer
Atmospheric temp, humidity
Aquadopp (waves/currents)
CTD/Turbidity



Roanoke Sound



Proposed Gages:

Anemometer
Atmospheric temp, humidity
Aquadopp (waves/currents)
Altimeter
Wet Lab (CTD. Turbidity, DO, Flourescence)

Our next move needs to include you…

…your thoughts, ideas, and $upport.