

# The Northeastern Regional Association of Coastal Ocean Observing Systems

*Our mission is to produce, integrate and communicate  
high quality information that helps ensure safety,  
economic and environmental resilience, and  
sustainable use of the coastal ocean.*

**NERACOOOS**



**IOOS** | EYES ON THE OCEAN™



# The Integrated Ocean Observing System (IOOS)



Operated By:  
Federal Component:



Regional Component:



Produce | Integrate | Communicate

IOOS | EYES ON THE OCEAN™





**79%**

of NERACOOS funds go toward ocean observations, modeling, and data management



**48,597**

people used the NERACOOS website in 2016



organizations receive funding from NERACOOS



**1.8 MILLION**

web page views were recorded for NERACOOS.org and NERACOOS-funded buoys on NDBC.NOAA.gov

**160+**

organizations distribute NERACOOS data on their websites

NERACOOS had a



**28%**

increase in likes on Facebook

**245**

Ocean and atmospheric sensors transmit environmental data 24/7 with support from NERACOOS



# How do you measure success?





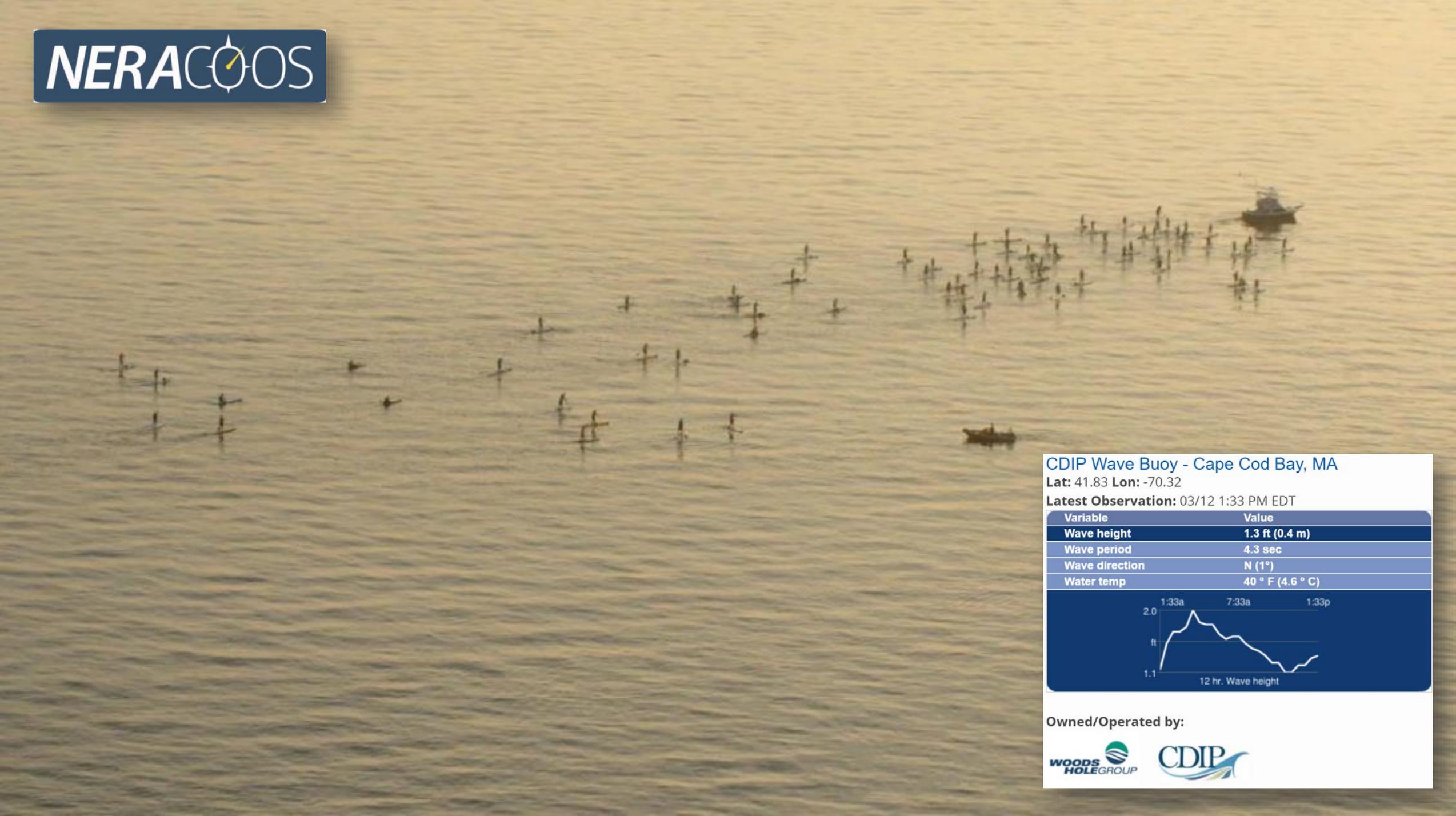
*“I am just one representative of the industry, everybody I know uses these [NERACOOS] buoys and they have them on their phones, so it’s extremely important to us.”*

- Jim Dow, Lobsterman, Maine Lobstermen's Association



*“We use the buoy to help us manage the risk of navigating the oil barges through the canal.”*

- Ed LeBlanc, US Coast Guard

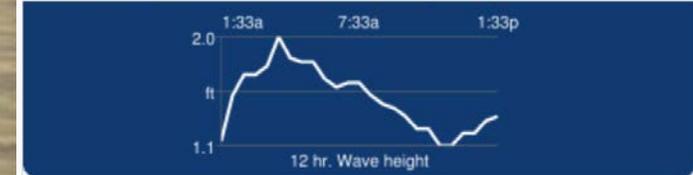


### CDIP Wave Buoy - Cape Cod Bay, MA

Lat: 41.83 Lon: -70.32

Latest Observation: 03/12 1:33 PM EDT

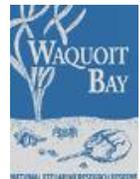
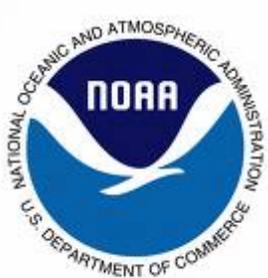
Variable	Value
Wave height	1.3 ft (0.4 m)
Wave period	4.3 sec
Wave direction	N (1°)
Water temp	40 ° F (4.6 ° C)



Owned/Operated by:







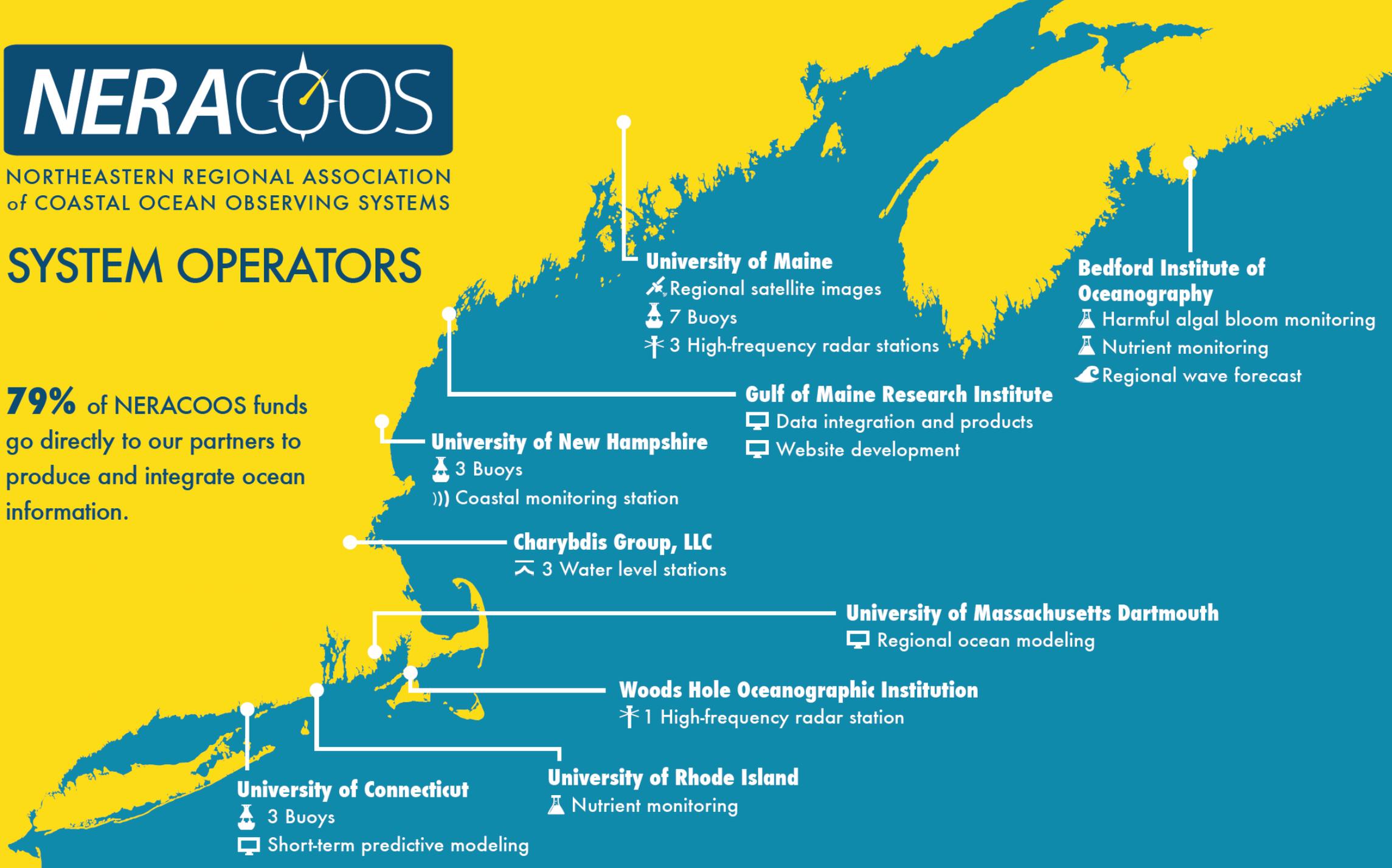
Building a Region-Wide Information System from the Bottom Up



NORTHEASTERN REGIONAL ASSOCIATION  
of COASTAL OCEAN OBSERVING SYSTEMS

## SYSTEM OPERATORS

**79%** of NERACOOS funds go directly to our partners to produce and integrate ocean information.



### University of Maine

- ✂ Regional satellite images
- 📡 7 Buoys
- 📡 3 High-frequency radar stations

### Bedford Institute of Oceanography

- 📡 Harmful algal bloom monitoring
- 📡 Nutrient monitoring
- 🌊 Regional wave forecast

### Gulf of Maine Research Institute

- 📡 Data integration and products
- 📡 Website development

### University of New Hampshire

- 📡 3 Buoys
- 📡 Coastal monitoring station

### Charybdis Group, LLC

- 📡 3 Water level stations

### University of Massachusetts Dartmouth

- 📡 Regional ocean modeling

### Woods Hole Oceanographic Institution

- 📡 1 High-frequency radar station

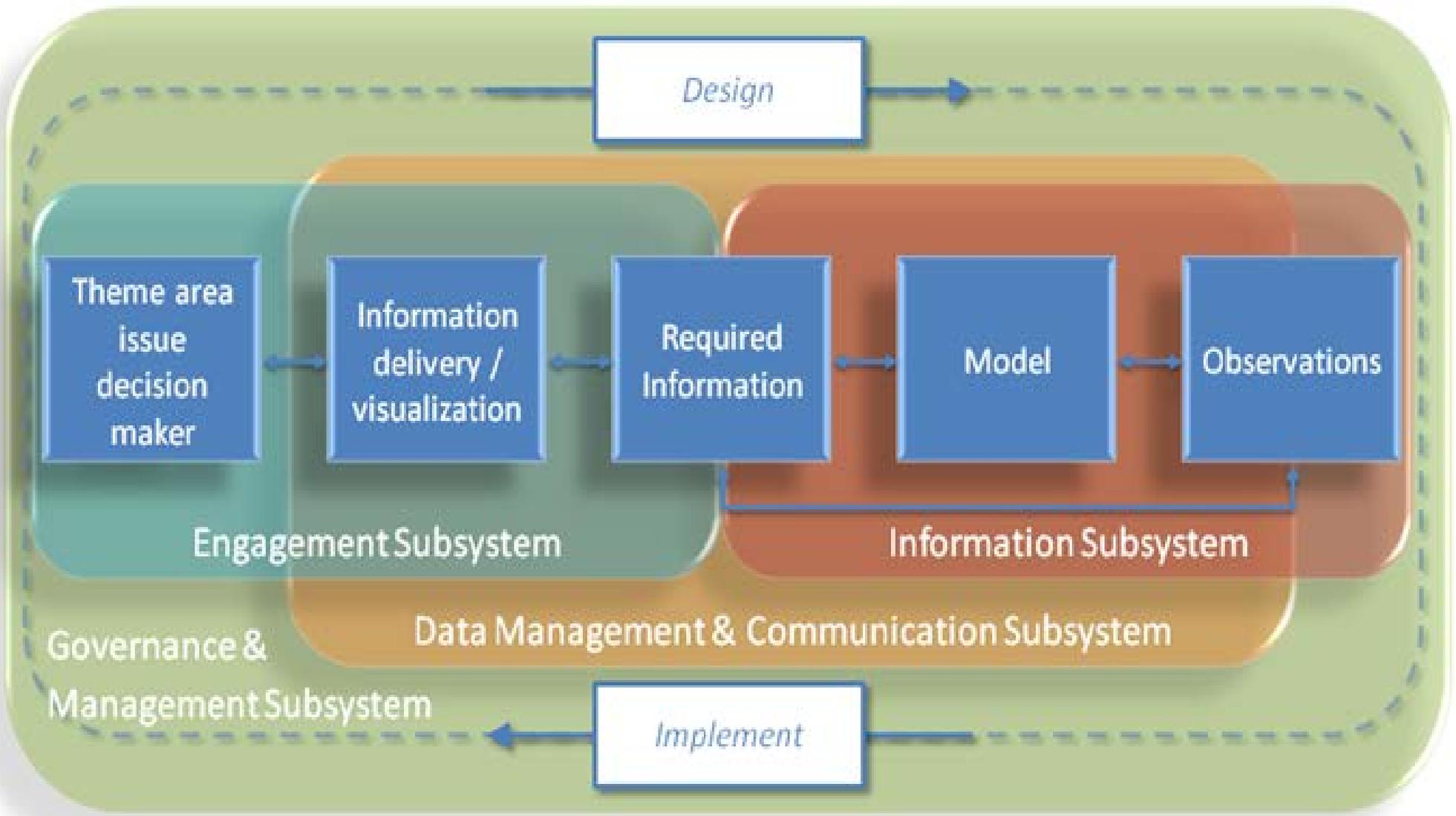
### University of Connecticut

- 📡 3 Buoys
- 📡 Short-term predictive modeling

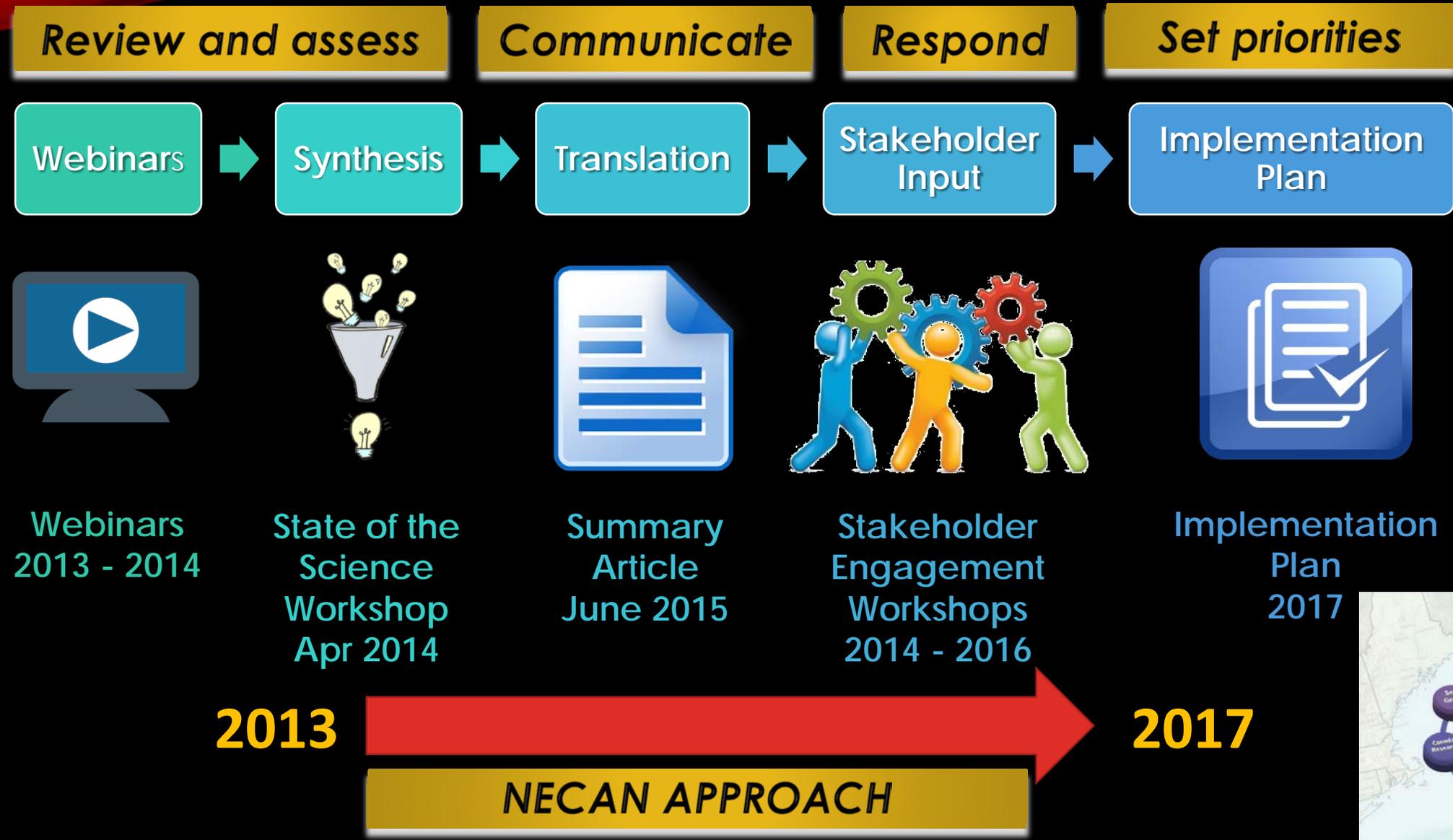
### University of Rhode Island

- 📡 Nutrient monitoring

# Engage and Collaborate



# The Northeast Coastal Acidification Network - NECAN





**Integrated Sentinel Monitoring Network - ISMN**



# Regional Harmful Algal Bloom workshop – March 2018



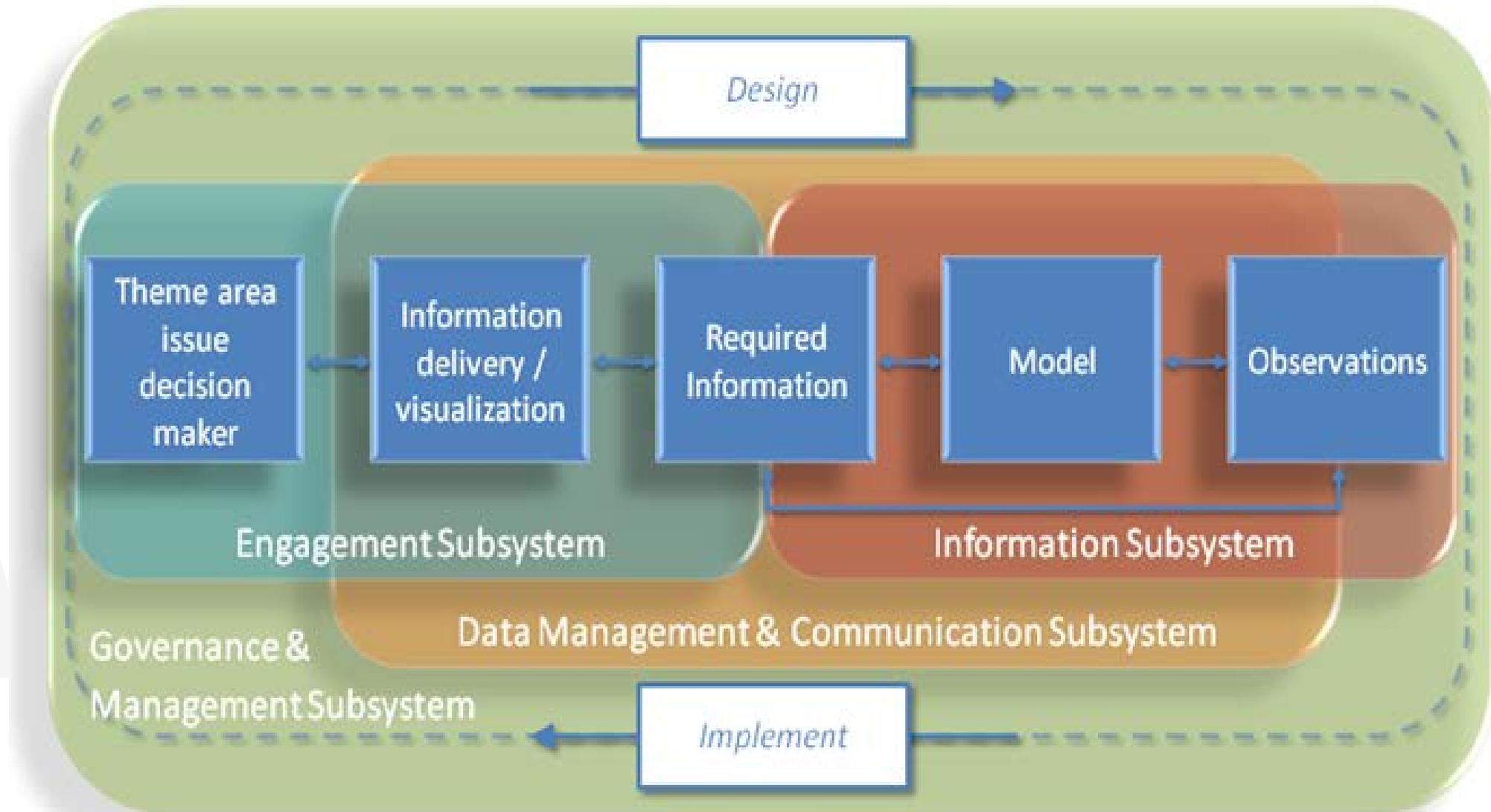
**NCCOS**

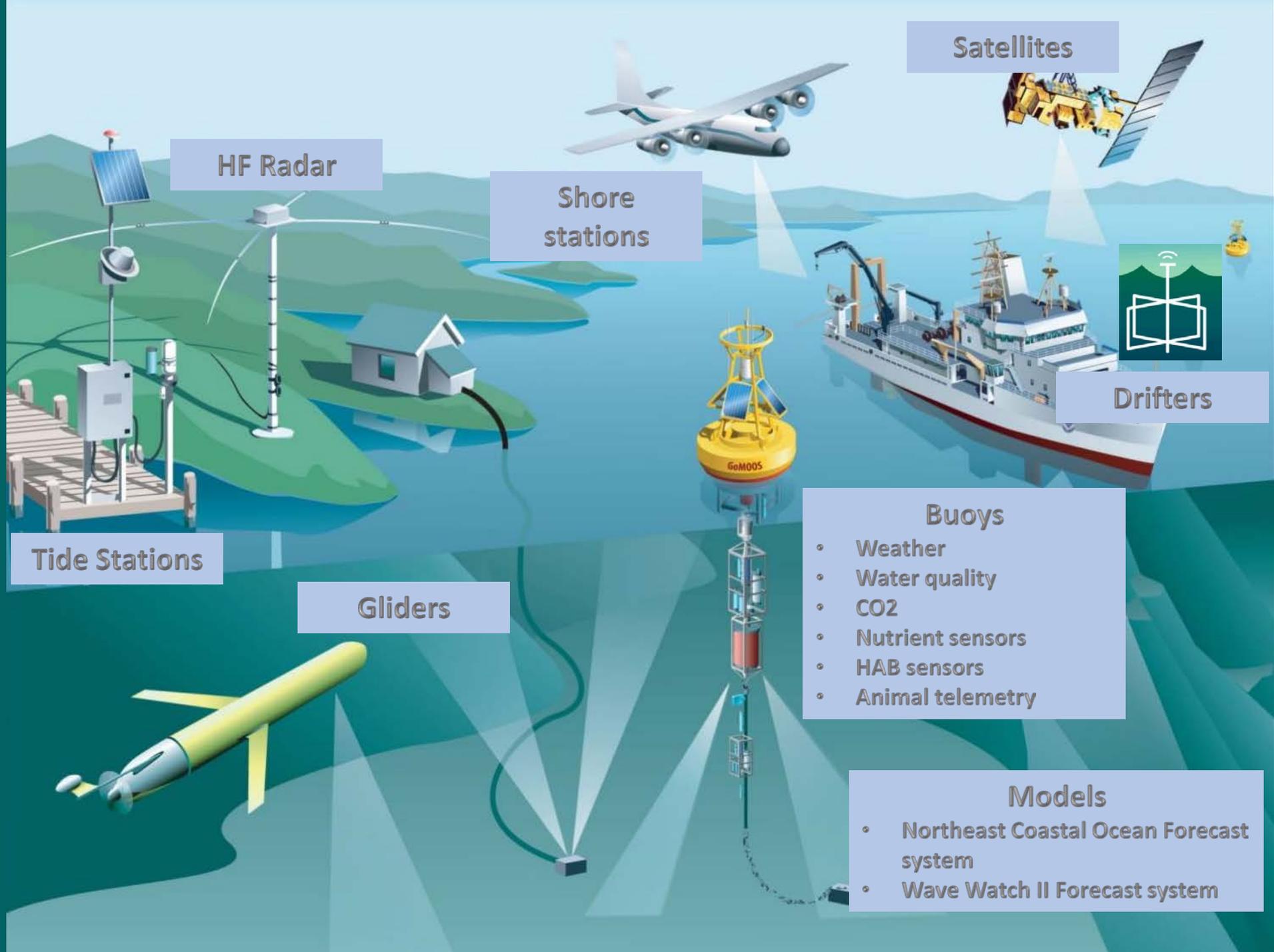
NATIONAL CENTERS FOR  
COASTAL OCEAN SCIENCE



# Regional Partner Meetings

# Generate Information





Satellites

HF Radar

Shore stations

Tide Stations

Gliders



Drifters

- Buoys
- Weather
  - Water quality
  - CO2
  - Nutrient sensors
  - HAB sensors
  - Animal telemetry

- Models
- Northeast Coastal Ocean Forecast system
  - Wave Watch II Forecast system

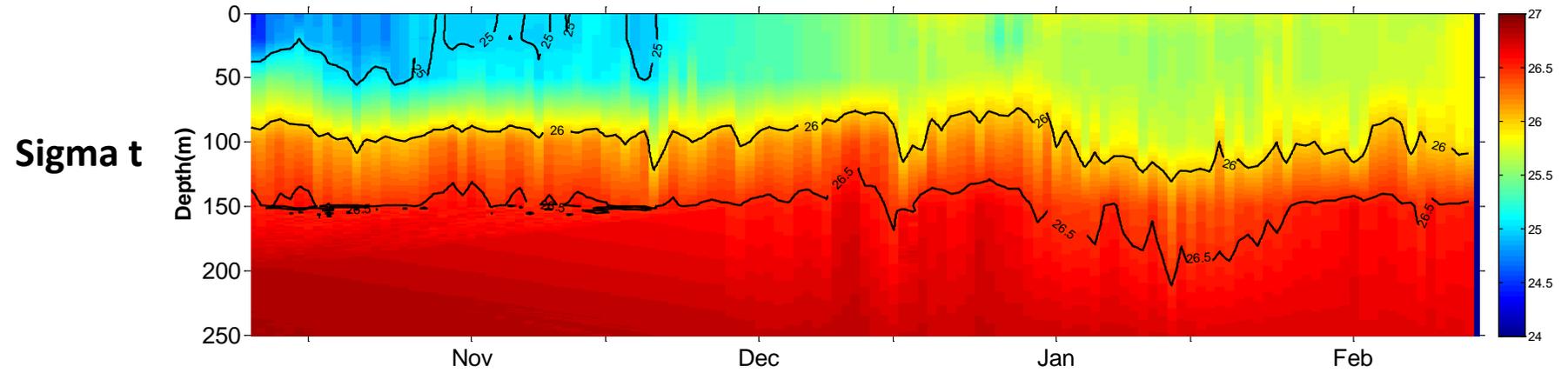


2017  
85%  
of SUBSURFACE  
MEASUREMENTS

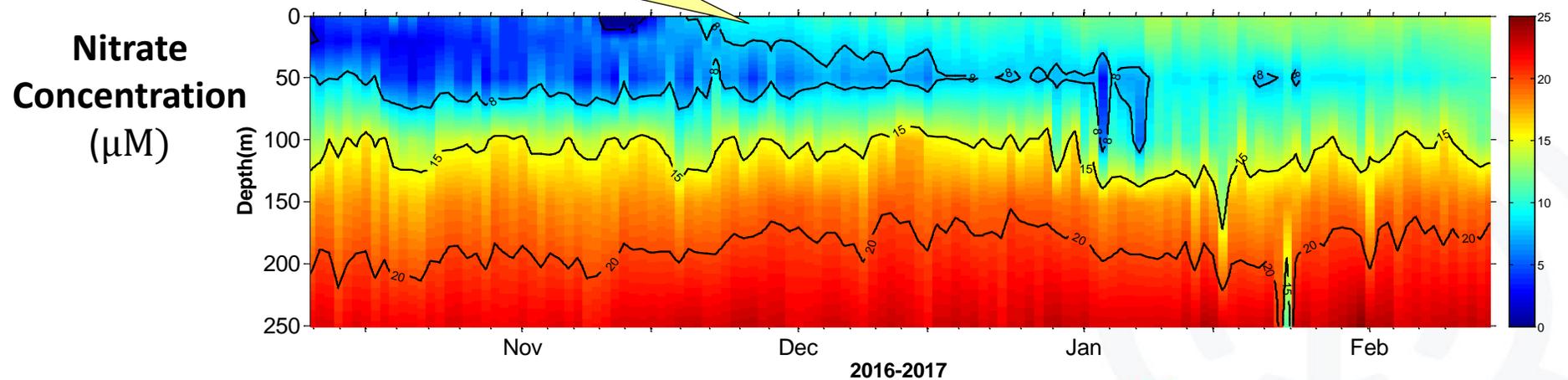
85%  
of SUBSURFACE  
MEASUREMENTS  
DEEPER THAN  
15 METERS

# Nutrient Observatory – Buoy M

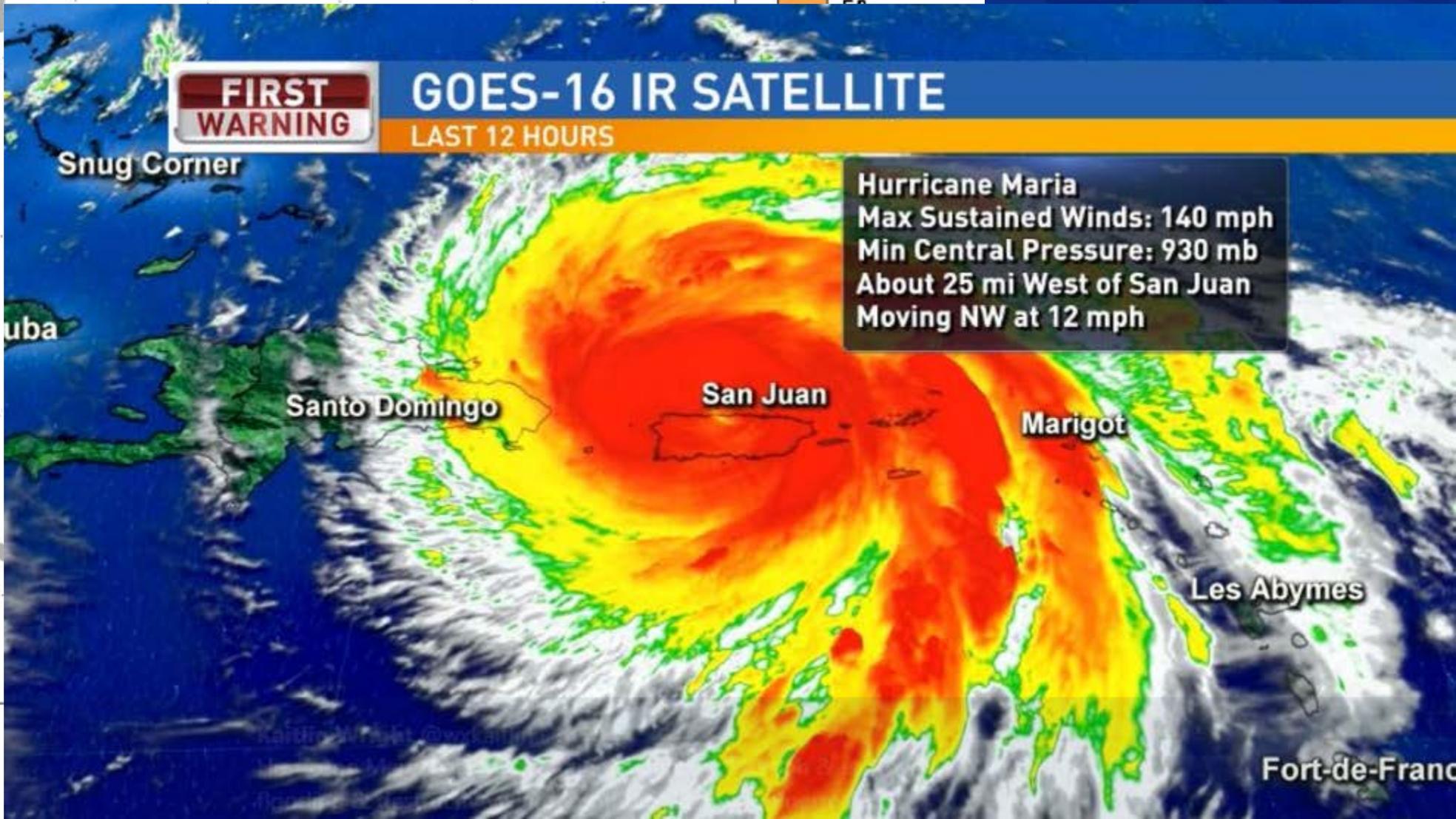
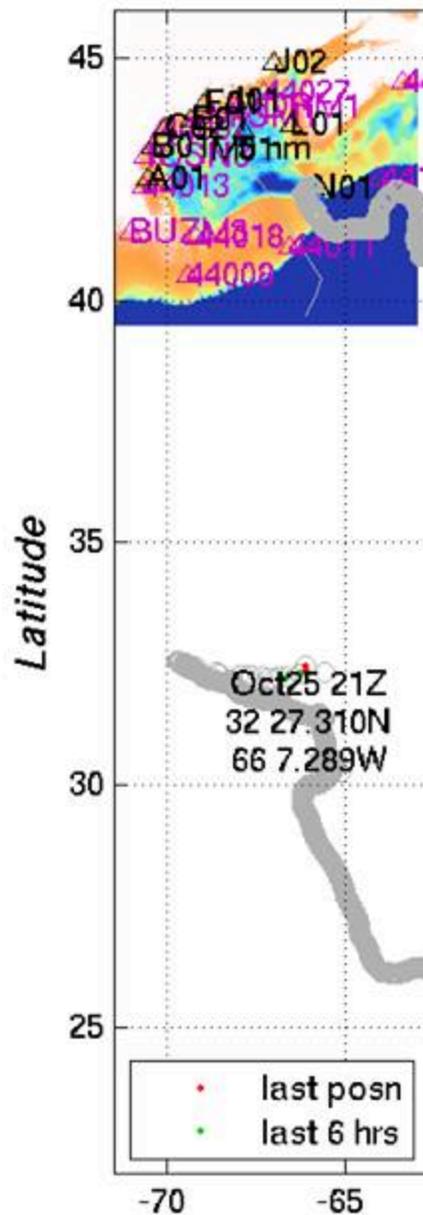
Reprocessed  
data  
Oct. 9, 2016 to  
Feb.14, 2017



Nitrate at 1m and 20m greater than at 50m, capping off low N layer beneath

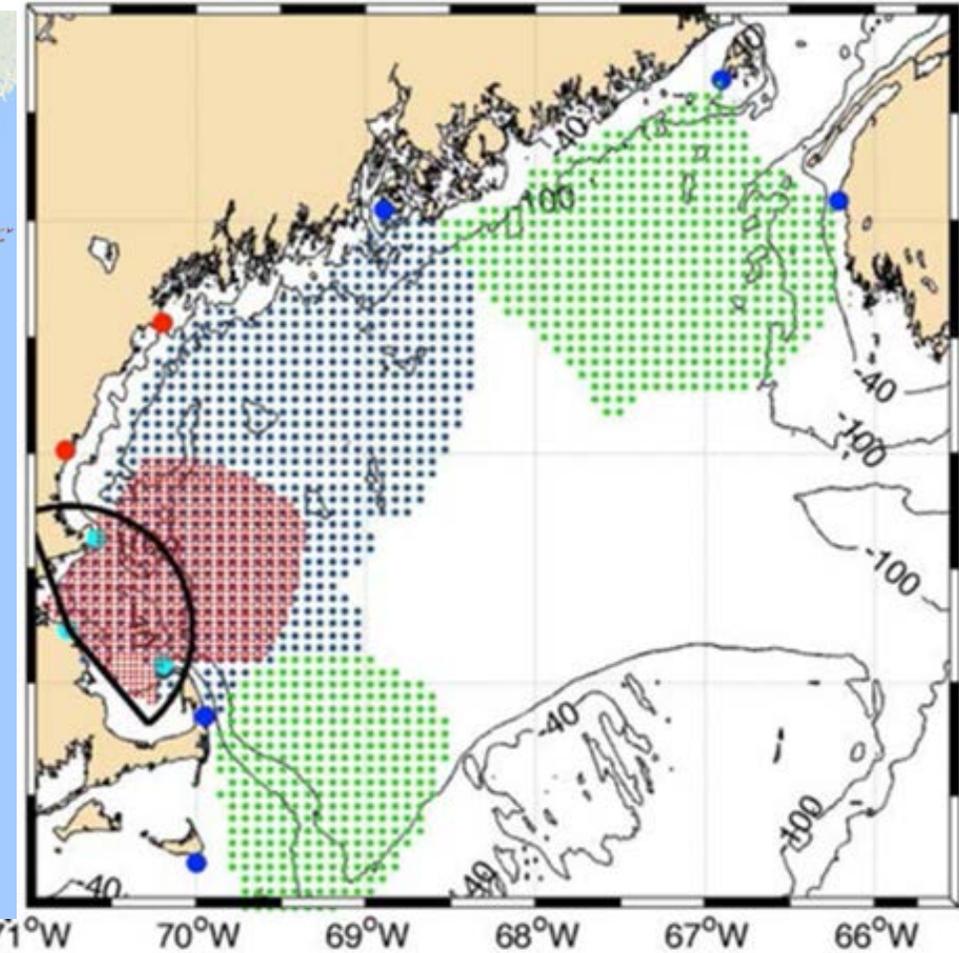
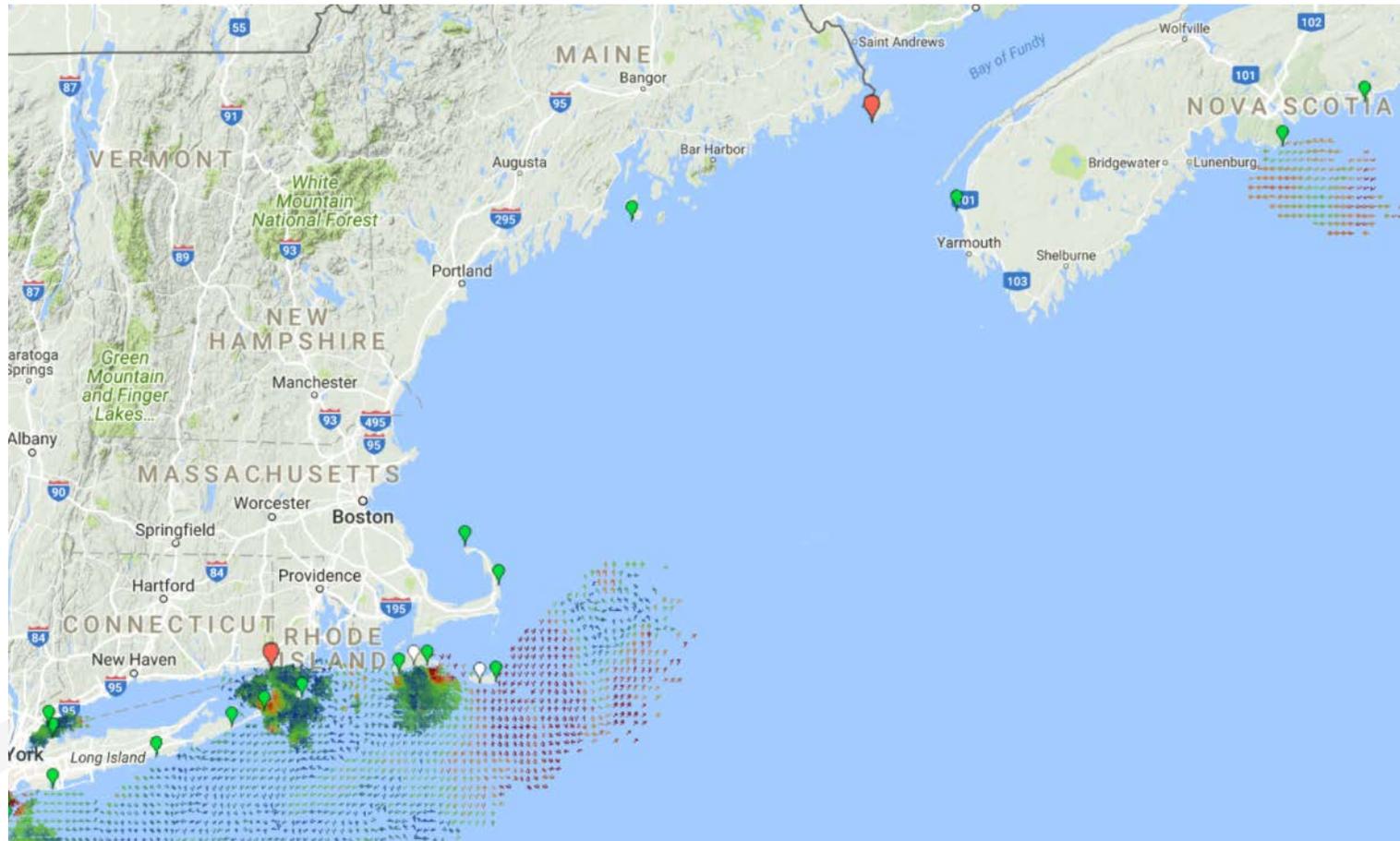


Mooring N0116 Positions: as of 2017-10-26 04:40:07





# Expanding Surface Current measurements



# SeaTrac

## Development Platform



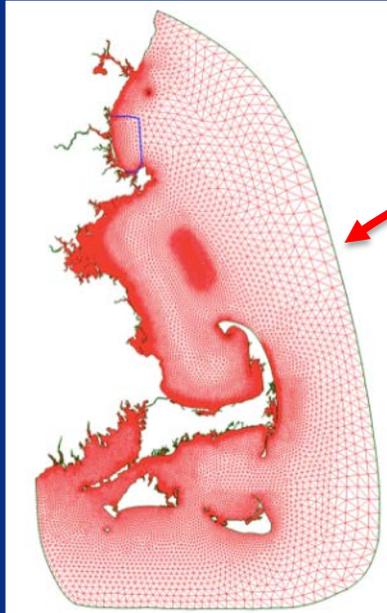
Two pilot projects selected for 2018



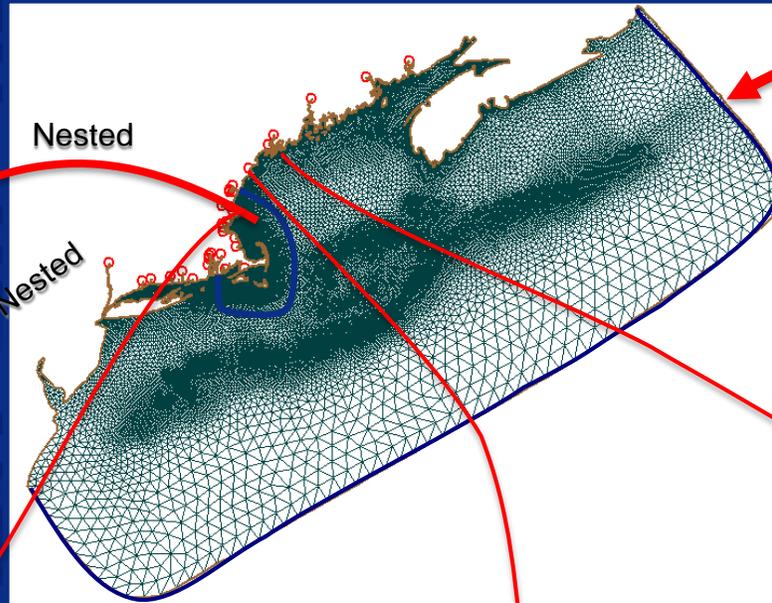
# Northeast Coastal Ocean Forecast System (NECOFS)



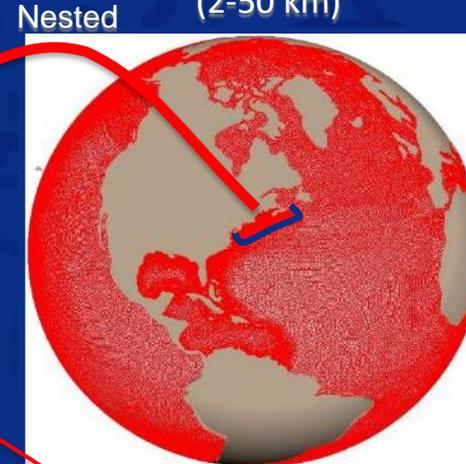
Mass-Coastal FVCOM  
(10 m-5 km)



GOM-FVCOM (0.3-15 km)



Global-FVCOM  
(2-50 km)



Nested



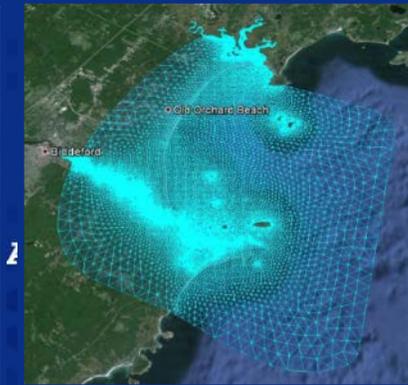
Scituate, MA (up to 10 m)



Boston Harbor, MA (up to 10 m)



Hampton, NH (up to 10 m)

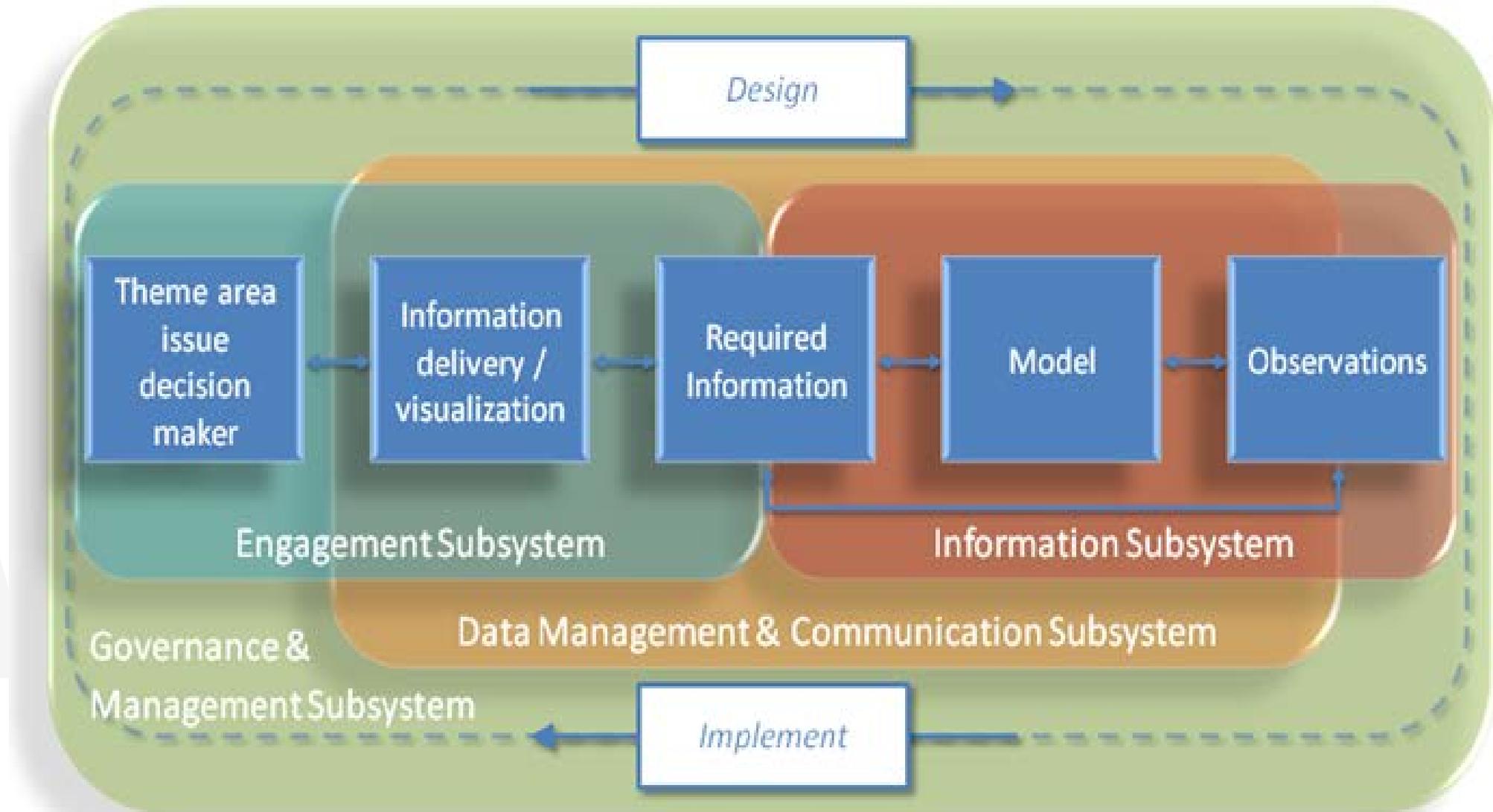


Saco Bay (up to 10 m)

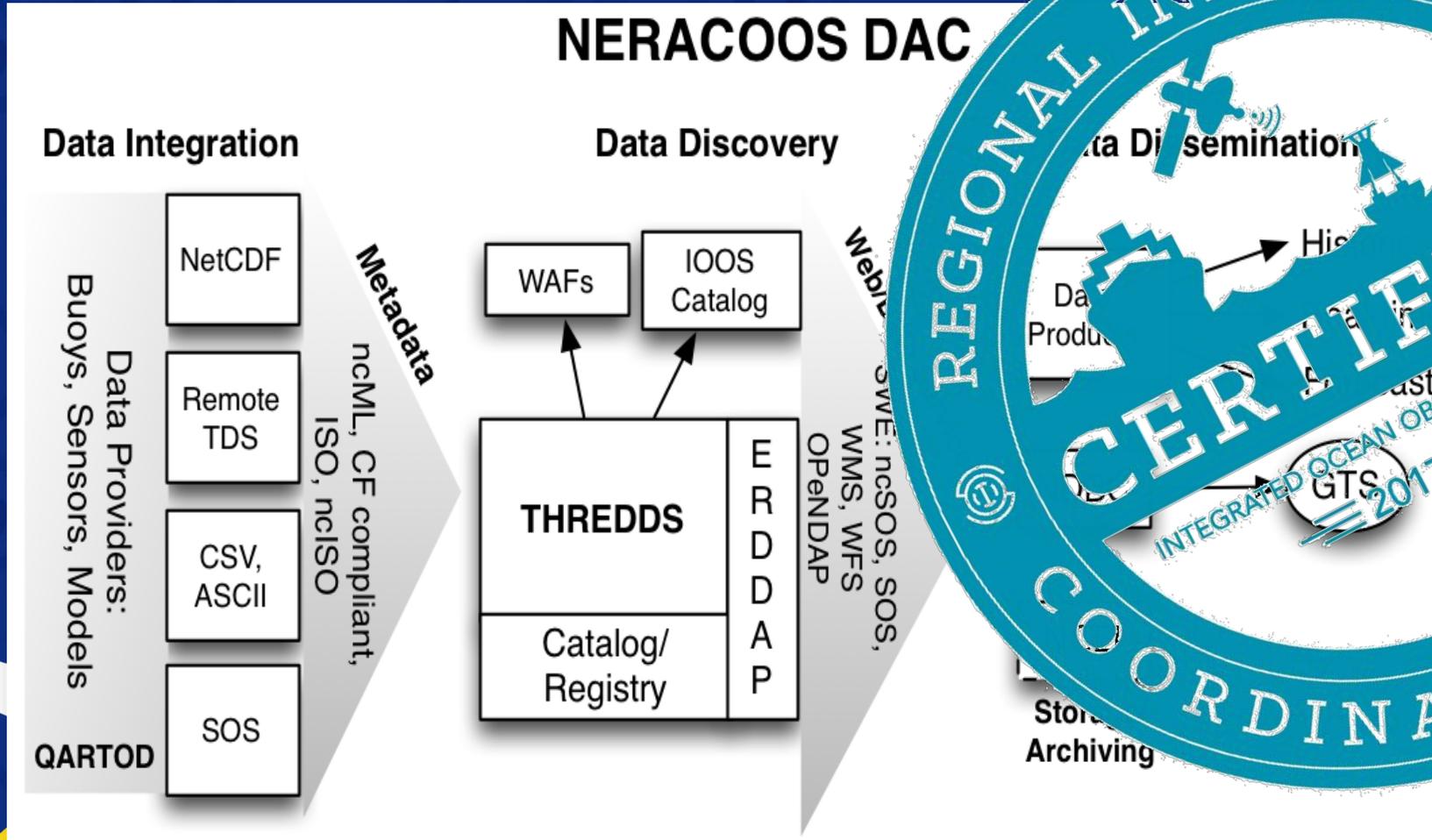




# Manage the data



# Data Management Framework



# ERDDAP > List of All Datasets

Or, Do a Full Text Search for Datasets:

Or, Search for Datasets by Category:

[cdm\\_data\\_type](#), [institution](#), [ioos\\_category](#), [keywords](#), [long\\_name](#), [standard\\_name](#), [variableName](#)

 Or, Search for Datasets with [Advanced Search](#)

## Pick a Dataset

158 matching datasets, listed in alphabetical order.

Grid DAP Data	Sub-set	Table DAP Data	Make A Graph	W M S	Source Data Files	Title	Summary	FGDC, ISO, Metadata	Back-ground Info	RSS	E mail	Institution	Dataset ID
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			* The List of All Active Datasets in this ERDDAP *	?	<a href="#">M</a>	<a href="#">background</a>			NERACOOS	allDatasets
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			A01 Aanderaa - Historic Surface Currents	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	A01_aanderaa_hist
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			A01 Accelerometer - Waves	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	A01_accelerometer_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			A01 Directional Waves (waves.mstrain Experimental)	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	A01_e_waves_mstrain_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			A01 Met - Meteorology	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	A01_met_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			A01 Optics - Chlorophyll / Turbidity	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	A01_optics_s_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			A01 Optode - Oxygen	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	A01_optode_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			A01 SBE16 - CTD Transmissivity	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			U.S. Geological ... ?	A01_sbe16_trans_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			A01 SBE16 Oxygen	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	A01_sbe16_disox_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			A01 Sbe37 - CTD	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	A01_sbe37_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			B01 Aanderaa - Realtime Surface Currents	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	B01_aanderaa_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			B01 Accelerometer - Waves	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	B01_accelerometer_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			B01 Met - Meteorology	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	B01_met_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			B01 Optics	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	B01_optics_hist
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			B01 SBE16 - CTD Transmissivity	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	B01_sbe16_trans_all
	<a href="#">set</a>	<a href="#">data</a>	<a href="#">graph</a>			B01 Sbe37 - CTD	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Univ. of Maine	B01_sbe37_all
<a href="#">data</a>			<a href="#">graph</a>	<a href="#">M</a>		BIO WW III Latest Forecasts East Coast	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Bedford Insitut ... ?	WW3_EastCoast_latest
<a href="#">data</a>			<a href="#">graph</a>	<a href="#">M</a>		BIO WW III Latest Forecasts Gulf Of Maine	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Bedford Insitut ... ?	WW3_GulfOfMaine_latest
<a href="#">data</a>			<a href="#">graph</a>	<a href="#">M</a>		BIO WW III Latest Forecasts North Atlantic	?	<a href="#">F</a> <a href="#">I</a> <a href="#">M</a>	<a href="#">background</a>			Bedford Insitut ... ?	WW3_NorthAtlantic_latest



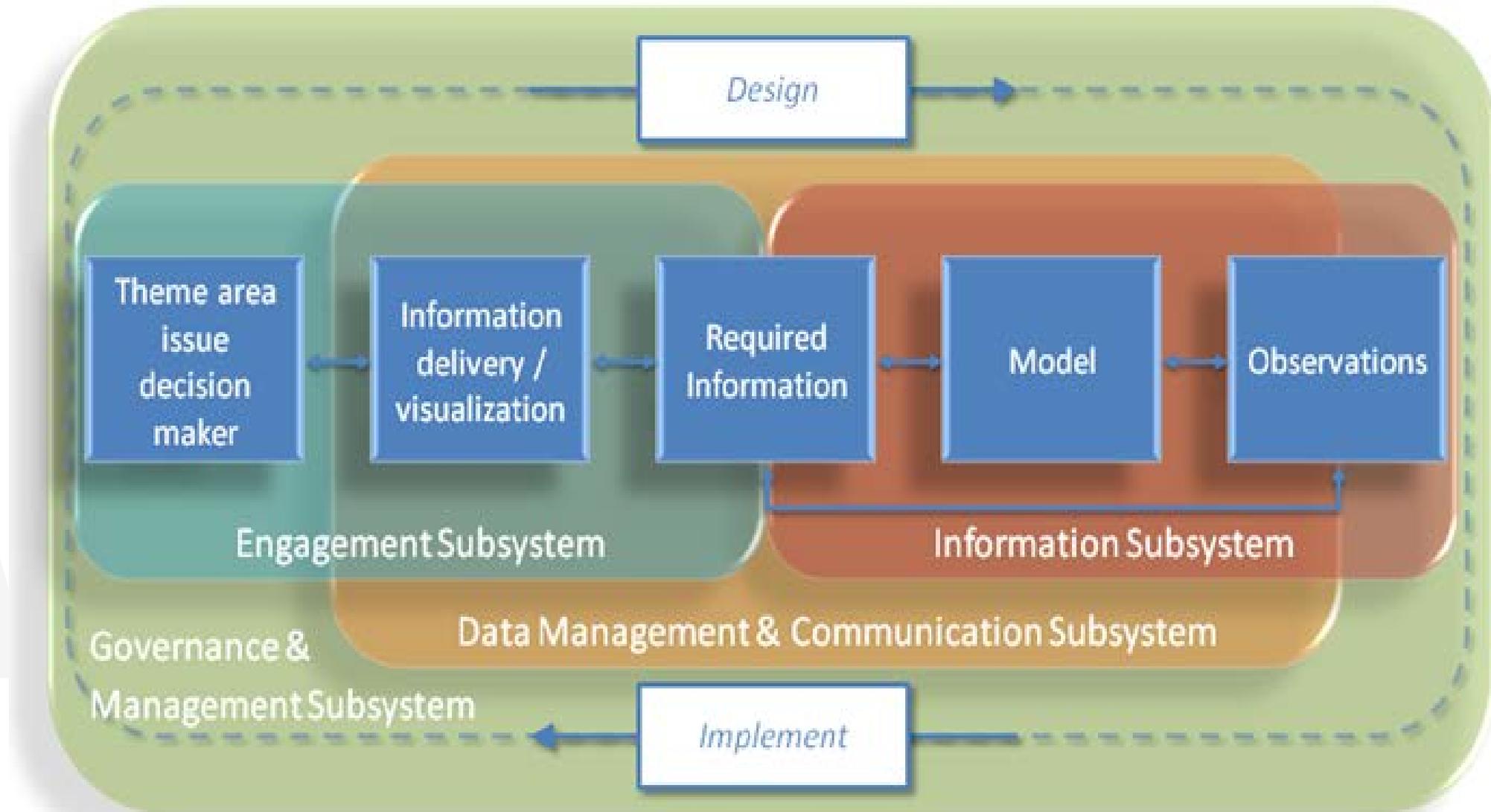


**I WANT DATA**

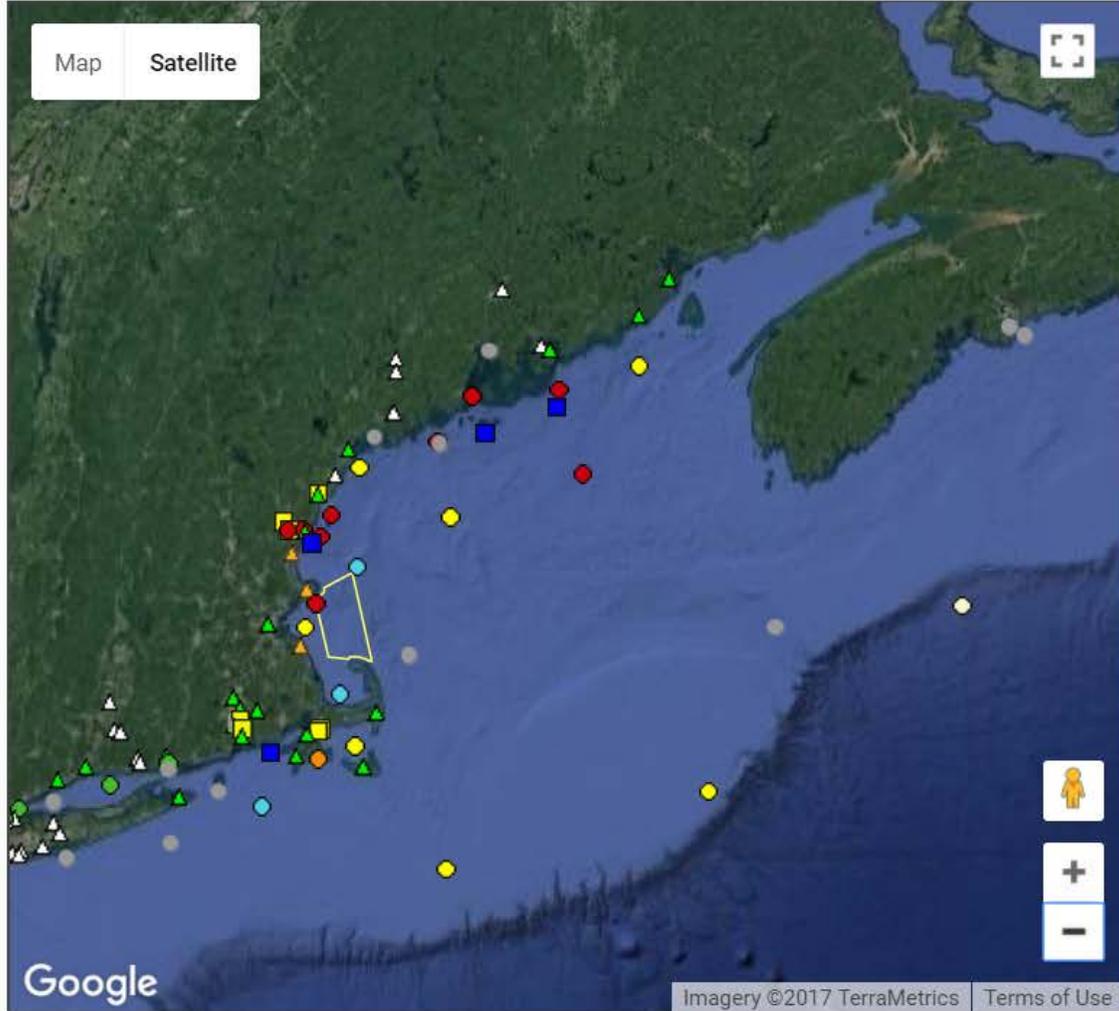


**KEEP  
CALM  
AND  
DO BOOT  
CAMP**

# Deliver the Information - Products



# Hourly Buoy Data



[View full screen map.](#)

Legend

Deselect all

Zoom to location:

Region Wide View  Preserve My View

NERACOOS Region

## NERACOOS Gulf of Maine B - Western Maine Shelf

Lat: 43.18 Lon: -70.42

Latest Observation: 12/06 7:00 AM EST

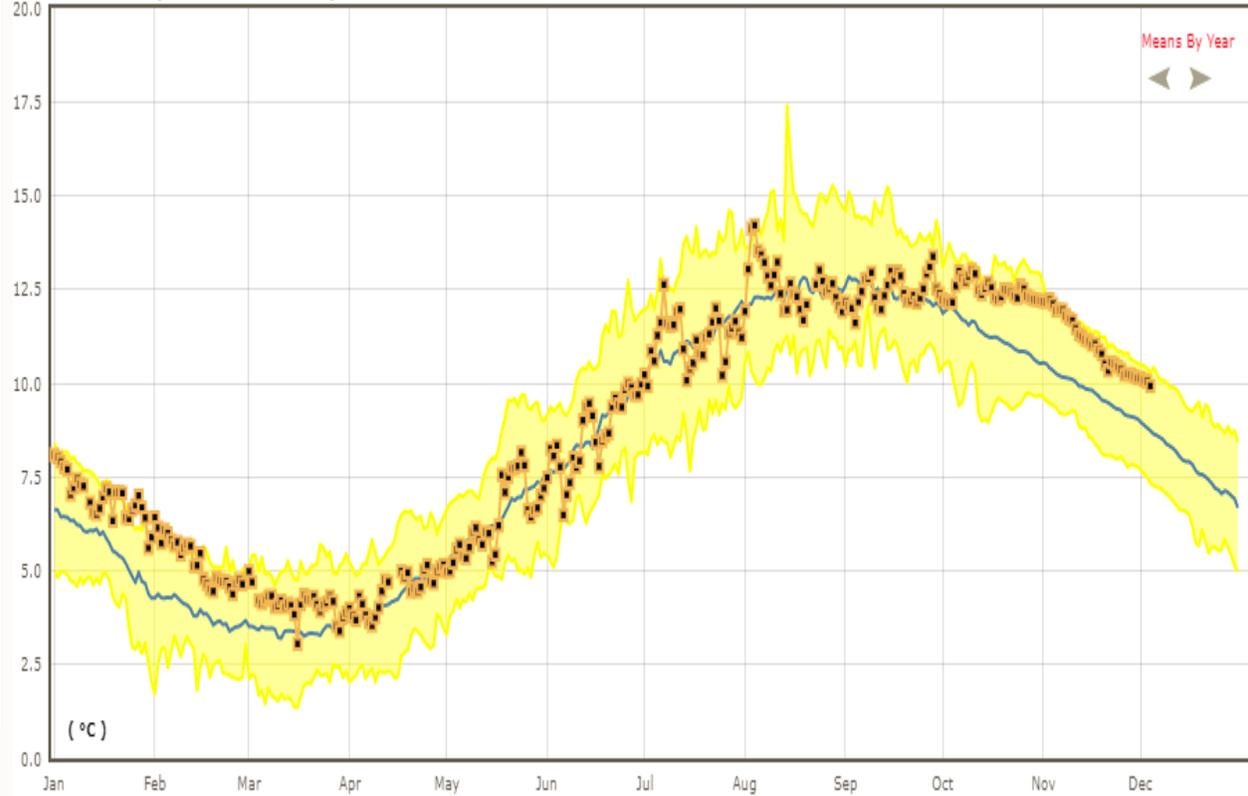


Owned/Operated by:  
 THE UNIVERSITY OF  
**MAINE**

Dr. Neal Pettigrew University of Maine

# Ocean Climate

Mean Water Temperature 1 meter depth at I01 for 2001 thru 2017



2017

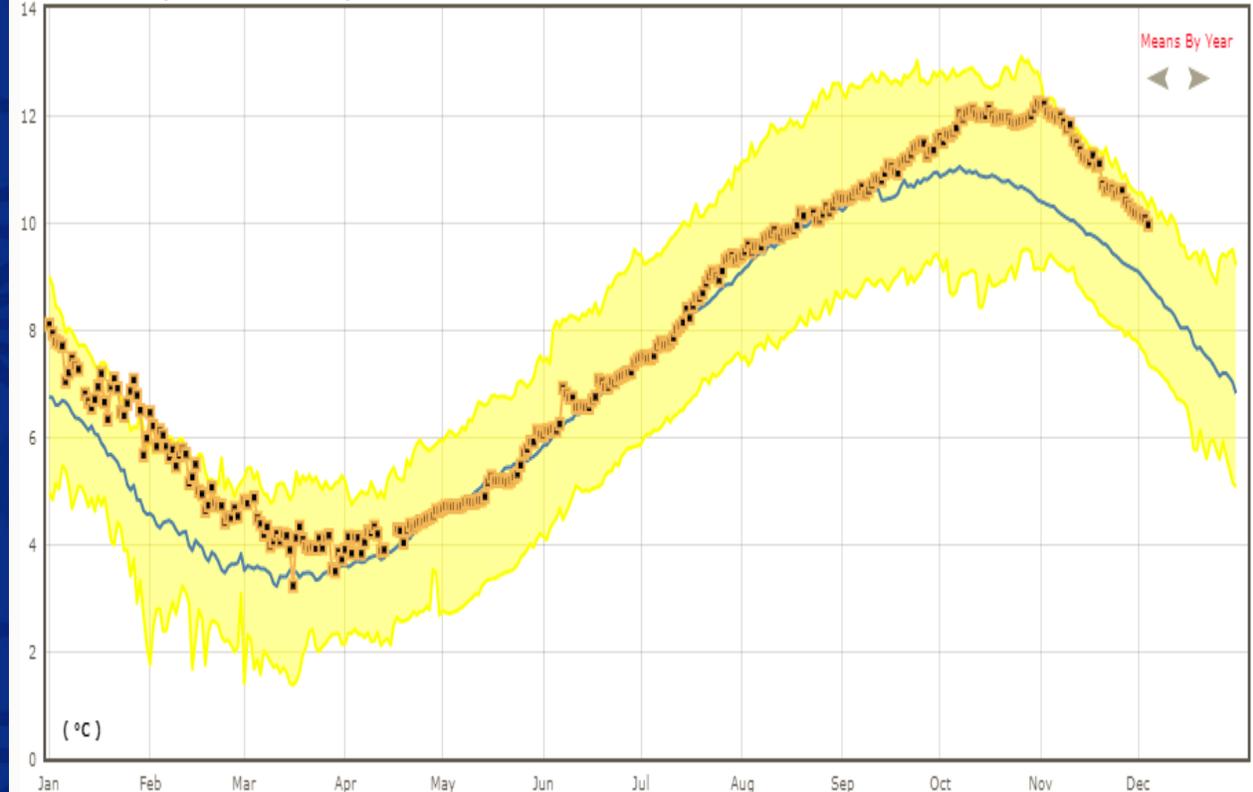
Range of Daily Means 2001 thru 2016

Mean 2001 thru 2016

Daily Means By Year

[View Climatology Data Table](#)

Mean Water Temperature 50 meter depth at I01 for 2001 thru 2017



2017

Range of Daily Means 2001 thru 2016

Mean 2001 thru 2016

Daily Means By Year

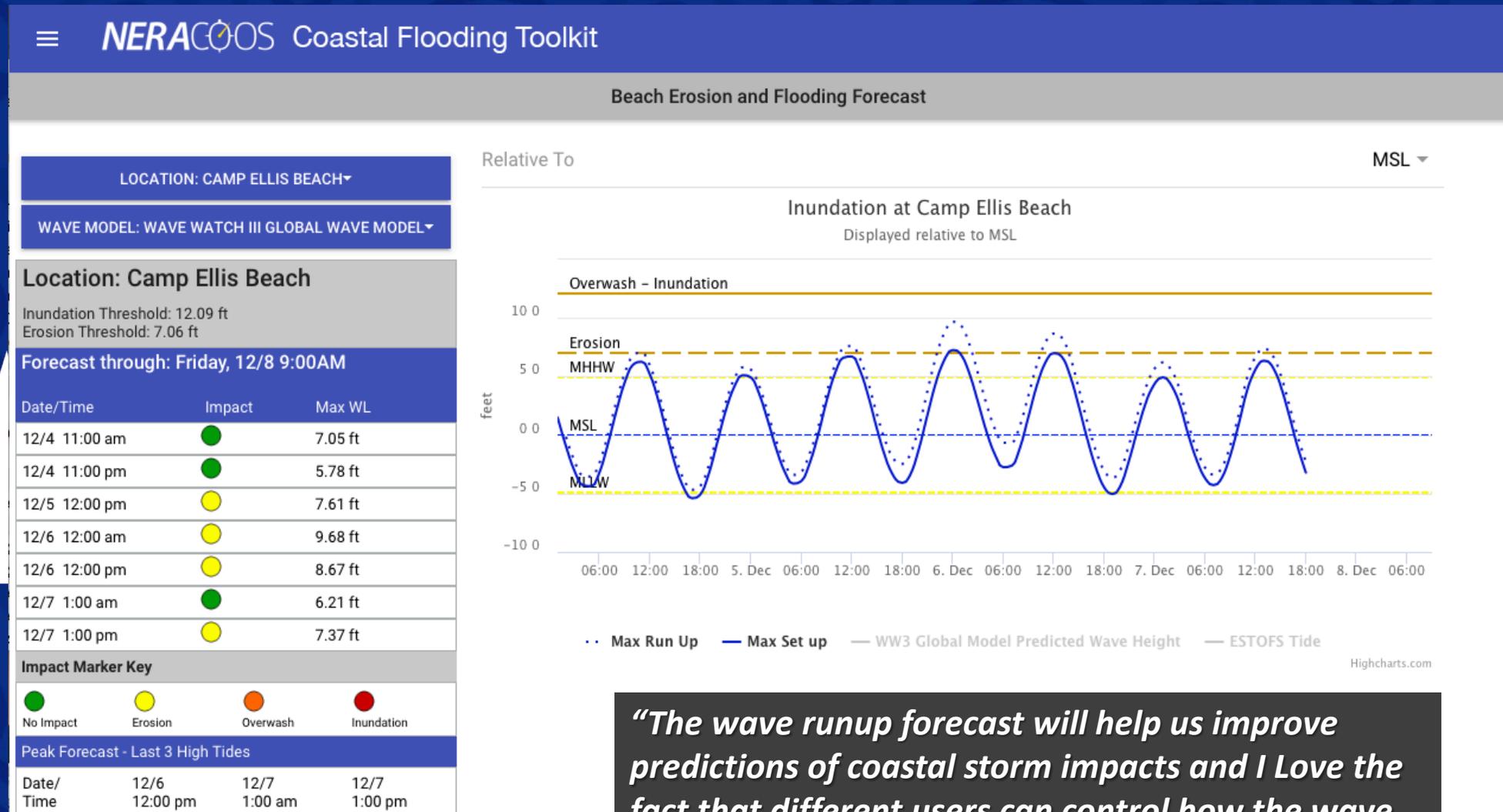
[View Climatology Data Table](#)



IOOS

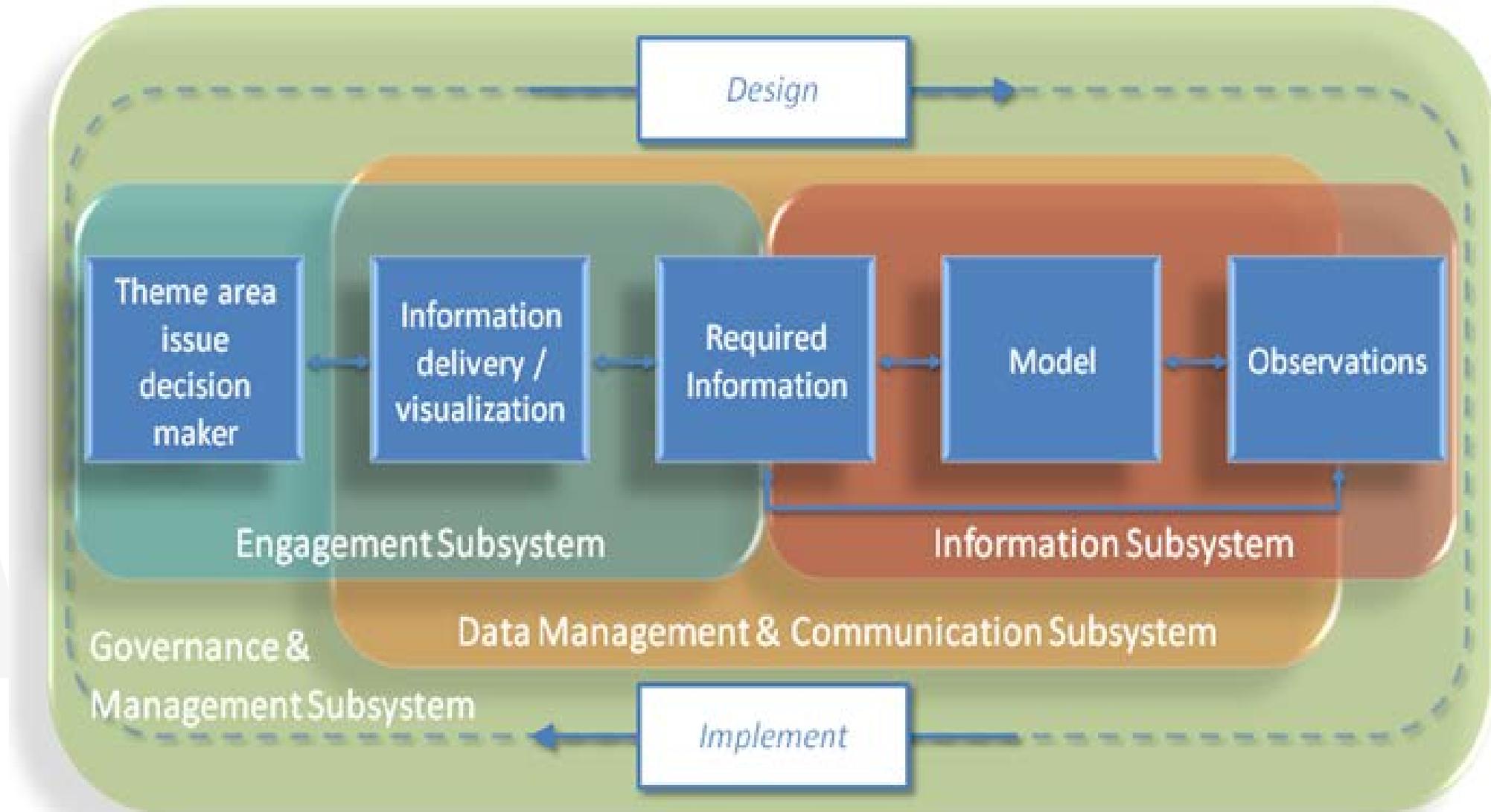
EYES ON THE OCEAN™

# Wave Runup Forecast

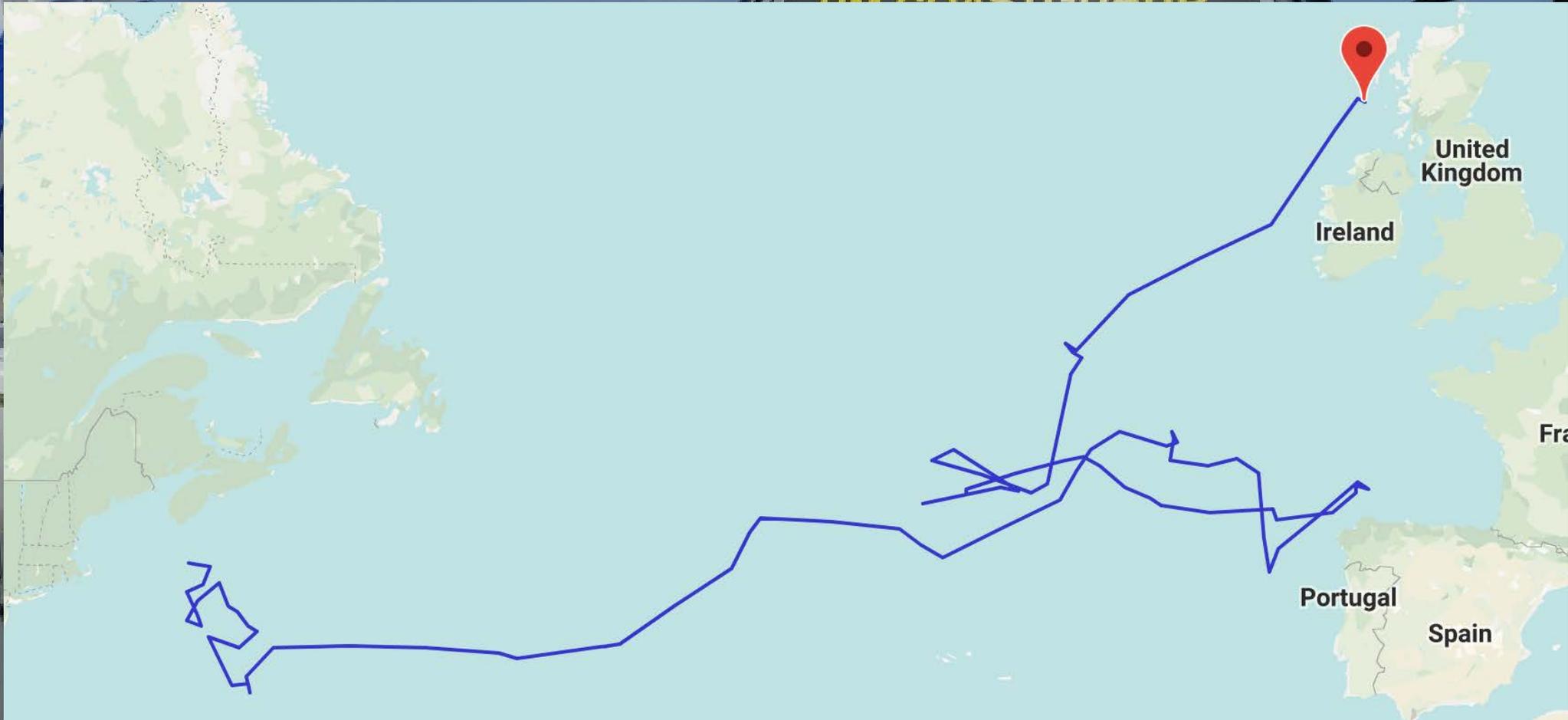


*“The wave runup forecast will help us improve predictions of coastal storm impacts and I Love the fact that different users can control how the wave runup output is displayed.”* John Cannon, NWS

# Govern and Manage the System







UN COASTGUARD

040

ERDÉ



Thank you

*[Ru.Morrison@neracoos.org](mailto:Ru.Morrison@neracoos.org)*

**NERACOOOS**

 **IOOS** | EYES ON THE OCEAN™

