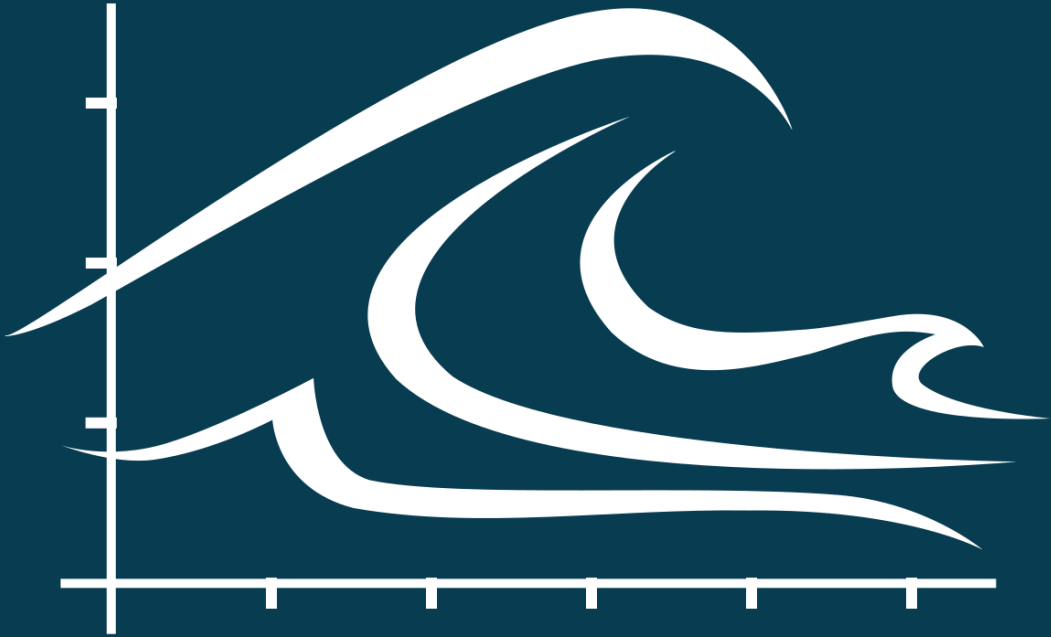


# NERACOOOS



NORTHEASTERN REGIONAL ASSOCIATION  
OF COASTAL OCEAN OBSERVING SYSTEMS

## Marine Labs within the Northeast Regional Observing System

NAML Biennial Meeting  
Schiller Coastal Studies Center  
October 6, 2023

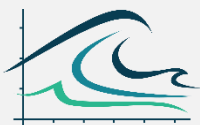
Jake Kritzer (NERACOOOS), Chris  
Hunt (UNH), Heather Stoffel (URI)

# U.S. Integrated Ocean Observing System (IOOS)

*To produce, integrate, and communicate high quality ocean, coastal and Great Lakes information that meets the safety, economic, and stewardship needs of the Nation.*

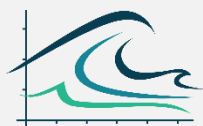
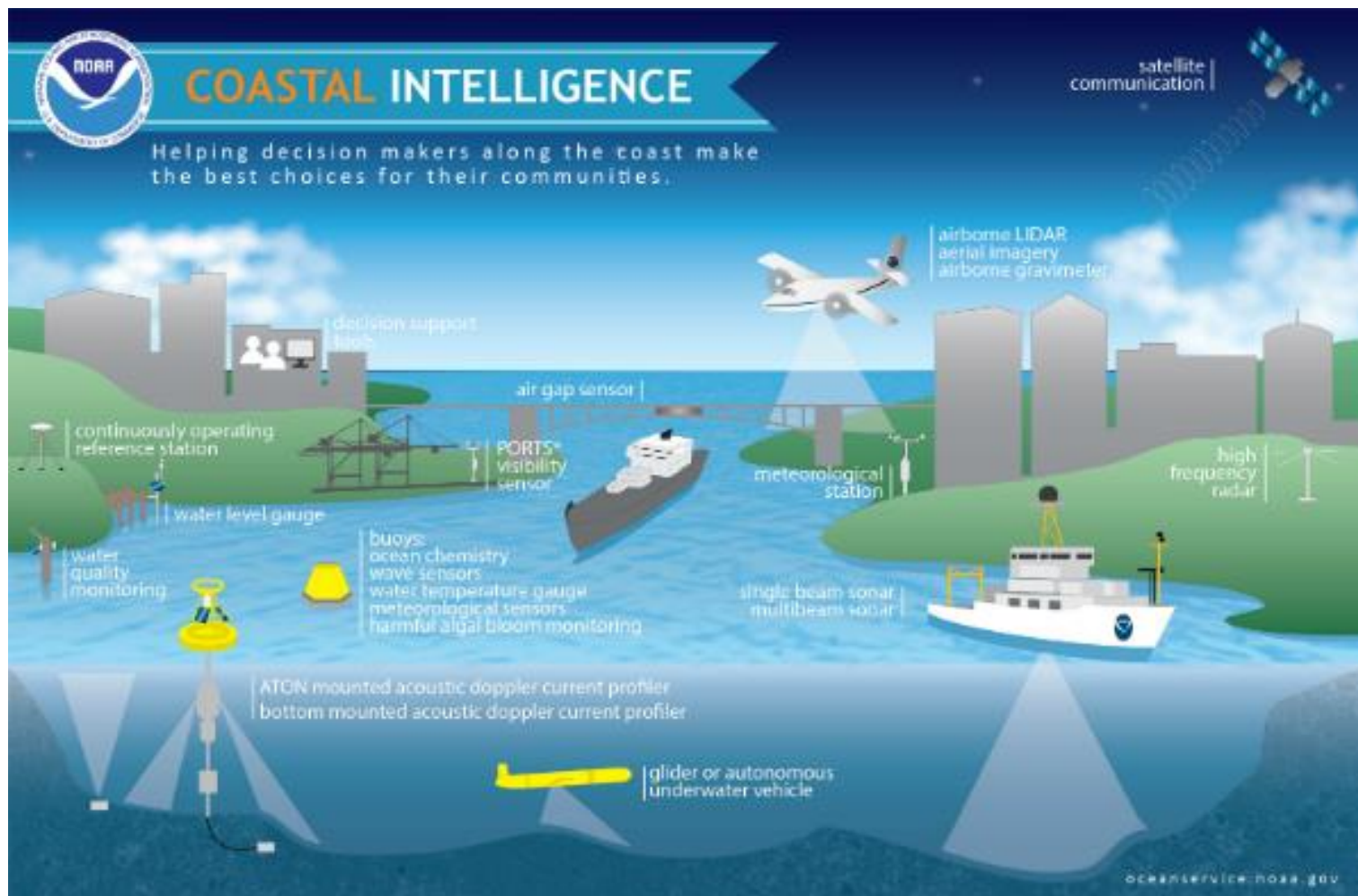


- 17 federal partners
- 11 regional associations
- 34 core variables
- Buoys, gliders, HFR, satellites, ship-based surveys, coastal stations, etc.
- Variety of models
- Federally-certified data management



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# Ocean Observing Tools



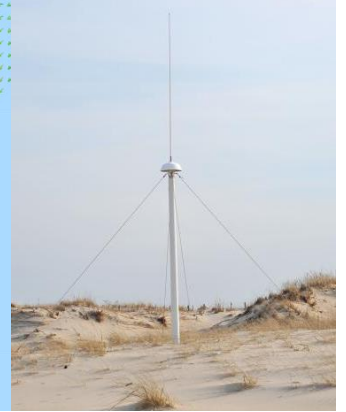
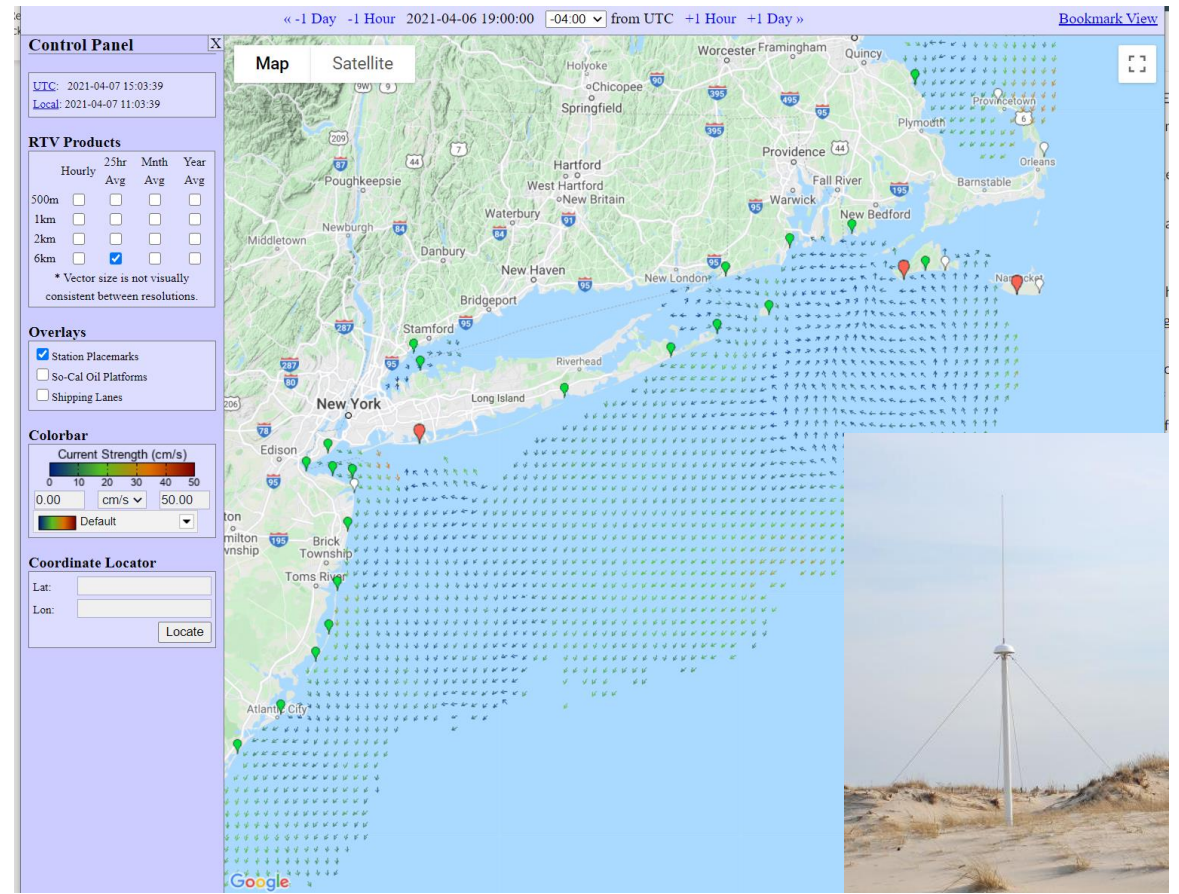
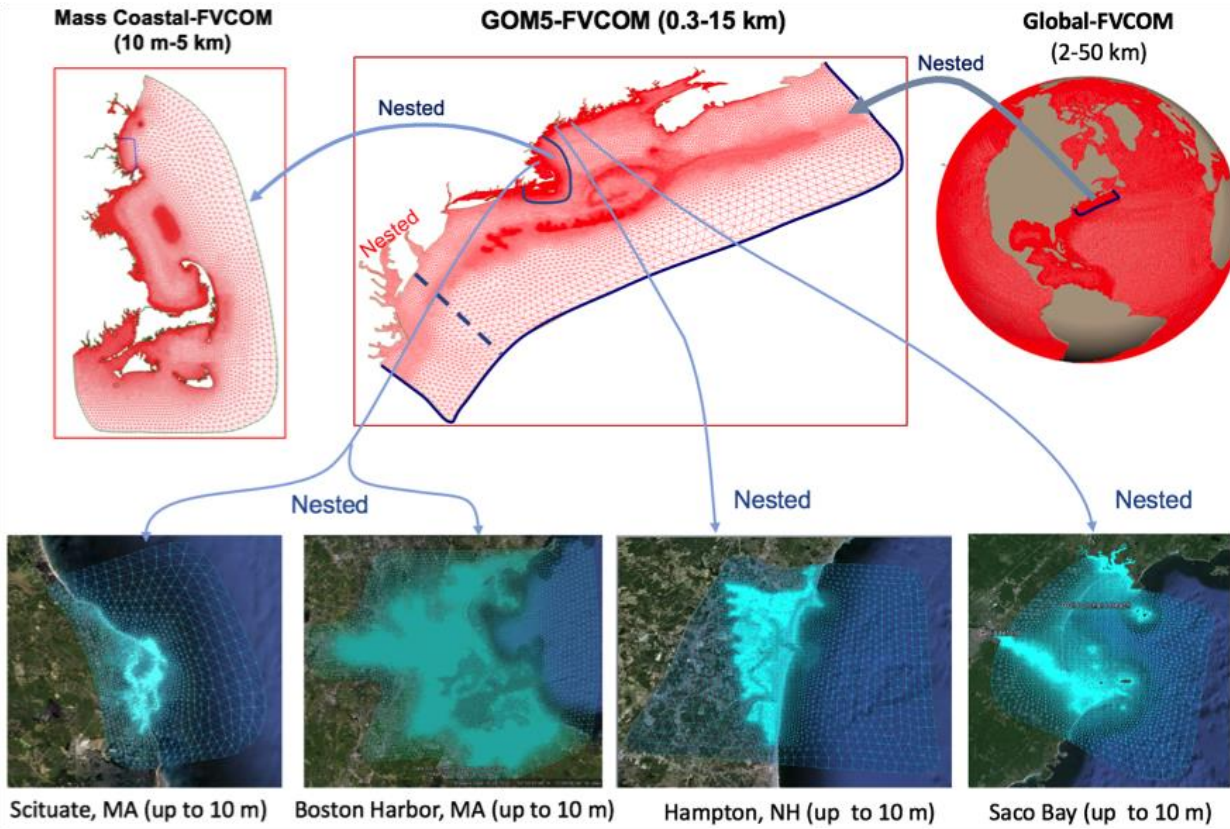
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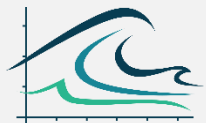


IOOS  
Integrated Ocean  
Observing System



# Oceanographic Models





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# Northeast Regional Observing System

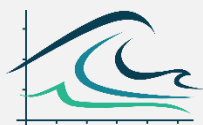
# Who We Serve

	Government	Private company	NGO	Academic	Other	Total
AOOS	24	14	22	10	4	74
	32.4%	18.9%	29.7%	13.5%	5.4%	
CARICOOS	22	26	10	10	6	74
	29.7%	35.1%	13.5%	13.5%	8.1%	
CenCOOS	26	12	10	33	5	86
	30.2%	14.0%	11.6%	38.4%	5.8%	
GCOOS	3	4	7	11	0	25
	12.0%	16.0%	28.0%	44.0%	0.0%	
GLOS	18	62	7	10	20	117
	15.4%	53.0%	6.0%	8.6%	17.1%	
NERACOOS	52	45	16	26	34	173
	30.1%	26.0%	9.3%	15.0%	19.7%	
PacIOOS	33	28	6	21	10	98
	33.7%	28.6%	6.1%	21.4%	10.2%	
SCCOOS	23	4	7	12	2	48
	47.9%	8.3%	14.6%	25.0%	4.2%	
SECOORA	27	14	7	52	7	107
	25.2%	13.1%	6.5%	48.6%	6.5%	
Total*	234	278	95	185	4	802
	29.2%	34.7%	11.8%	23.1%	0.5%	

*There is no typical NERACOOS user!*

*We provide services to a wide variety of people interested in or reliant on the ocean.*

*This broad focus aligns well with the mission of many research institutions.*



NERACOOS



Middlebury Institute of  
International Studies at Monterey  
Center for the Blue Economy



# What Users Need

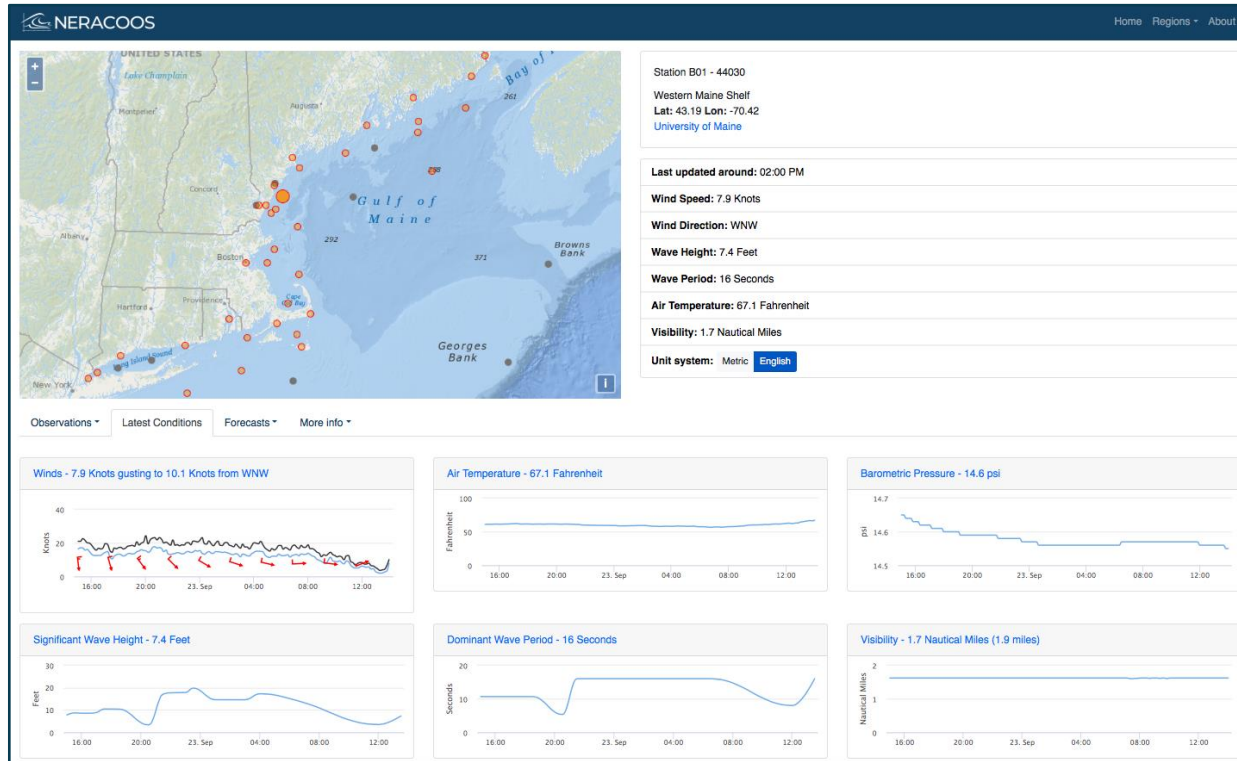
	Current Conditions	Forecast Conditions	Historical Data
AOOS	37.6	15.1	28.2
CARICOOS	51.5	32.2	7.4
CenCOOS	49.5	15.9	19.5
GCOOS	47.2	12.5	18.0
GLOS	75.3	15.6	4.0
NERACOOS	59.1	16.1	20.2
PacIOOS	56.6	33.2	6.8
SCCOOS	41.2	15.4	30.0
SECOORA	44.7	15.1	20.7
All RAs	64.3	9.5	18.8

*Most users are looking for real-time data, primarily for navigation and operations.*

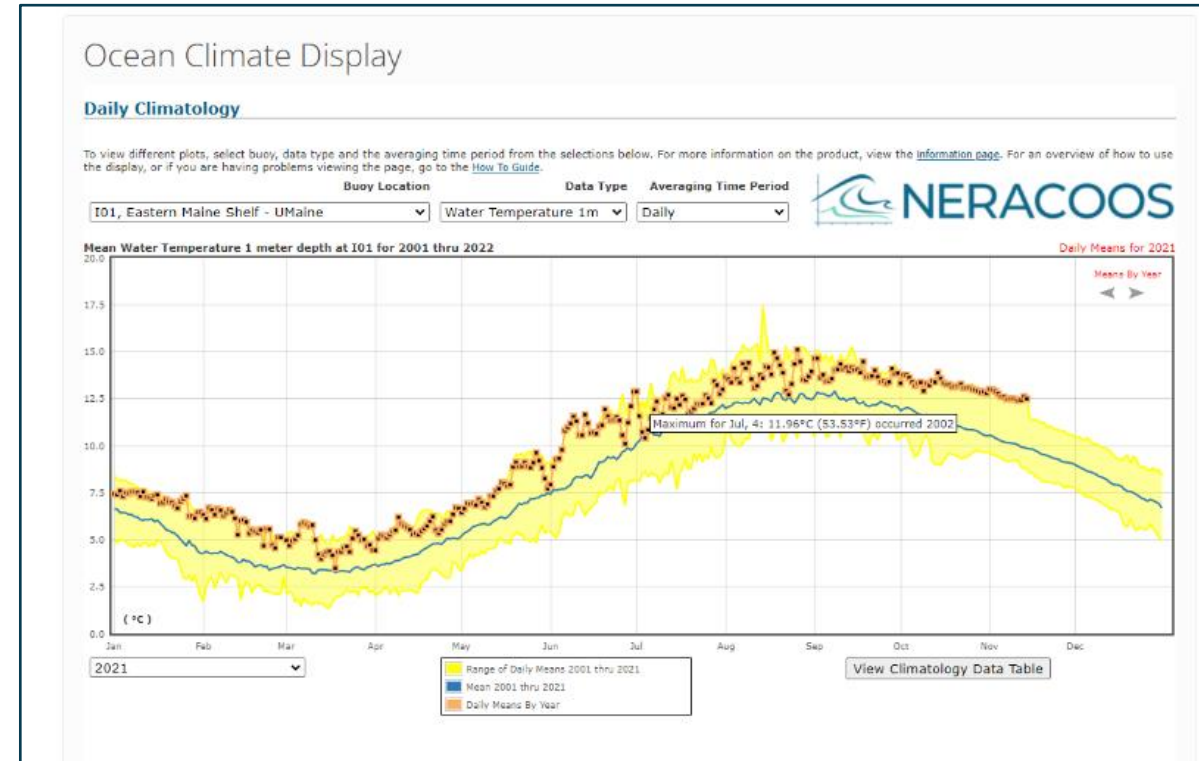
*Forecasts are also important for nav/ops, as well as predictive analyses.*

*Time series support research and policy.*

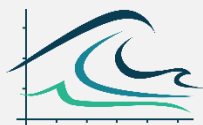
# Data Products



**Mariners' Dashboard**  
*Real-time conditions & forecasts*

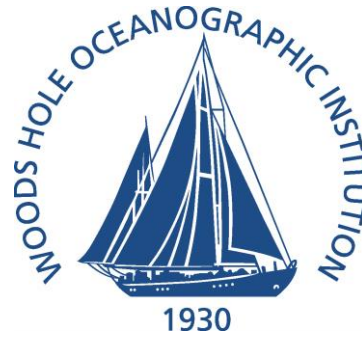


**Ocean Climate Tool**  
*Long-term trends*





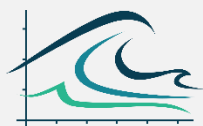
# Collaborations with NAML Members



# Marine Lab Stations in the NERACOOS Network



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OF RHODE ISLAND  
GRADUATE SCHOOL  
OF OCEANOGRAPHY



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# Variables Measured



University of  
New Hampshire

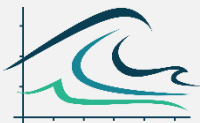
**Coastal Marine Lab**

- Temperature
- Salinity
- Dissolved oxygen
- Chlorophyll fluorescence
- Backscatter
- **Total alkalinity**
- **pCO<sub>2</sub>**
- **pH**
- Air temperature
- Humidity
- Winds

THE  
UNIVERSITY  
OF RHODE ISLAND

**Marine Ecosystems Research Lab**

- Temperature
- Salinity
- Dissolved oxygen
- pH
- Chlorophyll
- **Nitrates**
- + others after BIL upgrades

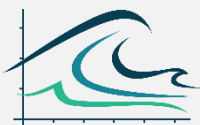
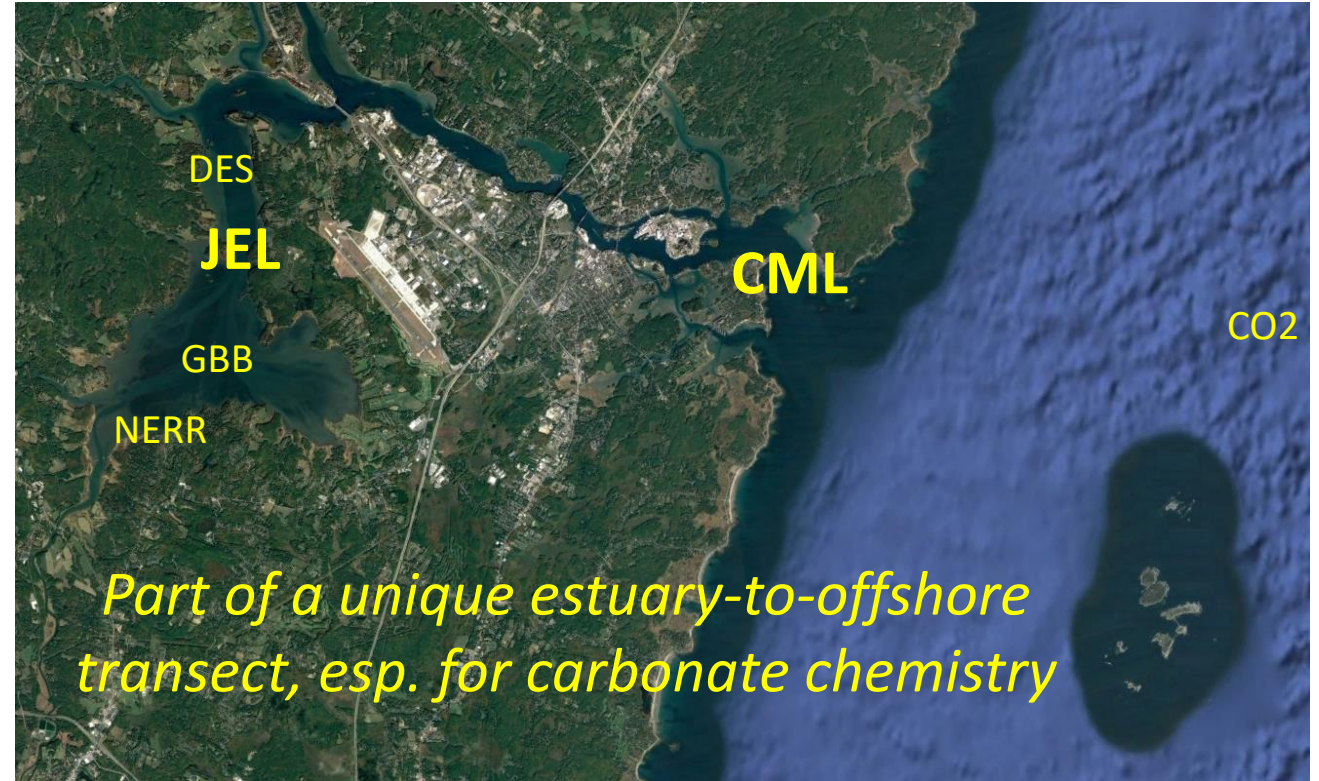


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# Lab Stations in Context



University of  
New Hampshire  
Coastal Marine Lab



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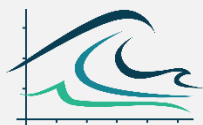
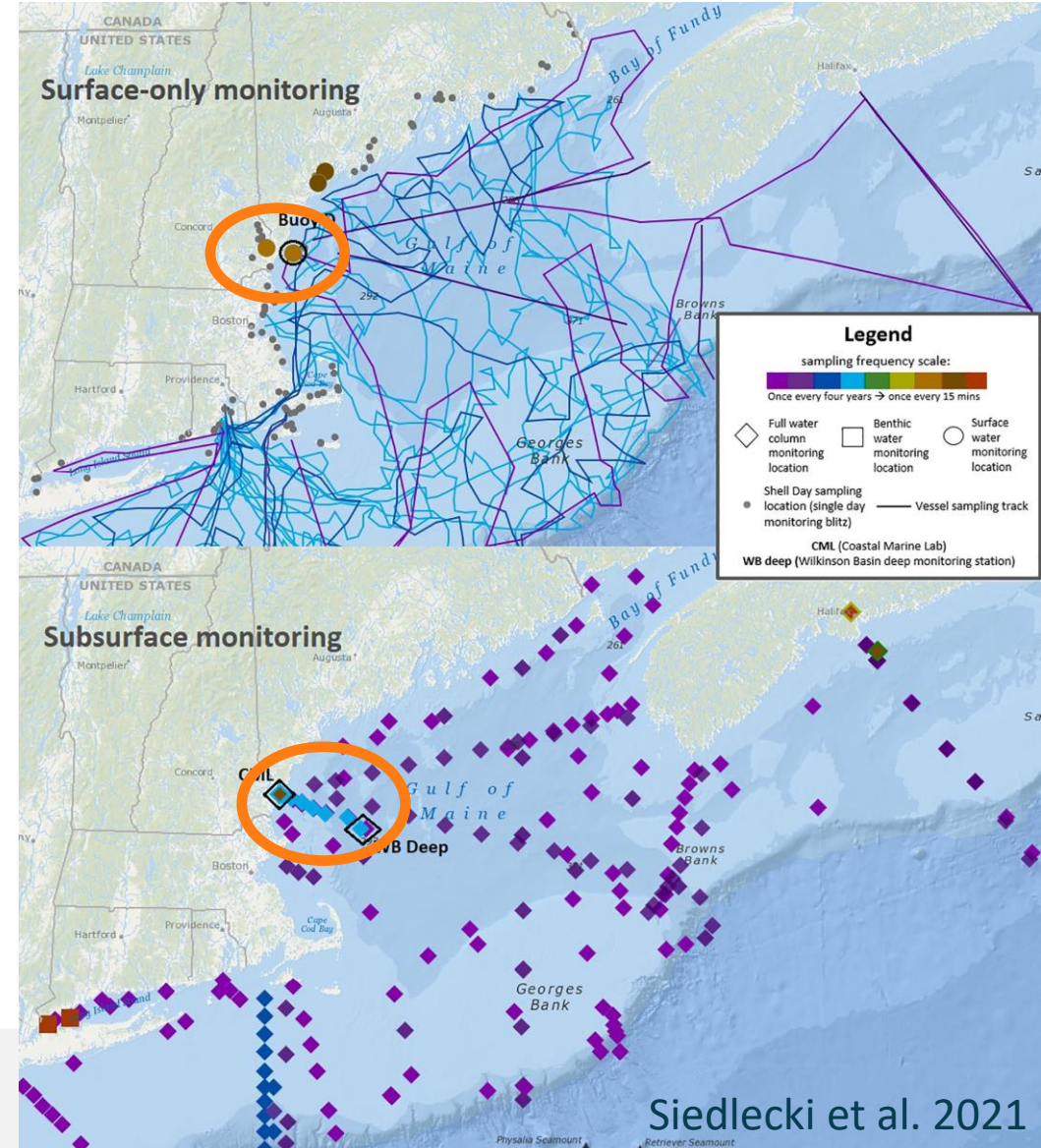
# Lab Stations in Context



University of  
New Hampshire  
Coastal Marine Lab



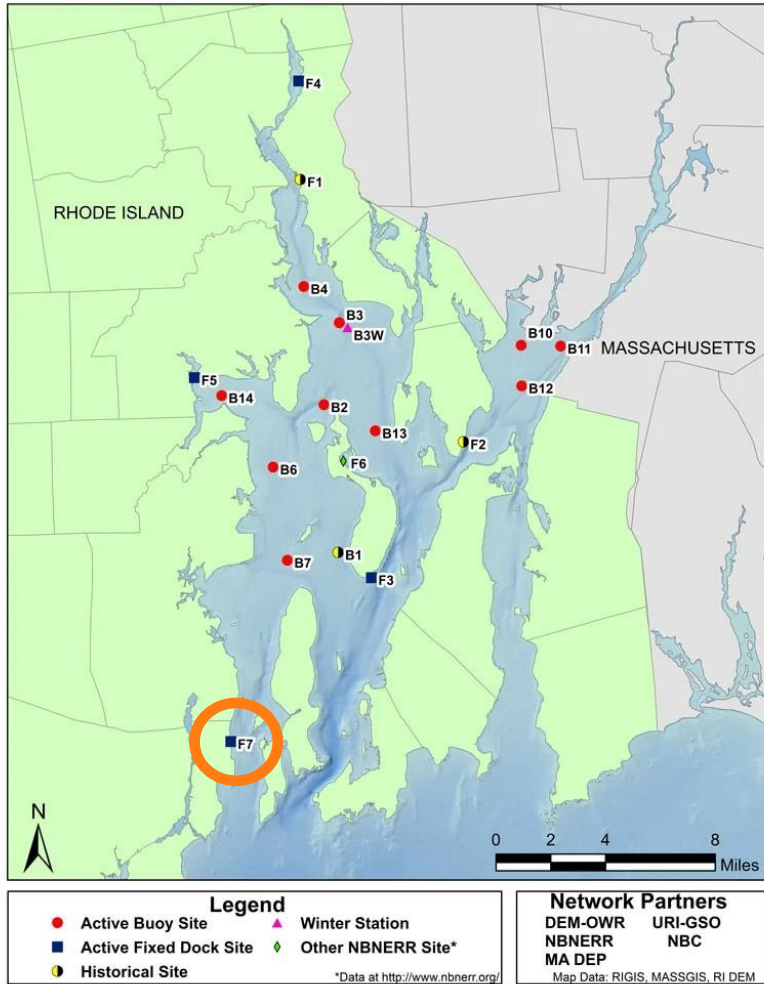
*One of the few  
sustained carbonate  
monitoring stations in  
the Northeast*



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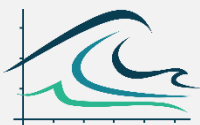
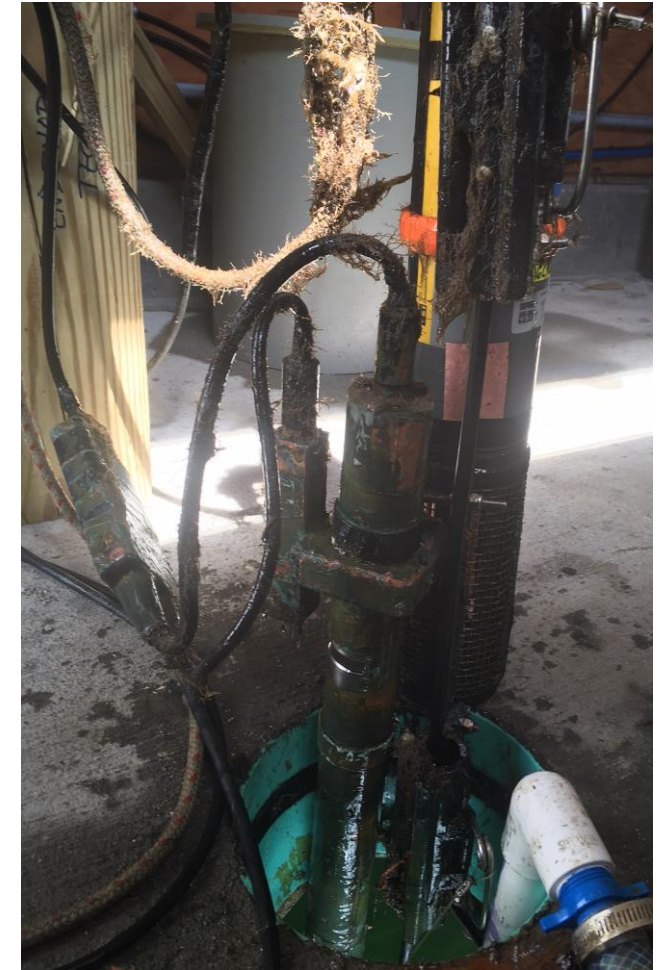
# Lab Stations in Context

Narragansett Bay Fixed-Site Water Quality Monitoring Network Locations



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**Marine Ecosystems  
Research Lab**

*The Bay mouth site in  
NBNERR, a collaboration  
involving RIDEM,  
Narragansett Bay NERR,  
Narragansett Bay  
Commission, and MassDEP.*

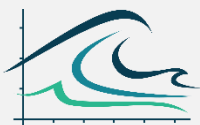


# Lab Stations in Context



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*NBFSMN is crucial for protecting the economic value of wild fisheries, aquaculture, and recreation.*



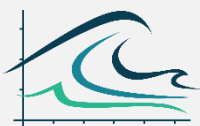
# Benefits & Challenges

## Benefits

- Education.
- Research, pure and applied, incl. instrument testing.
- Climate-relevant time scales.
- Cost-effective: on-site facilities + leveraged funding thru networks.

## Challenges

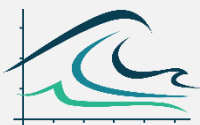
- Isolation and space limitations (esp. CML).
- Fouling and clogging.
- Data accessibility.
- Funding.





# Future Directions for NAML+IOOS?

- New technologies: Imaging, eDNA, webcams (Mass. Maritime Academy)
- Synoptic national network (e.g., NERR SWMP)
- Regional or national education programs/competitions
- Convening for partnership-building and cost-sharing



Thank You!!!  
Questions?

[jake@neracoos.org](mailto:jake@neracoos.org)