

# GoMOOS



The Gulf of Maine  
Ocean Observing System

# Overview of remarks

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1. Purpose of GoMOOS
  2. Governance : User-Driven Nonprofit
  3. User Community & Applications
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# Purpose...

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#1. Facilitate safe and efficient marine operations, ensure national security, ensure sustainable food supply, manage ecosystems, mitigate natural hazards, ensure public health.

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#2 To provide data and information that serve public and private sector needs to:

- Solve practical problems,
- Predict events,
- Increase public awareness,
- Further understand natural systems

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A Coastal Oceanic Analog of...

...the National Weather Service.

# GoMOOS is Regional and Multisector

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Serving all Gulf of Maine states and provinces:  
Nova Scotia, New Brunswick, Maine,  
New Hampshire, Massachusetts, on south...

Partners:

- Research Institutions
- Government Agencies
- Educational Institutions
- Private Industry
- Nonprofits

# Technical Program

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## Real-time monitoring:

**Weather** -- surface winds, air temperature, visibility(fog), light flux, cloud conditions

**Oceanic conditions** -- currents, waves, temperature, salinity

**Environmental quality** – dissolved oxygen, water clarity, turbidity, nutrients

**Ocean biology** -- spectral irradiance, algal biomass, productivity, community structure, passive acoustics (whales)

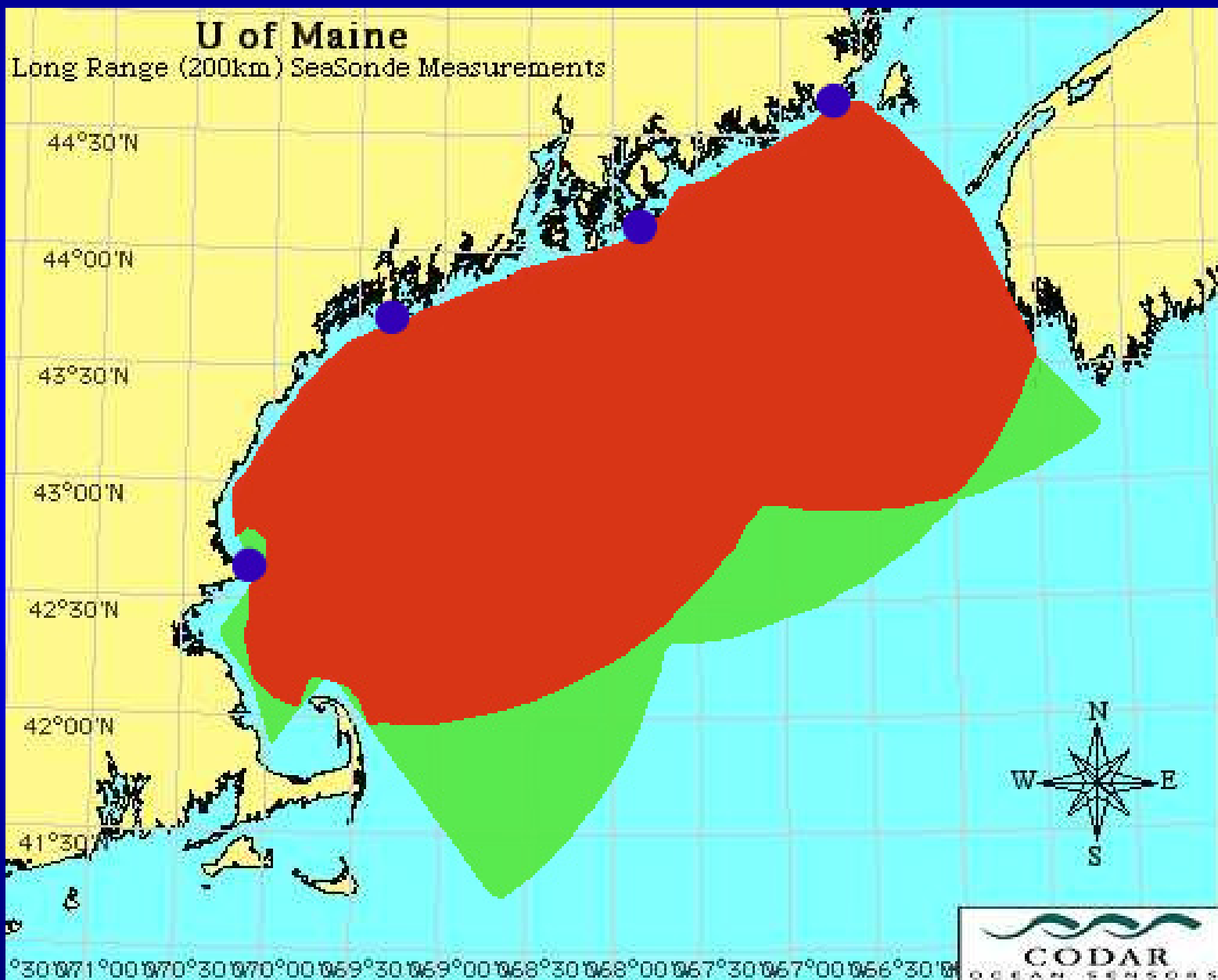
## Modeling & Prediction:

circulation & waves

# GoMOOS Buoys (9 Active)



# Long-Range HF Radar



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# Evolution of GoMOOS

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Began As:

Ended As:

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Research project to  
understand GoM



Utility project to  
facilitate research

Science/PI  
organizational model



Non-profit corporate  
organizational model

Researchers as  
primary users



Researchers as one  
user group among many



# GoMOOS Members

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## Research/Education:

Bedford Institute of Oceanography (Canada)  
Bigelow Laboratory for Ocean Science  
Bowdoin College  
Dalhousie University (Canada)  
Maine Maritime Academy  
Rutgers University  
University of Maine  
University of Massachusetts, Dartmouth  
University of New Hampshire  
University of Rhode Island  
Woods Hole Oceanographic Institution

## Government:

Maine Dept. of Marine Resources  
Maine Science & Technology Foundation  
Maine State Planning Office  
Massachusetts Coastal Zone Management  
Massachusetts Water Resources Authority  
Stellwagen Bank National Marine Sanctuary

## Industry:

Bath Iron Works  
James W. Sewall Company  
Maine Lobstermen's Association  
Portland Pipe Line Corporation  
Satlantic, Inc. (Canada)

## Marine Operations:

Atlantic Pilotage Authority (Canada)  
Eastport Port Authority  
Federal Marine Terminals (Canada)  
Penobscot Bay & River Pilots Assoc.  
Saint John Marine Pilots (Canada)  
Saint John Port Authority (Canada)

## Nonprofit:

Gulf of Maine Aquarium  
Island Institute  
New England Aquarium

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# User Needs

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- Mariners – safety, rescue
- Shipping – safety & efficiency
- Mammals – endangered species assessment
- Aquaculture – site selection & water quality
- Lobster fishing – recruitment prediction
- Petroleum Industry – spill response
- Shellfishing – spat collection, site selection
- Military – national security, operations test bed
- Coastal Management – eutrophication
- Commercial & Sport Fishing – stock assessments
- Research – long-term observations, infrastructure

# Maritime Shipping Industry

3,500 transits/yr  
50 million tons

202,000 transit hrs  
\$43 million ops.

1% time savings  
= \$500,000/yr



# Commercial Fishing Industry

Time and safety

Average value per  
fishing day = \$4.1M

“...I check for the official gale warnings, then go to the [GoMOOS] web site to see if the wind is actually blowing now. I can get a day's work in...”  
--Scalloper from Stonington, Me.



# Connecting Fisheries to the Physical Environment



Climate change

Stock assessment

- chlorophyll/productivity
- circulation

Aquaculture siting

- dissolved oxygen
- salinity
- sea surface temp.
- currents



National Undersea Research Center—University of Connecticut

# Oil Spills: Contingency Planning, Prevention, and Recovery

Julie N –  
180,000-gal. spill,  
Portland Harbor  
September 1996

Real-time

- Wind
- Waves
- Currents
- Predictive models



# Search & Rescue

U. S. Coast Guard:

2<sup>nd</sup> largest user of  
GoMOOS web site

6000 missions/yr

500 saved lives

28 lives lost/yr



4% success after 2 hours,

1% increase in effectiveness = **6 more lives saved per year**

# Wastewater Management

## New Boston Harbor Sewage Outfall

- Boundary conditions for nutrients & currents
- Dissolved oxygen

Helps meet costly monitoring requirements



# Lessons Learned So Far...

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1. Useful information is critical
  - Data  $\neq$  Information.
  - Path from Data to Information is **not** obvious.
  - User participation in the design is indispensable.
  - Tool development is create products is next
2. Stable funding stream is needed w/ local participation

# Conclusions

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1. GoMOOS can inspire *and* facilitate research.
2. Users (not hypotheses) will justify GoMOOS.
3. Users need a 24/7 operational system that provides useful, timely information...and drives research.
4. GoMOOS cost/benefit: \$(3/30)M/year.
5. A national OOS will only come to pass if Congress hears the same request from all regions!



Up-to-date information on weather and oceanographic conditions in the Gulf of Maine

[www.GoMOOS.org](http://www.GoMOOS.org)

