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.

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Agenda Items

Welcome and Introductions
Approval of Minutes from May 25, 2016
IOOS Association Update
U.S. IOOS Program Office Update
Regional Build Out Plan
NERACOOS Operational Update
Break
SPI Team Update
Nominating Committee Report & 2016 Nominations
Lunch
Finance Committee
Executive Committee
Review of Action Items
Adjourn

Welcome and Opening

Approval of Minutes:
May 25, 2016

IOOS Association

IOOS Program Office

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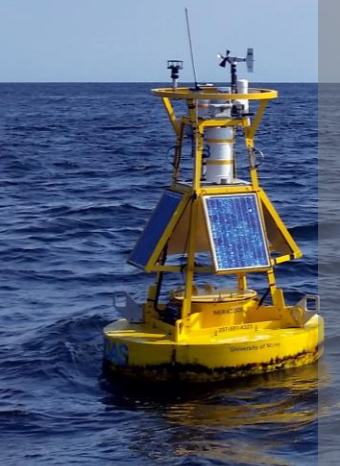
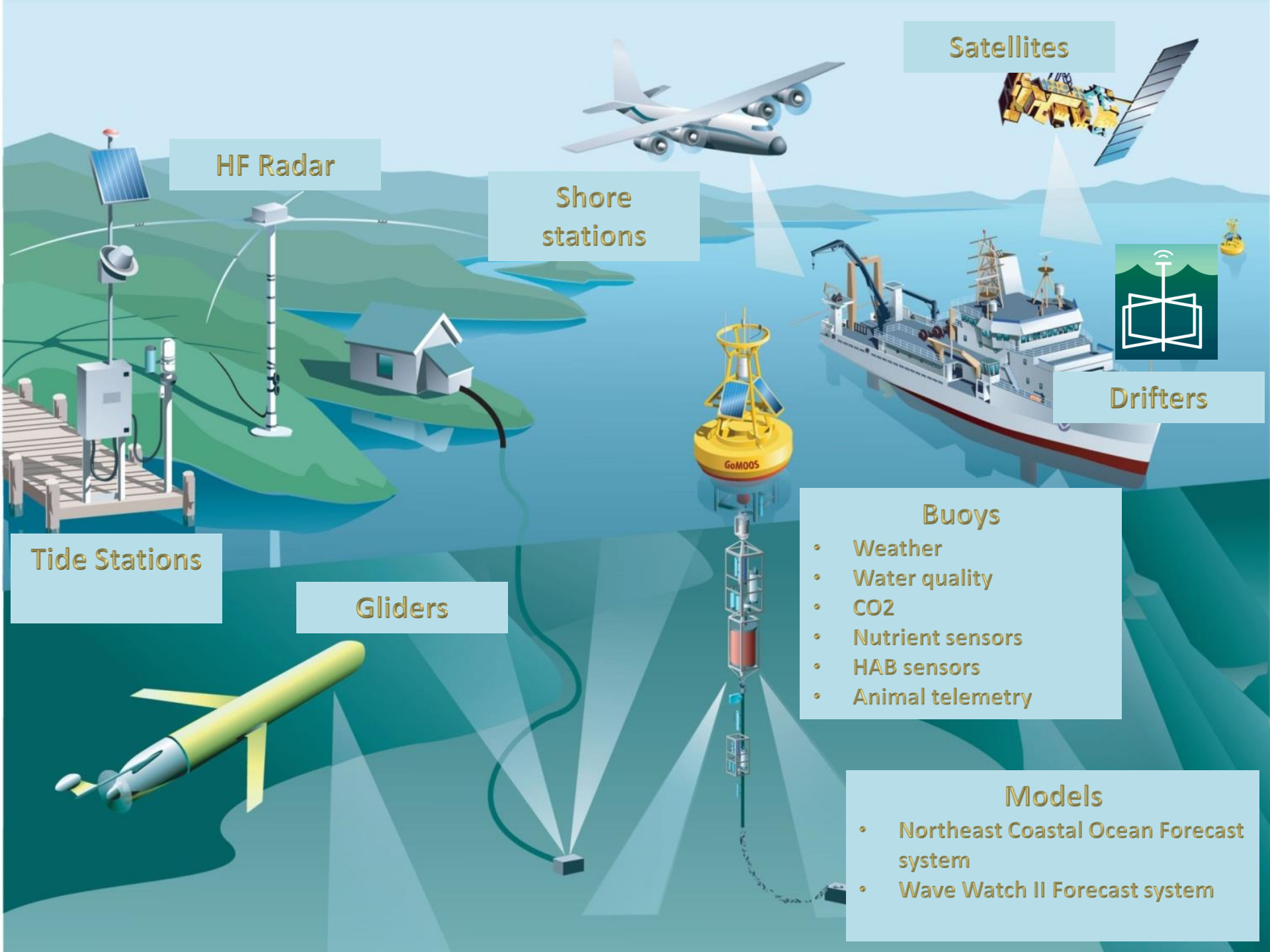
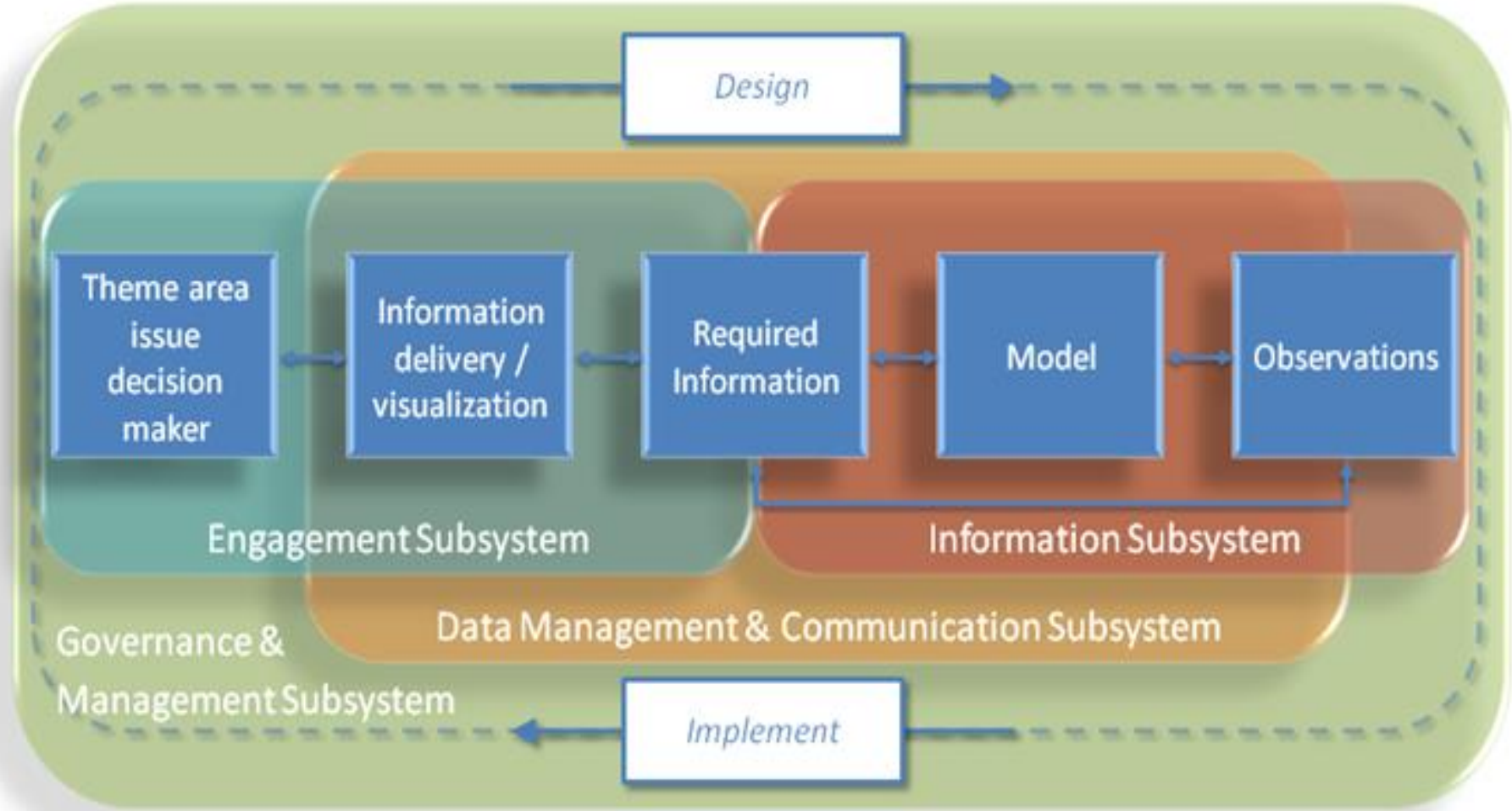
Regional Build Out Plan 2011



- Why / Significance?
  - Nationally
    - ICOOS Act (2009) requires
      - Independent Cost Estimate (ICE)
      - Gaps Analysis
    - National Ocean Policy
      - National Priority Objective # 9 – *Observations, Mapping, and Infrastructure* – inform the Strategic Action Plan
  - Regionally
    - System to plan for


Satellites
HF Radar
Shore stations
Drifters
GoMOOS
Tide Stations
Gliders
Buoys
Weather
Water quality
CO2
Nutrient sensors
HAB sensors
Animal telemetry
Models
Northeast Coastal Ocean Forecast system
Wave Watch II Forecast system

Current System Design



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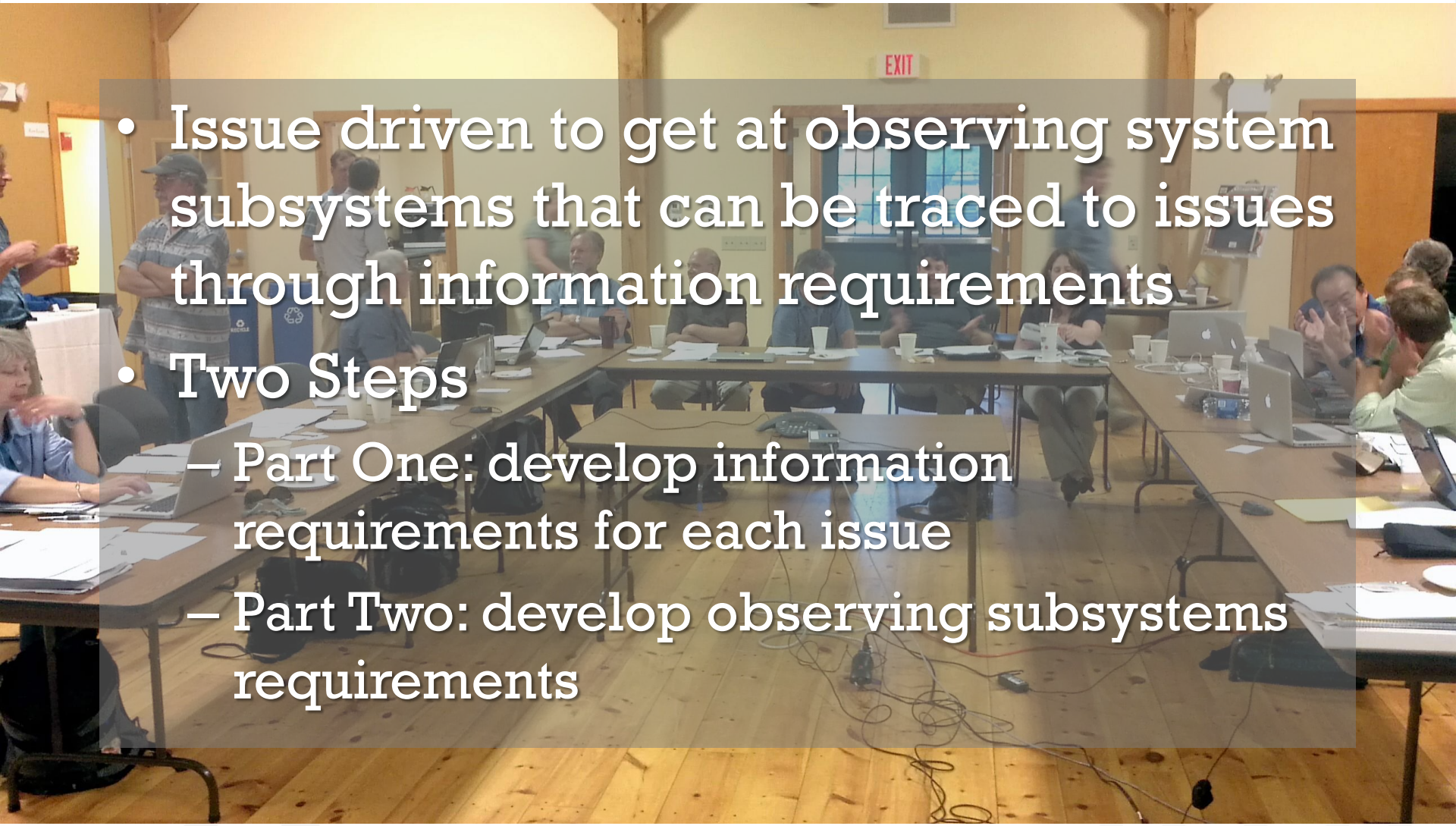
RBOP Process



- Issue driven to get at observing system subsystems that can be traced to issues through information requirements
- Two Steps
  - Part One: develop information requirements for each issue
  - Part Two: develop observing subsystems requirements

VW Beetle not Cadillac

Marine Operations

- safe and efficient commercial shipping and recreational boating,
- search and rescue,
- spill response,
- offshore energy,
- aquaculture, and
- tourism.

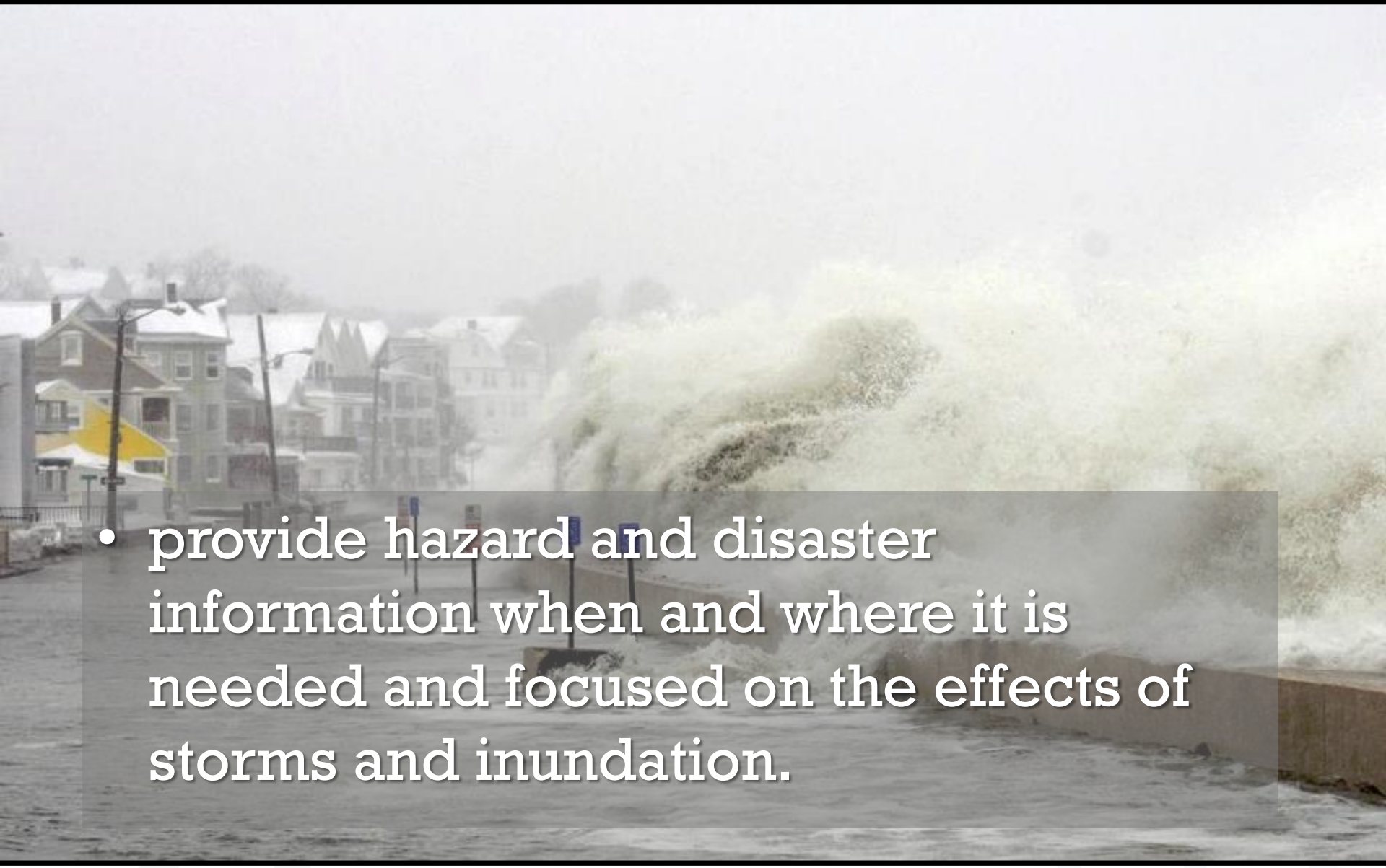
Climate Variability and Change

- changes in ocean conditions over time,
- ocean acidification, and
- sea level change.

Ecosystems, fisheries, and water quality the issues included

- healthy ecosystems,
- productive habitats and sustainable fisheries,
- harmful algal blooms,
- hypoxia and nutrient enrichment, and
- minimizing impact from polluted waters.

Coastal Hazards



- provide hazard and disaster information when and where it is needed and focused on the effects of storms and inundation.

Example: Search and Rescue

Issue 1.2: Search and Rescue

All mariners in the coastal waters of the United States Exclusive Economic Zone (EEZ) potentially need the services of the US Coast Guard's (USCG) office of Search and Rescue (SAR). In 2006, 28,316 search cases were conducted by the USCG and 5,260 lives were saved (Schafer et al., 2006). Unfortunately, there were also 786 deaths. Most of these SAR cases occurred within a few miles of shore where the currents are complicated as a consequence of coastal bathymetry and congested boat traffic. These cases are often resolved quickly and target drift is limited. The search target may be moved greater distances with limited visibility and farther from shore. Predicting this drift and its uncertainty allows searchers to be more effective by reducing the search area. Coastal High Frequency (HF) radar surface current observations, in concert with the USCG forecast and search management system has been demonstrated to reduce the search areas. High resolution circulation forecast models may also reduce search areas. Real-time information on water temperature is important for determining survival time and real-time, and forecast sea-state is critical for mission planning. Improving the probability of locating the object within the constraints of limited search resources is key to successful rescue efforts.

1.2.1 PRODUCT AND SERVICES: Real-time and forecast conditions sent to the Coast Guard's Environmental Data Server

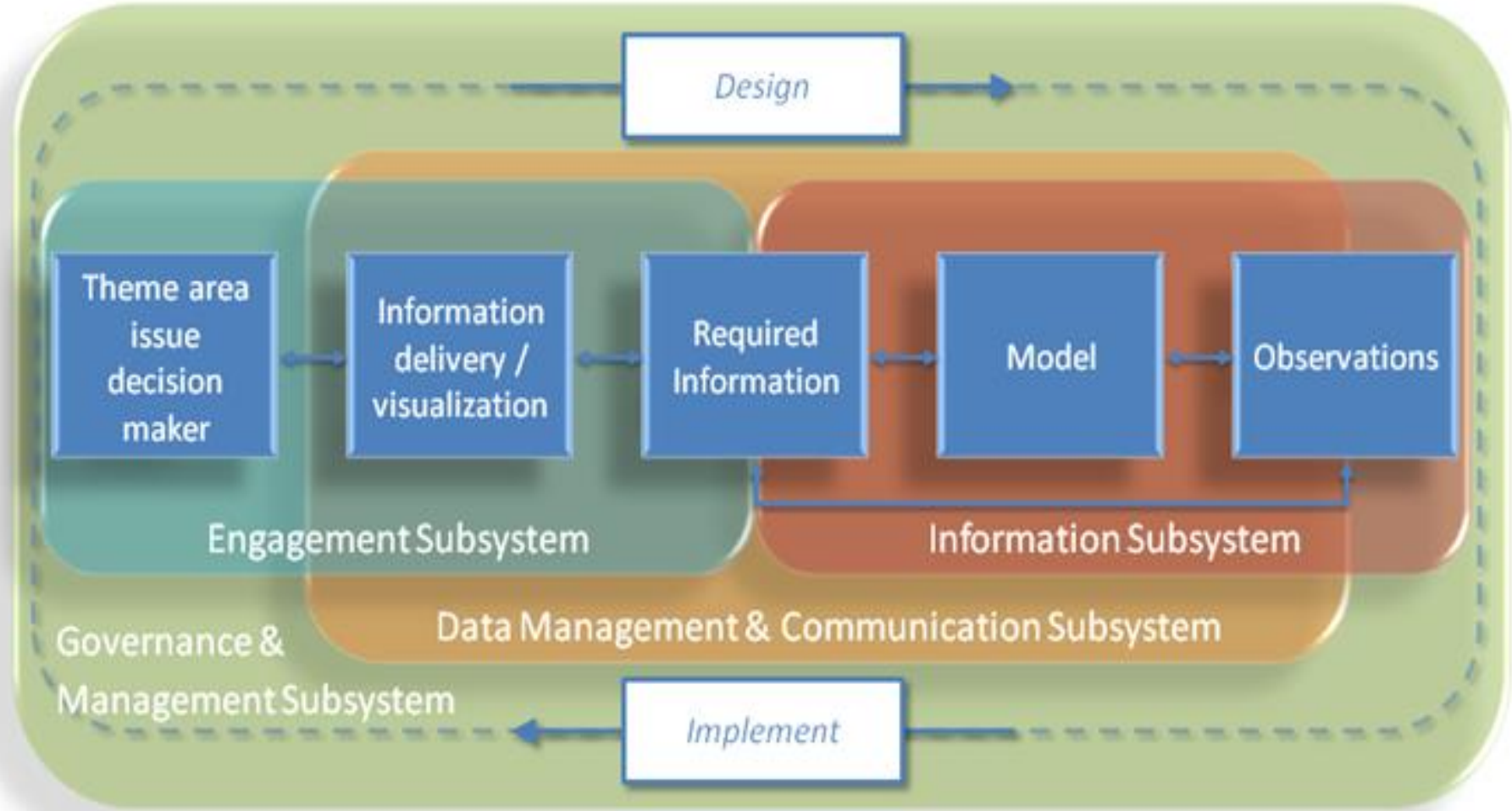
SAR operations are both costly and dangerous, but have the potential to bring large human and economic benefits. Recently, the USCG implemented a new operational tool to manage searches, the Search and Rescue Operational Planning System (SAROPS). This tool requires wind, surface current, wave measurements, water and air temperature measurements, and exploits a wide range of environmental forecasts through an Environmental Data Server (EDS). The data processing and telemetry associated with HF radar results in a delay of 1 to 3 hours in the delivery of surface current observations, and search planners need short-term statistical forecasts to predict search target drift. NERACOOS information will be integrated to the USCG SAROPS tool through the EDS.

INFORMATION REQUIREMENTS:

REAL-TIME AND HISTORICAL OBSERVATIONS: Operational requirements from the USCG require coverage of 80% of the area for 80% of the time of surface currents from HFR. Offshore – 6 km resolution is required (~10 HFR sites in the Gulf of Maine). Near-shore and densely populated shallow areas (Massachusetts Bay and the Sounds of southern New England) – 2 km resolution to resolve more complex currents. Historical observations are required for developing statistical current models. In-situ subsurface measurements of currents (speed and direction), wind, wave, water and air temperatures are also necessary at sufficient spatial resolution to inform SAR as well as minimizing model uncertainty. Thirty to sixty minute temporal resolution is required.

MODEL INFORMATION: A statistically derived Short Term Prediction System (STPS) is required for 24 hour current forecasts from HF radar observations. Dynamical meteorological and ocean condition models such as the Northeast Coastal Ocean Forecast System also provide forecast information to the EDS for the following 2-3 days.

Current System Design



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September 15th, 2011

Fixed platforms summary table I

Platform name	Description	Number
Multipurpose buoy/mooring system: offshore and shelf moorings	The multipurpose moorings will provide platforms capable of measuring a suite of real-time weather and ocean parameters (physical, chemical and biological) that will meet the requirements of many theme areas. All multipurpose moorings will not necessarily have the full suite of sensors detailed below but will be capable of supporting them and will have the capacity to test new sensors. Moorings will cover a range of depths up to 300m; deeper moorings require increased instrumentation.	~15 buoys geographically spread throughout the region
Nearshore/estuarine multipurpose buoys	Designed to provide information on a number of issues but mainly focusing on port / harbor operations and water quality (hypoxia / nutrient enrichment and minimizing the impact from polluted waters).	~15 buoys with a mixture of fixed and moveable locations
Shore/pier-based systems	A shore or pier based station will collect coastal meteorological and ocean data at key locations and especially in ports and harbors with significant maritime commerce and water quality issues.	~15 Stations throughout the region
Water-level gauge: tides and water level	Water level sensors are in addition to those deployed and maintained by Federal agencies such as NOAA CO-OPS and USGS. These mainly provide coastal hazard information.	15 additional gauges including moveable ones

Fixed platforms summary table II

Platform name	Description	Number
Coastal river gauge	A coastal river gauge will monitor river flow as well as the water quality entering the marine system.	Maintain and augment the current USGS stream gauge system and restore to previous levels if present capacity less that needed
Single purpose – Coastal Data Information Program (CDIP) wave buoy	Single-purpose buoy to measure wave characteristics at a given location. Data transmitted to and processed by CDIP at the Scripps Institution of Oceanography. This program has strong links to the Army Corps of Engineers.	Sufficient to meet national waves plan but exact number is unclear and depends on location of other multipurpose platforms
Single purpose – molecular analysis buoy	Currently molecular analysis sensors such as the Environmental Sample Processor (ESP) used for HAB detection require a dedicated platform due to power, telemetry, and stability requirements.	~ 6 in the region
Single purpose – passive acoustic / listening buoys	At the moment there is an array of single-purpose Right Whale listening buoys in the Boston Shipping channel (funding from a Massachusetts Liquid Natural Gas (LNG) mitigation award.	Currently 10 in region.
Platforms of opportunity	On offshore energy installations and fixed gear such as lobster traps	~5 well-instrumented ~50 with a few sensors
Profiling moorings (future vision)	Used to provide highly depth-resolved information at key sentinel locations. They may replace some multipurpose buoys.	More development needed

Mobile platforms summary table I

Platform name	Description	Number
Gliders	Coastal gliders will help characterize the vertical and horizontal structure of the water column providing important observations to support many theme areas. Routine transects will help provide information on external forcing such as volume transport. This is particularly important at the region's northern boundary with the majority of the freshwater being delivered across the Scotian Shelf. Internal surveys are important for data assimilation into models.	7 needed to provide routine surveys at the northern boundary as well as conditions within the region
Autonomous underwater vehicles	AUVs require less time underwater than gliders due to power usage. Powered propulsion allows access to more high-energy / complex environments that gliders cannot access. Also allows more complex flight patterns including surveys at a single depth (e.g., under salmon net pens).	2 needed for specific sites and times (e.g., to monitor oxygen under and around net pens)
Ships (research and fishing)	Ships can be used to provide information that cannot easily be obtained through autonomous systems. Combinations of research ships and fishing vessels will depend on level of support and required facilities. Key fixed sentinel stations with biogeochemical, pelagic and benthic habitat components still require ships. Value can be added through common protocols with the Canadian Atlantic Zone Monitoring Program (AZMP).	8 stations in the region: Sentinel sites that could be sampled over the long-term, including estuarine, nearshore, and shelf locations, ideally collocated with other regional assets (e.g., NERACOOS buoys)

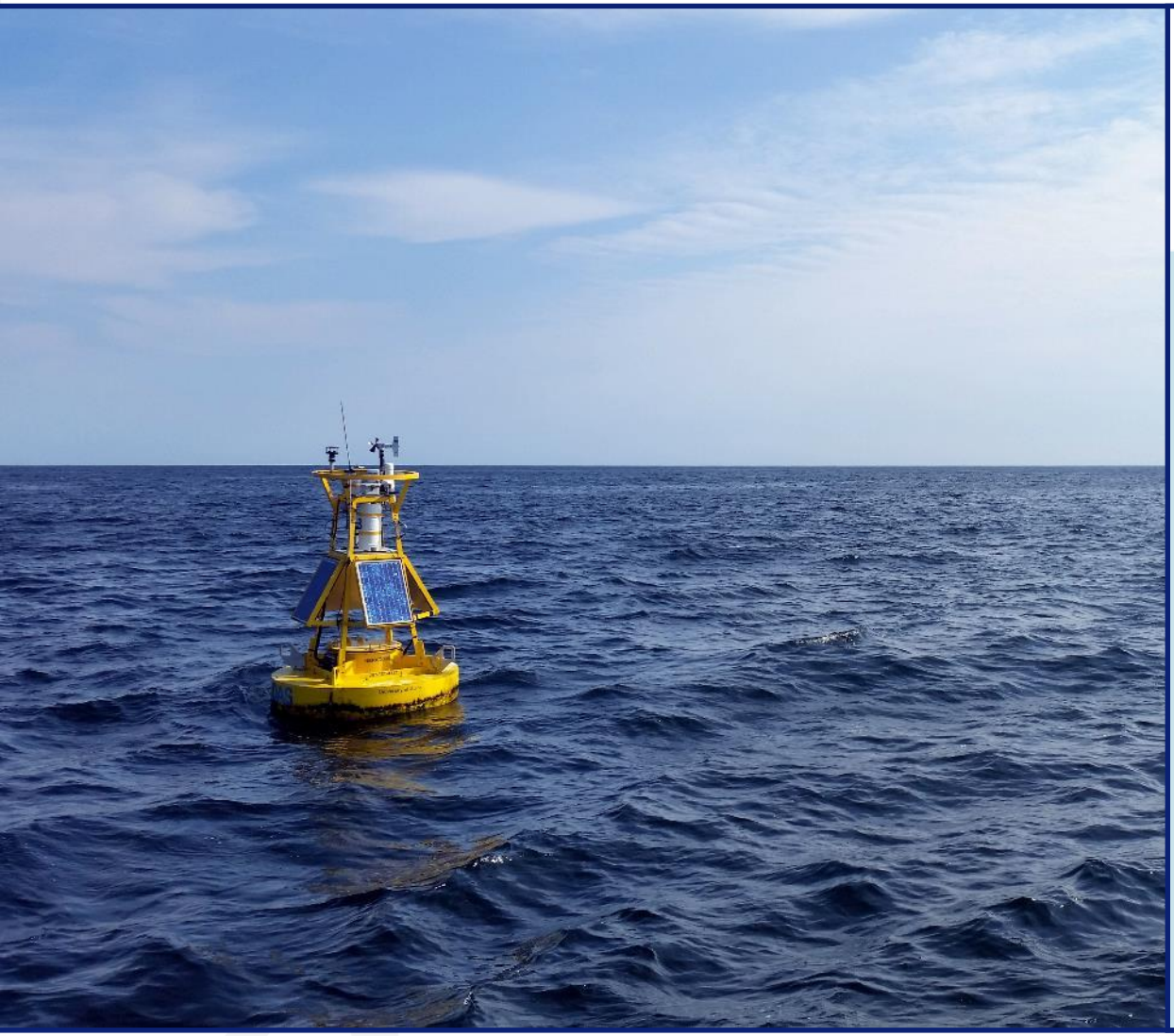
Mobile platforms summary table II

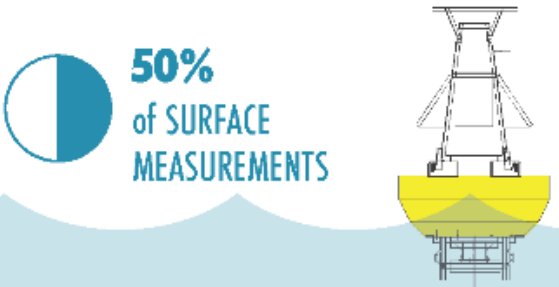
Platform name	Description	Number
Drifters	Student-built, fishermen-deployed, satellite-tracked drifters track surface currents.	Entire northeast continental shelf with typically 30 units active at any one time
Vessel of opportunity (e.g. ferry) repeating a transect for extended durations	Repeats multidisciplinary measurements (including meteorology, water quality, currents) at high frequencies (multiple times daily) for extended durations (often on repeated transects), to address multiple theme areas.	7 critical transects spanning choke points in coastal and estuarine systems typically having heavy shipping, fishing, and boating activities
Autonomous Surface Craft (Future Vision)	Multidisciplinary measurements (including water quality, currents, & potentially meteorology) multiple times daily for extended durations, along a repeat transect with full water column coverage, to address multiple theme areas.	More information is needed

Remote sensing platforms

Platform name	Description	Number
High-frequency radar (HFR)	Land-based short- and long-range HF radar systems will provide extensive coverage of coastal surface current speed and direction.	10 long-range HF radar shore stations (does not include the Long Island Sound systems that have historically been funded by MARACOOS) 13 short-range HF radar shore stations
Satellite	Satellites used to provide synoptic coverage of ocean conditions as well as at locations not sampled by other means. Example information includes; sea-surface temperature, ocean-color products (chl-a, CDOM, non-algal particles, phytoplankton groups and physiology), synthetic-aperture radar (SAR), satellite altimeter (for volume transport), and winds.	As available
Aerial remote sensing and autonomous aircraft (future vision)	Provide spatial information of surface and shallow habitat properties (e.g., areal coverage by submerged vegetation).	Future vision (no template at present)

Multipurpose Buoys





50% of SURFACE MEASUREMENTS

85% of SUBSURFACE MEASUREMENTS

100% of SUBSURFACE MEASUREMENTS DEEPER THAN 15 METERS

Fixed Platforms

Observing platform-fixed **Multipurpose buoy/mooring system: offshore and shelf moorings**	The multipurpose moorings will provide a platform capable of measuring a suite of real-time weather and ocean observations (physical, chemical and biological) that will meet the requirements of many theme areas. All multipurpose moorings will not necessarily have the full suite of sensors detailed below but will be capable of supporting them and will have the capacity to test new sensors. Moorings will cover a range of depths up to 300m; deeper moorings generally require increased instrumentation required.
Theme issues addressed	1.1, 1.2, 1.3, 1.4, 1.5, 2.1,2.2, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1
Variables observed and resolution (spatial, temporal, accuracy) requirements	10-60 min measurements and finer time intervals for selected parameters. Up to 10 minutes for hurricane. Wind (speed and direction): surface Air temperature: Barometric pressure: Irradiance(Heat Flux): surface and one other depth Visibility: Wave height, period, direction, and spectrum: 30-60 minutes (2m) Relative humidity; Water temperature: 1, 2, 20, and 50 m; every 50 m below, and 1-2 m above bottom [5 or 10 levels] Salinity: same as water temp Current speed and direction: surface and water column Bottom pressure Dissolved oxygen: same as water temp Nutrients (NO_3, PO_4, others as available): - 3 depths (surface, below pycnocline, near bottom) Optical sensors (chl a, CDOM, turbidity, irradiance)–same depth as nutrient sensors. No irradiance at bottom. Molecular analysis tool (e.g., ESP)- 5 m Biological acoustic sensors: (on both multi and single purpose buoys) Acoustic tag detectors: (currently don't telemeter real time-development need?) pCO_2: 1m and bottom *Possible additional sensors:* Wind (speed and direction profile: up to 80 m above sea level) for offshore wind energy development. AIS receivers Alkalinity Total Carbon pH *Future Vision:*

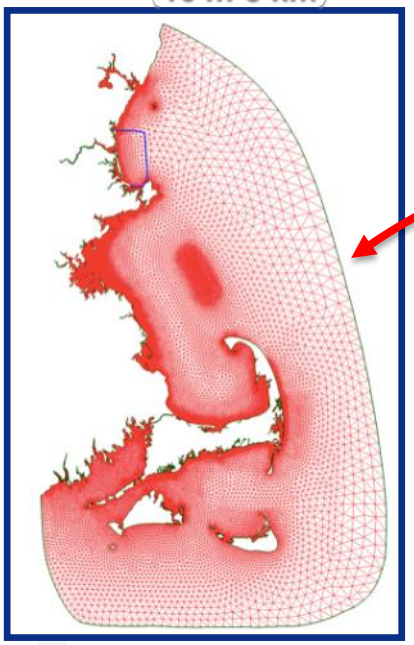
	phytoplankton (abundance, classification, distribution), zooplankton (abundance, classification, distribution) Video cameras (fish)
Sensors (and number)	For a mooring in 300 m : 2 met stations, 1 visibility sensor, 1 wave accelerometer system, 1 surface ACDP, 1 long-range ACDP, 9 CTDs with DO, 3 optical sensor packages, 3 nutrient sensor packages, 1 ESP sensor, bottom pressure.
Geographic cover / location and number of buoys: • Slope, • Shelf (includes outer-shelf, mid-shelf, inner shelf),	~15 buoys geographically spread throughout the region. [This is in addition to the ~9 NDBC buoys in the region that could be augmented with an enhanced sensor suite]
Operational requirements • Deployment / Operations (boats, etc) • Maintenance (# of service trips/year) • Personnel (# of FTEs) • Replacement needs (spare parts, redundant systems) • Other	Capital cost: ~ 400k / buoy (need 1.5 buoys per location) Operations and Maintenance: ~40 k/ yr / buoy FTEs: 1 FTE / year / buoy (sum of multiple types of personnel skill types) 2 primary service trips per year and 2 emergency service trips per year. Cost savings are gained with multiple buoys operated by the same work group.
Development needs	Development needs include improved communications systems to support two-way communications at high data rates, improved power supply to extend deployment time and support more sensors, nutrient systems need additional development for longer-term deployments (6 mo), sensor development and refinement for more complex sensors, integration of buoy systems, etc.

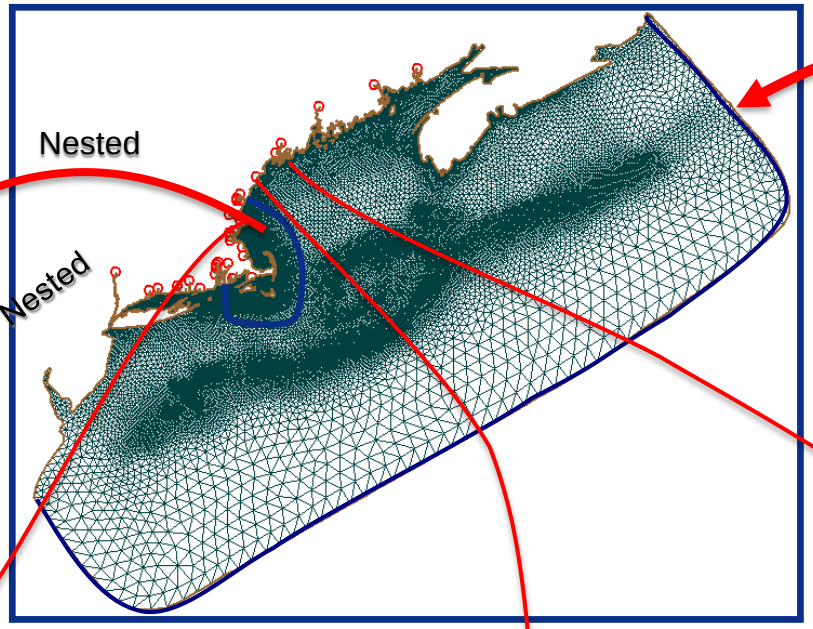
Northeast Coastal Ocean Forecast System (NECOFS)

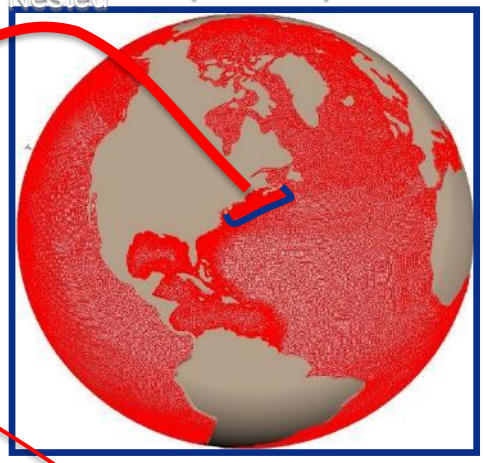
Mass-Coastal FVCOM (10 m-5 km)

GOM-FVCOM (0.3-15 km)

Global-FVCOM (2-50 km)







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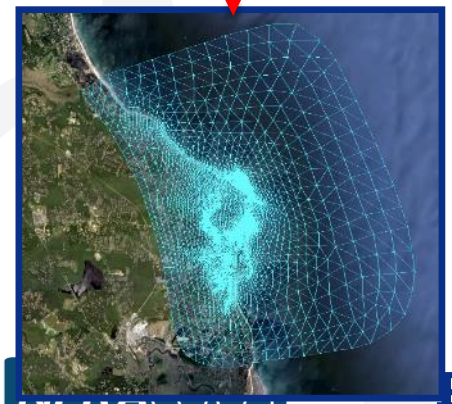
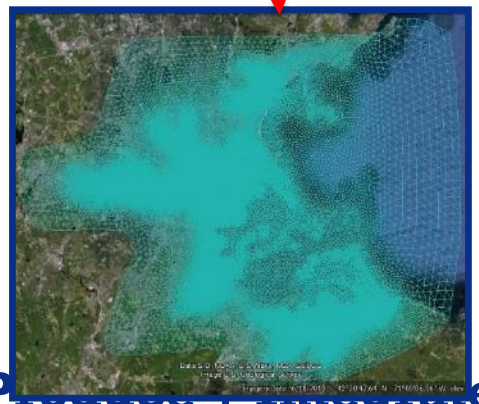
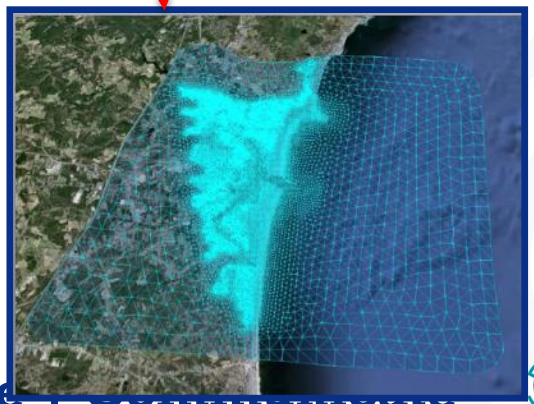
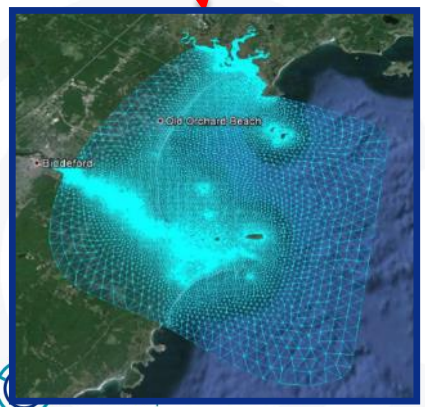






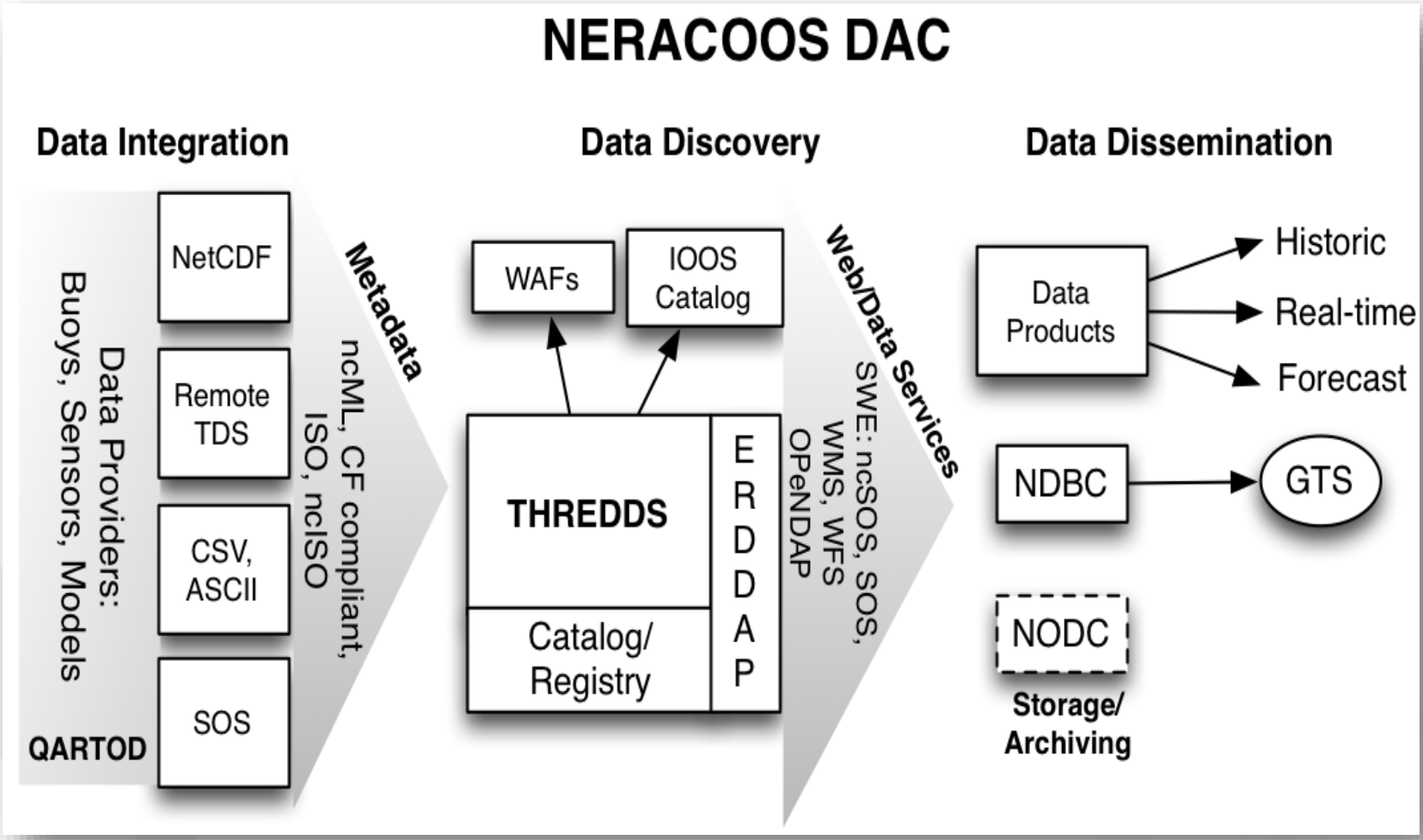


Scituate, MA (up to 10 m) | Boston Harbor, MA (up to 10 m) | Hampton, NH (up to 10 m) | Saco Bay (up to 10 m)

Modeling & Analysis Subsystem

- *To provide a more robust modeling infrastructure modeling efforts may be transitioned to federal agencies. However, NERACOOS will maintain a more rapidly adaptable and flexible modeling capacity that is closely tied to state-of-the-art modeling efforts.*
- *The observing subsystem is closely tied to the modeling and analysis subsystem – the two providing an information system for the region. Observations are assimilated into models, filling gaps between observations with nowcasts as well as providing future conditions with forecasts. Models can inform observational strategies such that model uncertainties are minimized. Hindcasts which assimilate historical observations allow past events and trends to be studied and assessed. They also provide a range of conditions that might be expected and allow for simulation of extreme events such as hurricanes and nor'easters with changed settings such as a rise in sea level*

Data Management Framework

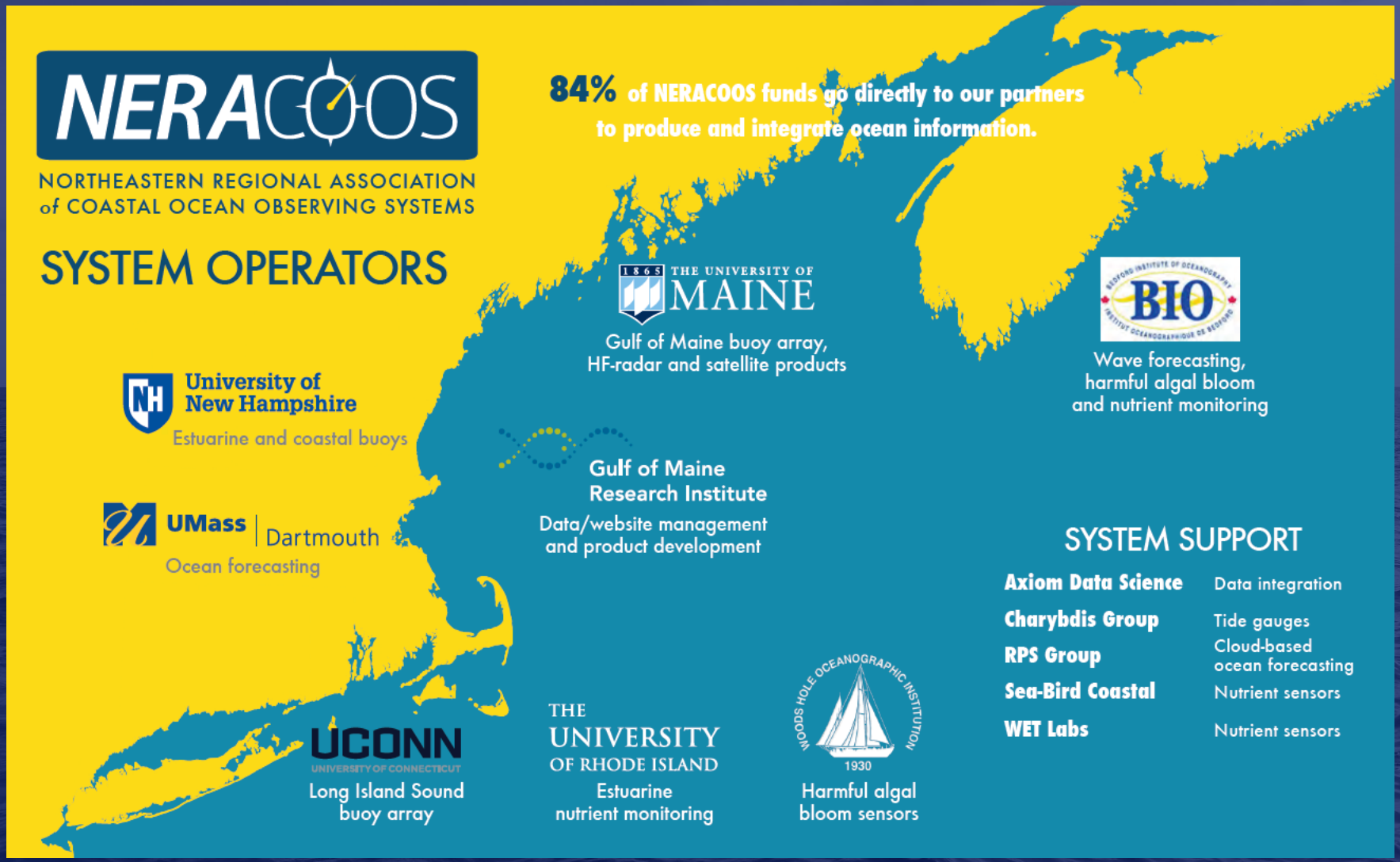


Independent Cost Estimate 2012

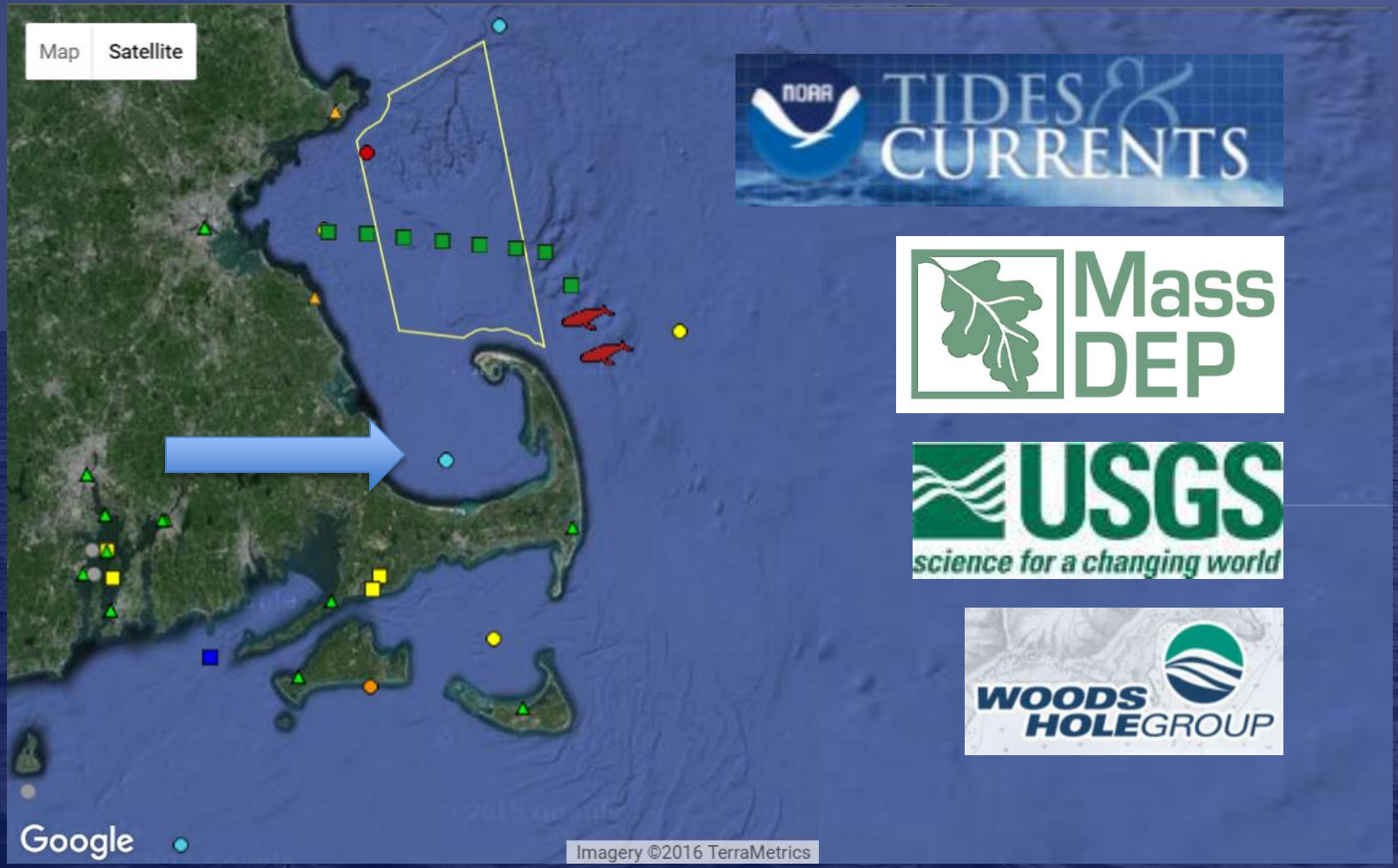
IOOS WBS Element		Central	Federal	Non-Federal	Total
1. Development		**574**	**15,166**	**4,432**	**20,172**
1.1	Observing su	13	7,843	2,926	10,782
1.2	Data manage	337	2,289	248	2,873
1.3	Modeling and	60	2,289	327	2,675
1.4	Governance	110	1,526	643	2,279
1.5	Research an	20	763	70	853
1.6	Training and	34	458	217	709
2. Operations and S		**412**	**30,047**	**3,575**	**34,035**
2.1	Systems eng	21	0	0	21
2.2	System oper [replication of 1.X fun	**352**	**15,256**	**3,575**	**19,183**
2.3	Maintenance	12	9,861	0	9,872
2.4	Sustaining su	0	2,465	0	2,465
2.5	Indirect conti	0	1,233	0	1,233
2.6	Continuing sy	27	1,233	0	1,260
		986	**45,214**	**8,007**	**54,206**

	Year 1
ACT	$1
AOOS	$52
CaRa	$14
CeNCOOS	$17
GCOOS	$52
GLOS	$19
MACOORA	$112
NANOOS	$36
NERACOOS	$45
PacIOOS	$36
SCCOOS	$47
SECOORA	$69
Total ($M)	**$501**

Operations

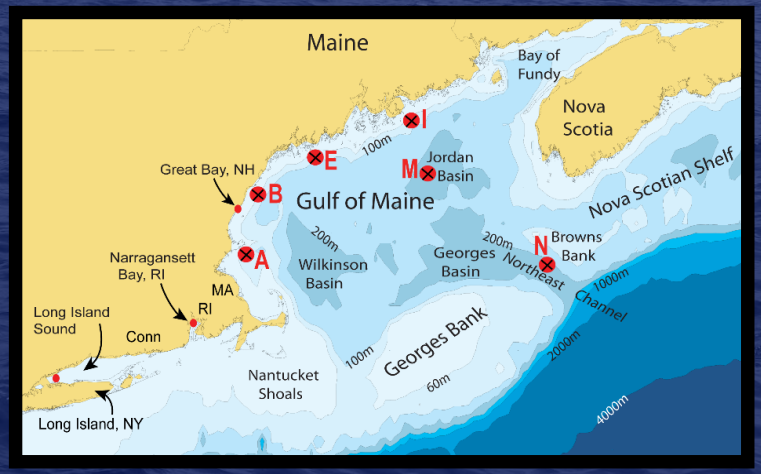

NERACOOS
NORTHEASTERN REGIONAL ASSOCIATION of COASTAL OCEAN OBSERVING SYSTEMS
84% of NERACOOS funds go directly to our partners to produce and integrate ocean information.
SYSTEM OPERATORS
THE UNIVERSITY OF MAINE
Gulf of Maine buoy array, HF-radar and satellite products
BIO
Wave forecasting, harmful algal bloom and nutrient monitoring
University of New Hampshire
Estuarine and coastal buoys
Gulf of Maine Research Institute
Data/website management and product development
UMass | Dartmouth
Ocean forecasting
SYSTEM SUPPORT
Axiom Data Science — Data integration
Charybdis Group — Tide gauges
RPS Group — Cloud-based ocean forecasting
Sea-Bird Coastal — Nutrient sensors
WET Labs — Nutrient sensors
UCONN
UNIVERSITY OF CONNECTICUT
Long Island Sound buoy array
THE UNIVERSITY OF RHODE ISLAND
Estuarine nutrient monitoring
WOODS HOLE OCEANOGRAPHIC INSTITUTION
1930
Harmful algal bloom sensors

PORTS® System for Cape Cod Canal
Deployed May 20, 2016



Nutrient Observatory

> *Improving the water quality and overall health of the Great Bay Estuary is of utmost importance to us. The NERACOOS buoy in Great Bay delivers important information that is an integral piece of the clean water puzzle.*
>
> Ted Diers, Watershed Management Bureau Administrator
> NH Department of Environmental Services



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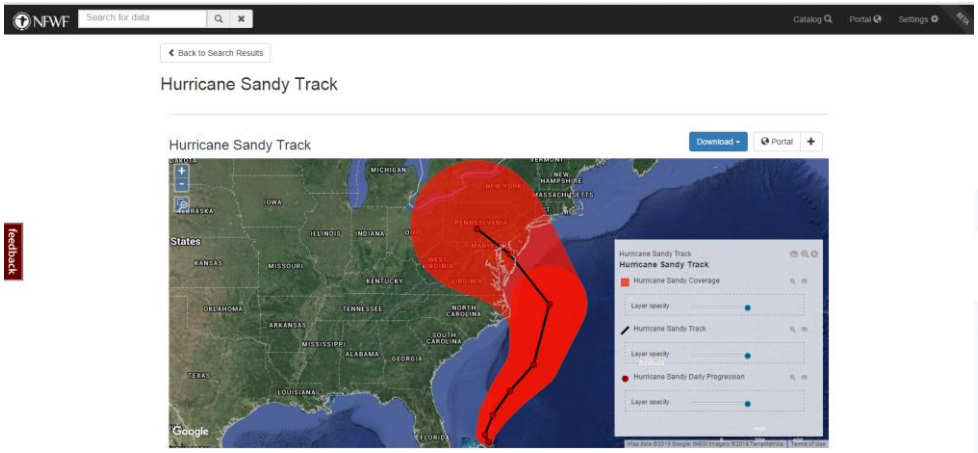
Engagement – Coastal Resilience (NFWF)

Components:

- Data integration portal and best practices for working with unstructured grids
- Inundation viewer for NWS (and others)

Project updates:

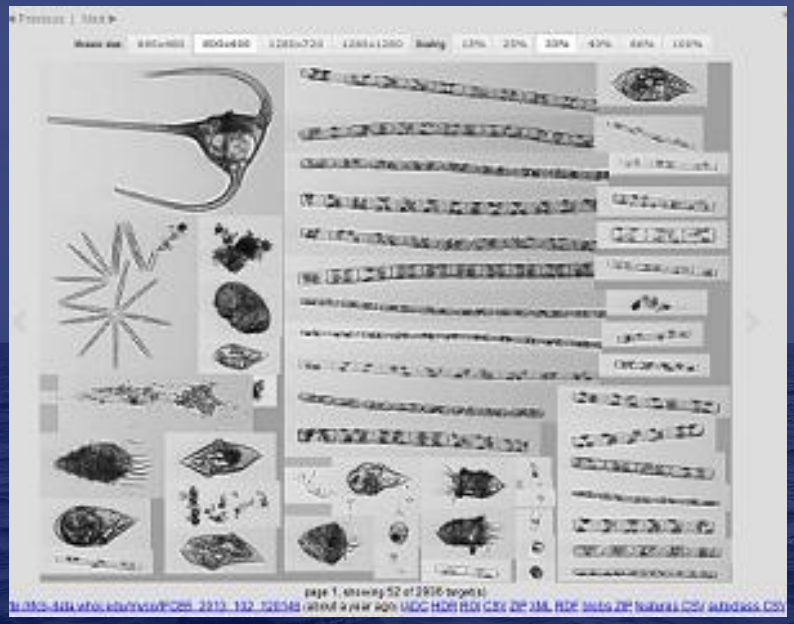
- 6 month extension approved. Project will now end in March 2017.
- Portal and viewer in progress, stakeholder engagement completed
- Developing new timeline, evaluation plan, and QAPP



New Total Alkalinity Sensor

- IOOS Ocean Technology Transfer funded
- World's first commercially available autonomous total alkalinity analyzer
- Augmenting stations with existing pH sensors, looking to better understand carbonate system process

ImagingFlowCytobot



- IOOS Ocean Technology Transfer funded
- In partnership with: WHOI, GMRI, and GCOOS.
- Project update:
  - Initial kick off calls have been held
  - WHOI testing mobile platform

Regional Resiliency

- Awarded ~$890k
- Start Date: May 1, 2016
- 14 subawards
- Status Meeting: September
- Two Track Project
  - Track 1: modeling and inundation forecasts
  - Track 2: living shorelines

Proposals Update

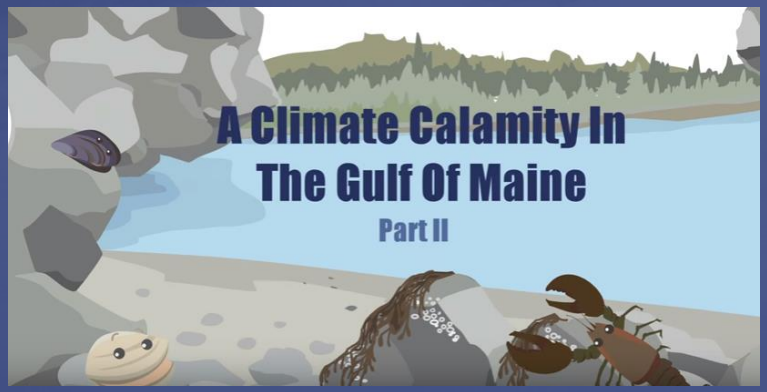
- NSF ITEST
- Gulf Research Program

Certification

- Certifying organizations (not data, models, buoys, etc.)
- Extends civil liability coverage for data use
- PacIOOS & GLOS were completed, MARACOOS has submitted, other RAs are in negotiation phase
- Goal for NERACOOS is to submit application by September
- Heavy emphasis on data management and processes

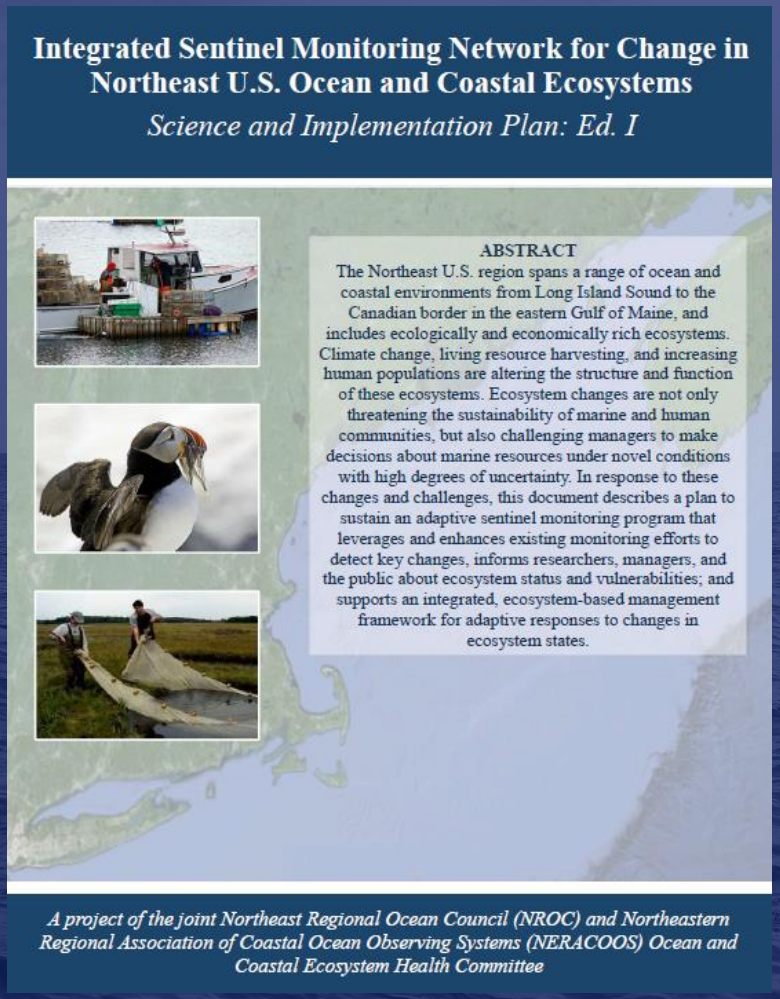
NECAN

- Website Live
- Implementation plan in progress
- Informational 4-pager



ISMN

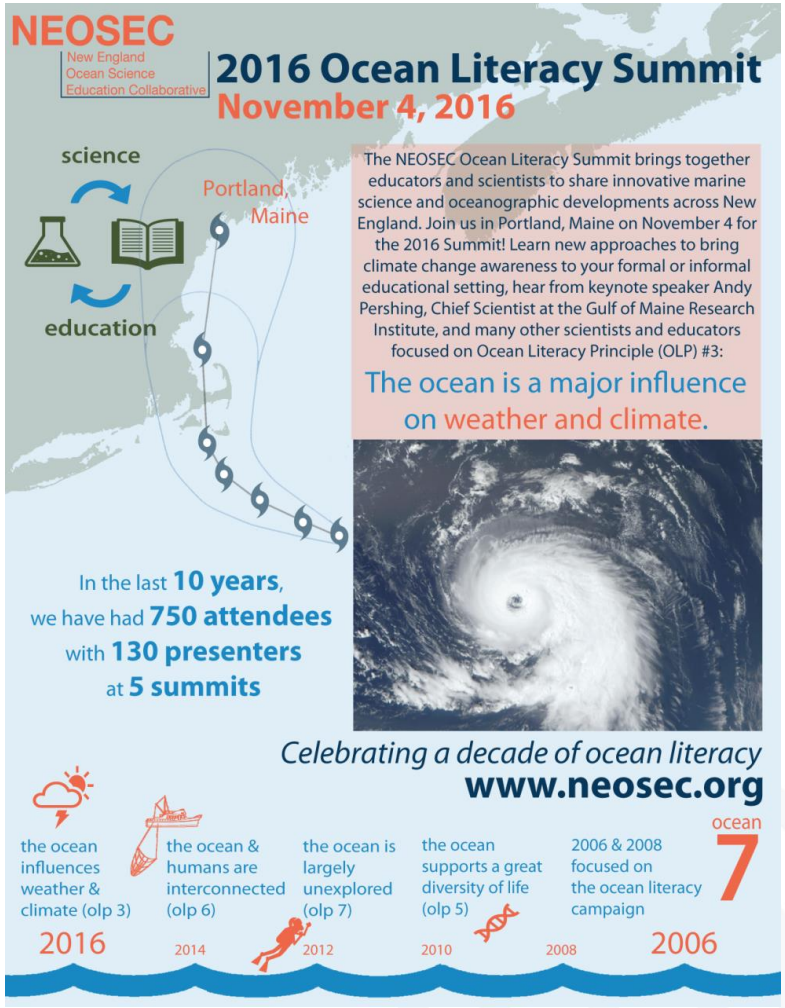
- Met in June to discuss next steps
  - NERACOOS- host agency
- Gulf Research Program



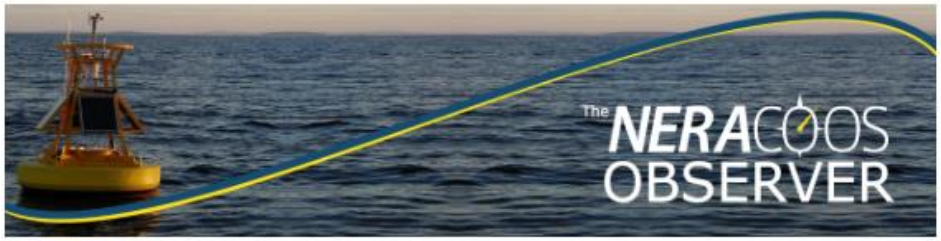
Engagement – Next Generation

cultivate coastal ocean stewards and professionals

- NMEA Meeting
- Formalizing resources and educational tools
- Three new interns
- NEOSEC Ocean Literacy Summit 2016

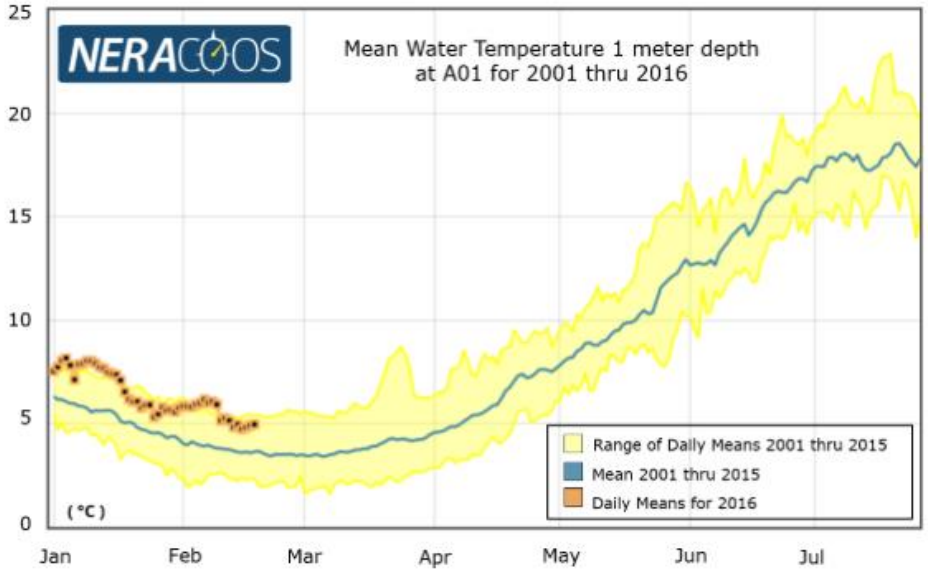


Newsletter



January 2016 Ocean Temperatures Warmest on Record

For the past 14 years NERACOOS buoy A has been monitoring water temperature and other ocean conditions in Massachusetts Bay. Our ocean climate tool (see graph below) shows that recent surface water temperatures have been well above the average temperatures for this time of year.

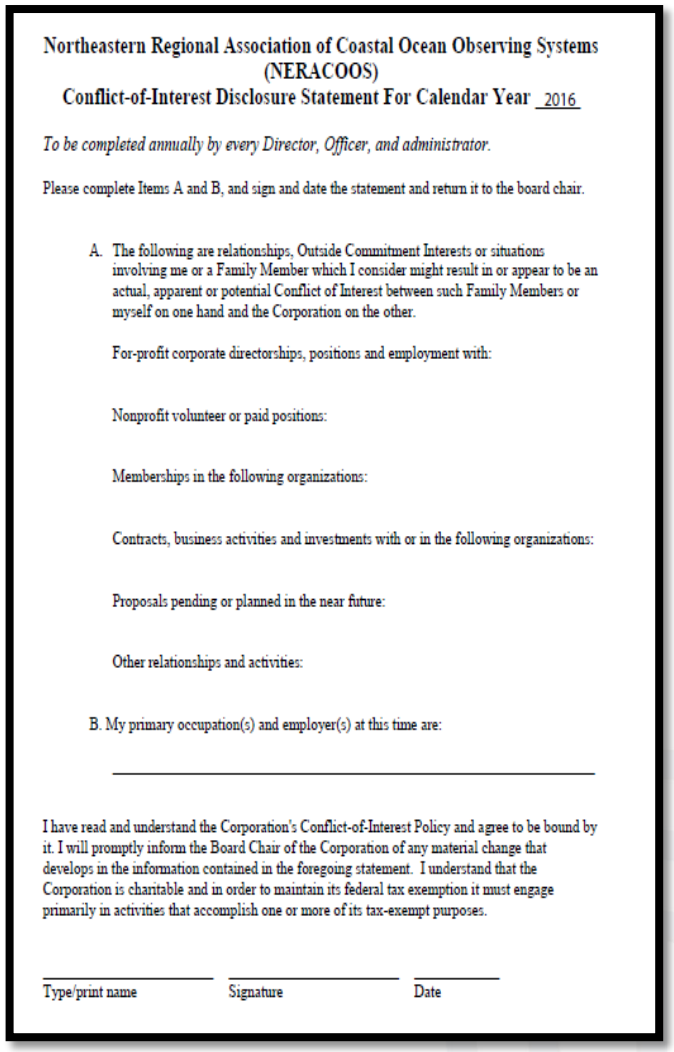


Annual Meeting

Conflict of Interest Forms

Total Received: 22

Total Remaining: 10



Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS)
Conflict-of-Interest Disclosure Statement For Calendar Year 2016

To be completed annually by every Director, Officer, and administrator.

Please complete Items A and B, and sign and date the statement and return it to the board chair.

A. The following are relationships, Outside Commitment Interests or situations involving me or a Family Member which I consider might result in or appear to be an actual, apparent or potential Conflict of Interest between such Family Members or myself on one hand and the Corporation on the other.

For-profit corporate directorships, positions and employment with:

Nonprofit volunteer or paid positions:

Memberships in the following organizations:

Contracts, business activities and investments with or in the following organizations:

Proposals pending or planned in the near future:

Other relationships and activities:

B. My primary occupation(s) and employer(s) at this time are:

_____

I have read and understand the Corporation's Conflict-of-Interest Policy and agree to be bound by it. I will promptly inform the Board Chair of the Corporation of any material change that develops in the information contained in the foregoing statement. I understand that the Corporation is charitable and in order to maintain its federal tax exemption it must engage primarily in activities that accomplish one or more of its tax-exempt purposes.

_____ _____ _____
Type/print name Signature Date

SPI Team Update

Active working groups:

DMAC: lead Tom

Modeling: lead Bob Beardsley

Operations: lead Anthony

HFR: lead Anthony

SPI Team Update

DMAC: lead Tom

- GMRI and Maine attended the IOSS DMAC meeting
- Tom and Riley working on the DMAC portion of the Certification plan
- Group updates to thredds servers

SPI Team Update

Operations: lead Anthony

- monthly calls,
- focused discussion on near term plans, issues, and
- details of operations

SPI Team Update

HFR: lead Anthony

- STPS outreach
- Near term plans for equipment moves
- QAQC implementation
- Tapping into wind energy interest on RI/MA shelf

SPI Team Update

Upcoming Events/activities:

Planning for a fall meeting: building or creating data products that would serve users in new ways.

Nominating Committee

Nominating Committee

Terms Ending in Dec. 2016

Officers:

- Steve Lohrenz, President
- Peter Smith, Vice President
- Anthony Kirincich, Secretary
- Matt Lyman, Treasurer

Directors:

- Anthony Kirincich, NEAC
- Peter Smith, NEAC
- Steve Lohrenz, NEAC
- Steve Couture, NROC
- Justin Manley
- Andy Pershing
- Paul Stacey
- Curtis Bohlen

Nominating Committee

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- Paul Stacey
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Nominating Committee

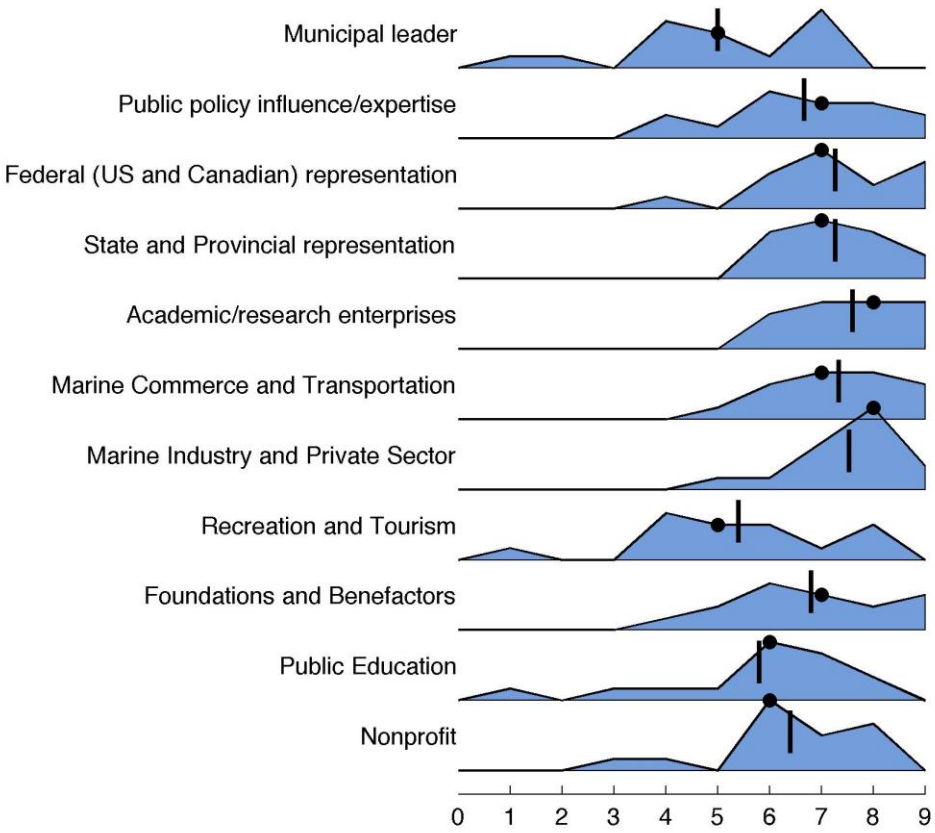
2016 Nomination Process

Survey Takeaways:

- Appropriate Board Size

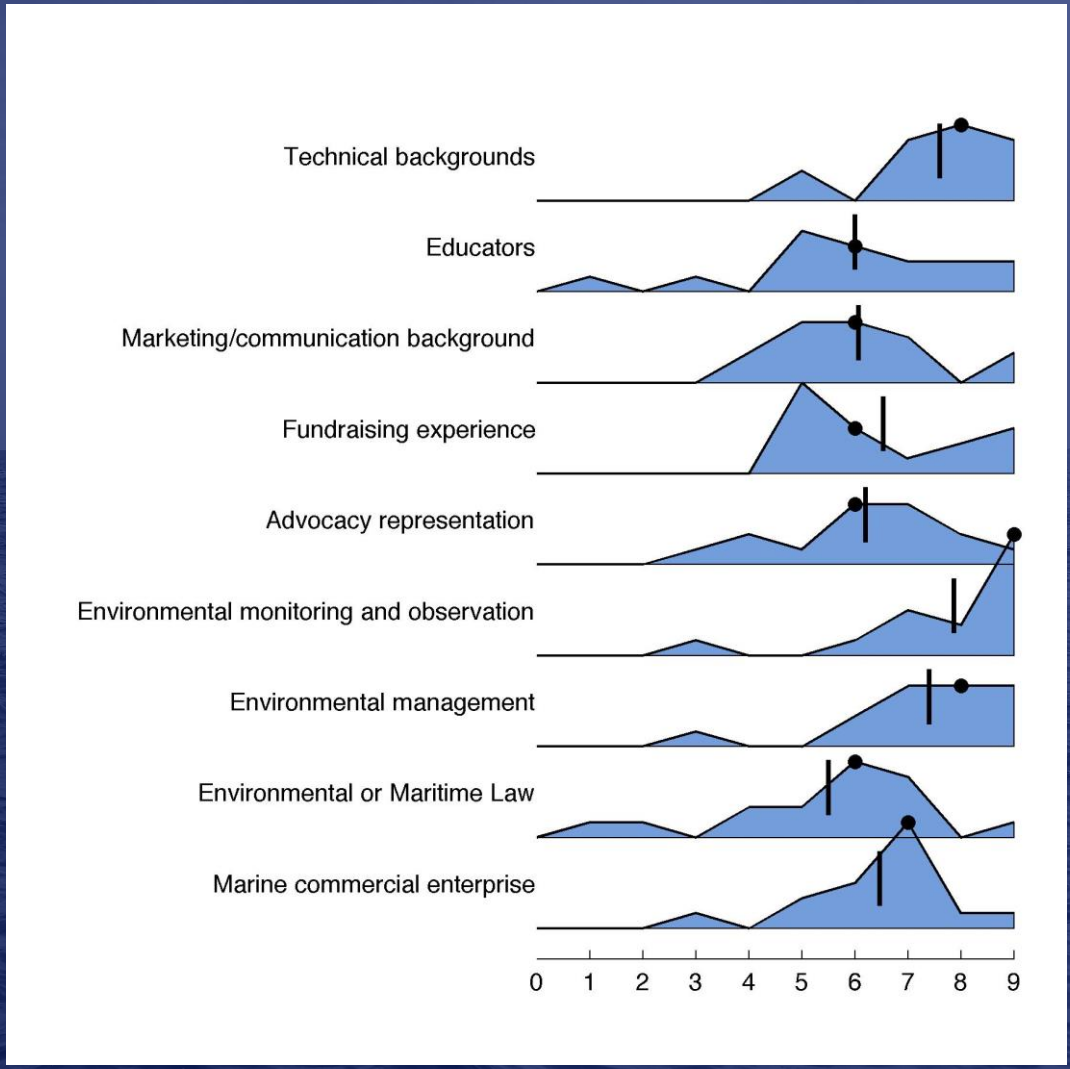
Nominating Committee

Q2: What skill sets should the board possess collectively, via the individual skills and abilities of the directors themselves?



Nominating Committee

Q3: What 'Spheres of Influence', i.e. the ability of a director to make outside connections in an area on behalf of the organization, must be represented on the board to ensure NERACOOS is able to complete its mission?



Nominating Committee

2016 Nomination Process

Next Steps:

- Confirm re-nominations

- Define new groups to recruit to fill secondary needs :
  - Harbor pilots,
  - MA DEP/ MWRA
  - Wind energy sector
  - Commercial Fishing

Finance Committee Report

FY 2016 Finance report October 2015 through June 2016

	BUDGET	ACTUAL	FORECAST	
Revenue				
Non-Federal	34,000	31,873	35,000	
Subtotal Non-Federal	34,000	31,873	35,000	
Federal				
FY11 - direct, no subawards	402,049	264,641	402,049	behind on invoicing
Sandy Supplemental, no subawards		3,792	3,792	
MSI - direct, no subawards	22,696	2,360	22,696	need to start spending down this award
NFWF - direct, no subawards	33,072	11,934	33,072	
Reg Res - direct, no subawards			2,000	Total year 1 funds - $8,961
FY16 - direct, no subawards			20,000	Total year 1 funds - $283,410
IFCB - direct, no subawards	8,499	-	2,000	
OA - direct, no subawards	3,247	-	1,000	
Subtotal Federal	469,563	282,727	486,609	
Indirect - all sources	116,191	74,727	123,501	Add $7.3K from new awards (FY16 and Reg Res)
TOTAL	$ 619,754	$ 389,327	$ 645,110	
Expenses				
Personnel				
Salaries and Wages	339,060	259,712	340,000	
Fringe - estimated actual	57,640	28,929	57,000	
Subtotal Personnel	396,700	288,641	397,000	
Travel - per grant proposals	51,930	36,278	52,000	
Supplies, etc. - per grant proposals	8,865	6,888	8,500	
Other - per grant proposals	32,371	41,650	50,000	
Subtotal Direct Expenses	93,166	84,816	110,500	
Indirect - non-personnel	73,380	37,722	65,000	
Non-Federal - non-personnel	7,500	2,973	7,500	
TOTAL	$ 570,746	$ 414,152	$ 580,000	
Surplus/(Deficit)	$ 49,008	$ (24,824)	$ 65,110	

Subaward summary:

Main Award: Received approval for No Cost Extension. Executed NCE amendments for subawards. BIO, GMRI, and WHOI in closeout process.
Sandy Supplemental: Closed out
Marine Sensor: UConn remains a bit behind. May want to request rebudget to move funds to indirect
NFWF-Sandy: Payment request went out in July.
Regional Resiliency: Funds received into ASAP. Subaward agreements mailed. Some invoices started coming in in July.
FY16: First year funds received into ASAP. Subaward agreements mailed. Working towards complete spenddown of FY11 funds before spending FY16 funds.
Flow CytoBots: No spending yet
OA: No spending yet.

Executive Committee

NERACOOS

Produce | Integrate | Communicate

IOOS | EYES ON THE OCEAN

December Board Meeting

NERACOOS

Produce | Integrate | Communicate

IOOS | EYES ON THE OCEAN

NERACOOS

NORTHEASTERN REGIONAL ASSOCIATION
of COASTAL OCEAN OBSERVING SYSTEMS

"Protecting Long Island Sound is critical to Connecticut's economy and our culture. It generates billions for the state annually in tourism, fishing, and boating. It's home to hundreds of diverse species of wildlife, and its 1,300 square miles of coastline are the site of happy memories for my family and countless others across the state. Whether it's the Coast Guard or lawmakers, researchers or advocates, people across Connecticut rely on NERACOOS' data to make the best decisions to protect our oceans and boost coastal resiliency. On behalf of all of Connecticut, I thank NERACOOS for their critical work."

U.S. Senator Chris Murphy (CT)