

Lead Federal Agency Report to the Committee

Zdenka Willis
Director, U.S. IOOS Program Office
2 December 2010



U.S. IOOS Programmatics

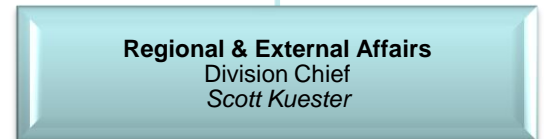
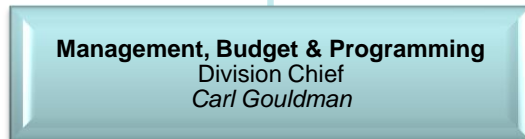
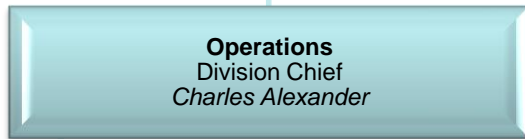
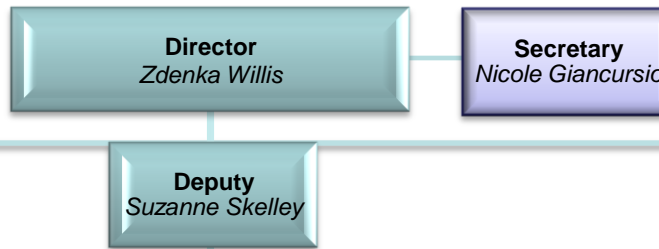
National Component

Regional Component

Interagency Collaboration

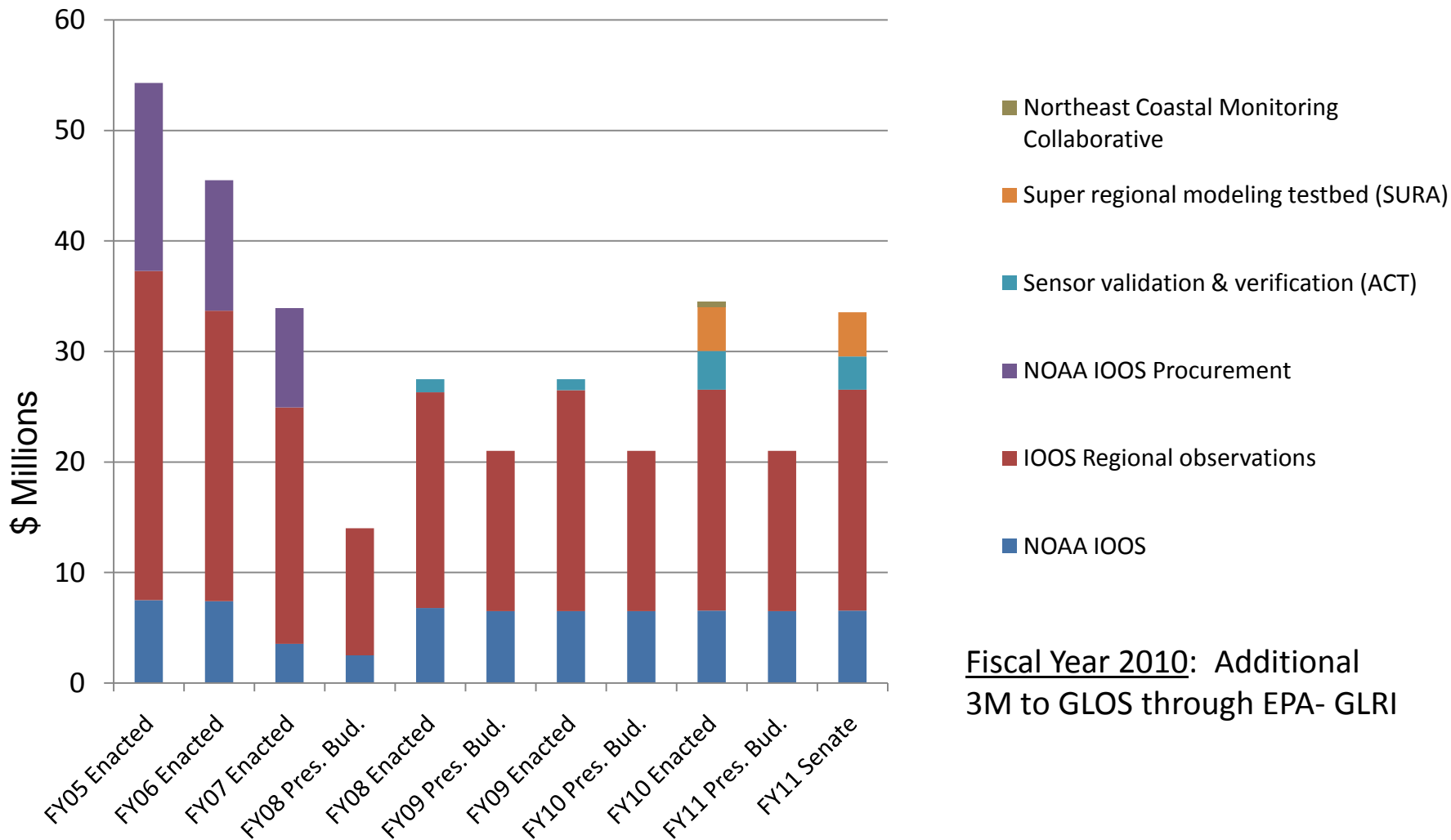
Challenges

U.S. IOOS Program Office
November 2010



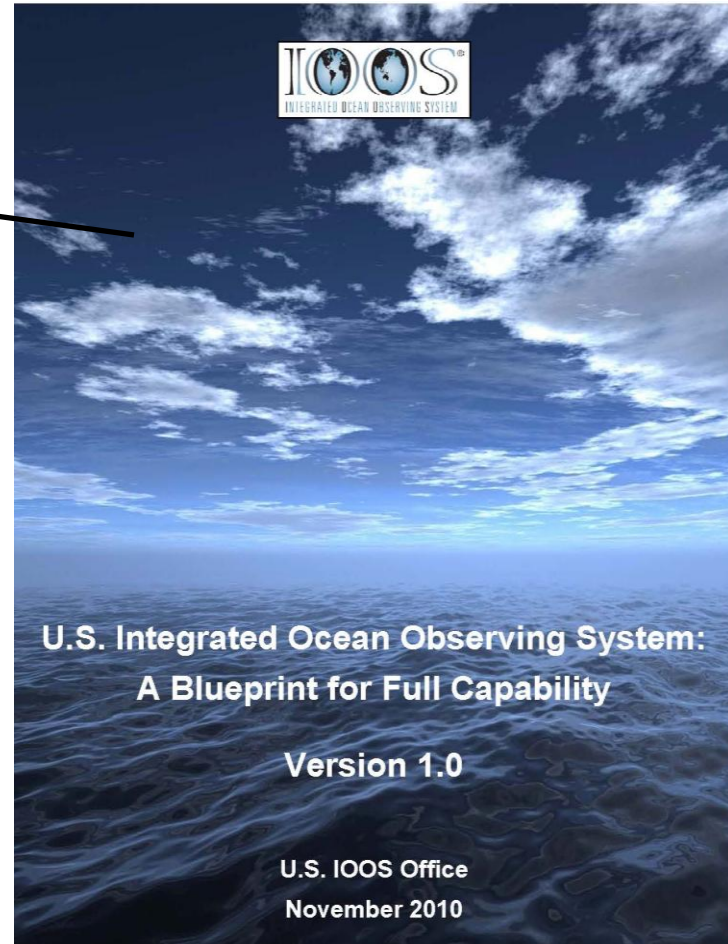
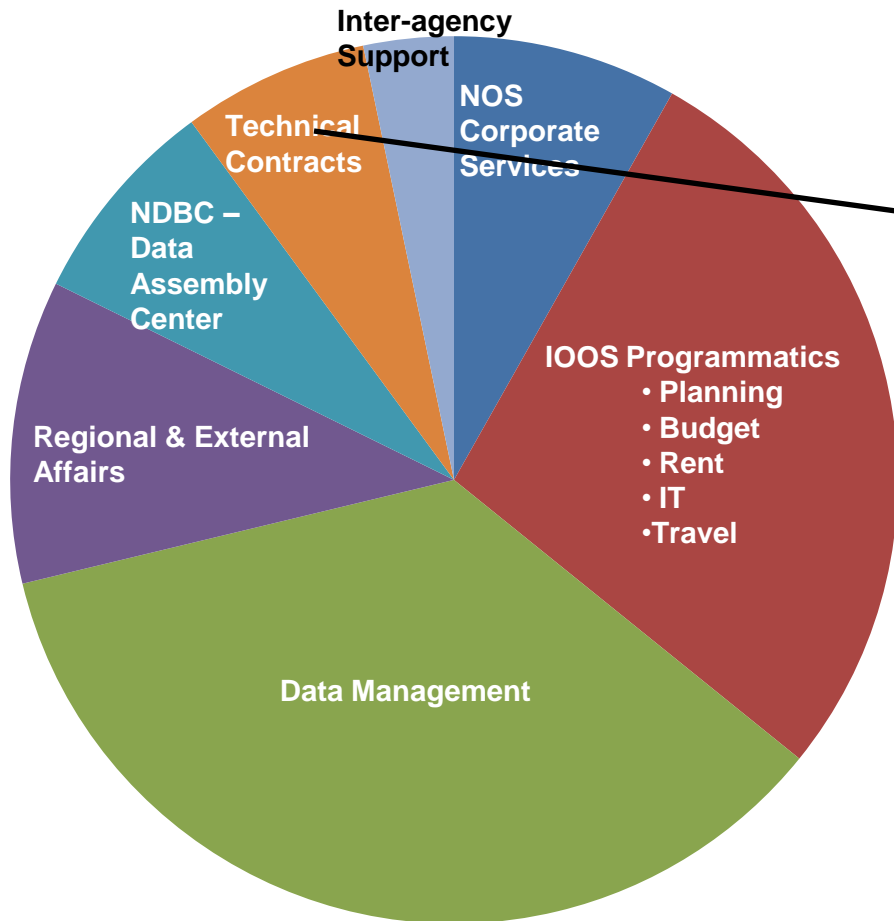
- Federal - FTE
- Contractor
- Interagency Detailee/IPA

IOOS Funding History



Fiscal Year 2010: Additional 3M to GLOS through EPA- GLRI

National Office Summary



IOOS Programmatic

- Budget Formulation through NOAA, DOC, & OMB
 - New NOAA budgeting process
 - Input to NOAA's new Strategic Plan
- Regional Oversight
 - FY10 limited geography competition
 - Processed 27 awards, 6 supplemental awards
 - Processed 24 administrative changes
 - FY10 FFO to modeling testbed
 - FY11 FFO – includes NASA, DOE, ONR in specific themes
 - Regional Fact Sheets compiled annually; online @ IOOS.gov
 - Coordinate NFRA Annual Meeting and Visits
- Daily Grind: Responds to 5+ taskings a week
 - Congressional member inquiries
 - Questions for the Record for Congressional hearings
 - Talking points for senior officials' travel, as well as Washington meetings by Regional Associations Reps
 - Funding levels or other budgetary information related to IOOS requested by Congressional Members, NOAA, or Department officials

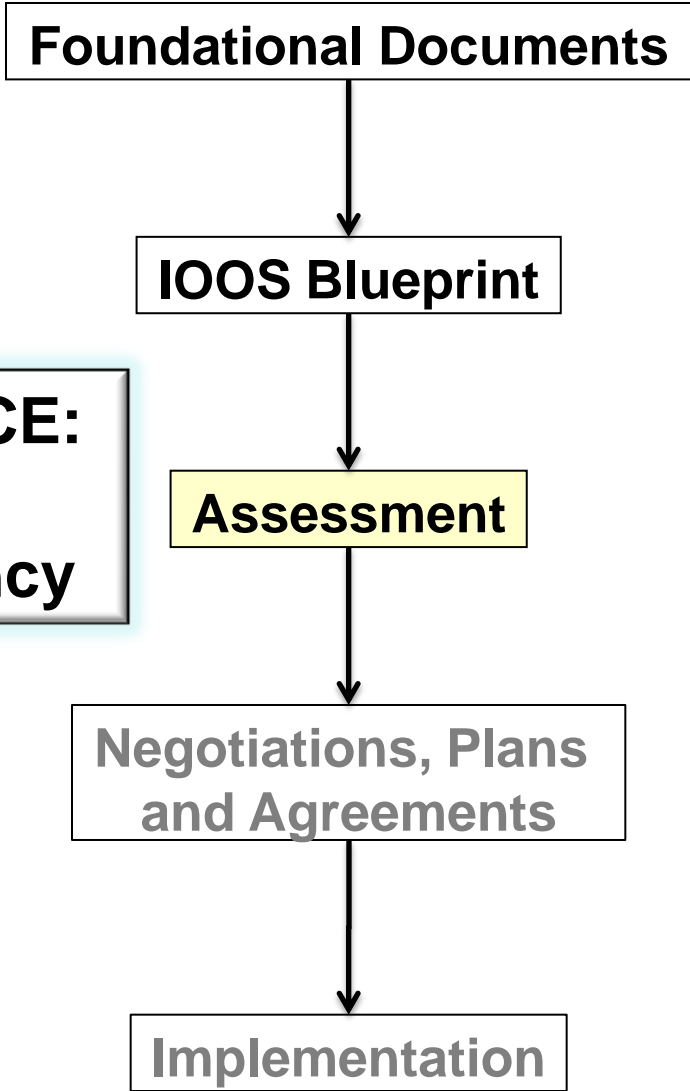
Programmatic: ICOOS Act Implementation

- Establish Program Office
- Implement merit-based competitive funds
- Congressional Report
- System Advisory Committee
- Public/Private Policy Process
- Certification Criteria

ICOOS Act Governance and Required Activities	Council	Committee	Lead Federal Agency	RICEs	Federal Agencies
Establish a National Integrated Coastal and Ocean Observation System	●				
Develop and publish a Public Private Use policy	●				
Develop and transmit annual and long term plans and budgets (pdf, Nov 2010)	●	●			
Establish observation data variables (pdf, Nov 2010)		●			
Develop certification standards, compliance procedures and program guidelines (pdf, Nov 2010)		●	●		
Establish process and observation coverage gaps or capital improvement needs (pdf, Nov 2010)		●	●	●	
Obtain independent cost estimate (pdf, Nov 2010)		●	●		●
Establish an IOOS Program Office within NOAA (pdf, Sept 2010)			●		
Review and evaluate non-federal assets (pdf, Sept 2010)			●		
Implement a merit-based competitive funding process to support non-federal assets (pdf, Sept 2010)			✓		
Establish protocols for and develop a data management and communication system (pdf, Nov 2010)		●	●		
Implement a public education and outreach program (pdf, Sept 2010)			●		
Establish a system advisory committee (pdf, Sept 2010)			●		
Respond to reporting requirements (pdf, Sept 2010)			●		
Demonstrate capable organizational structure and operate under a strategic operational plan				●	
Additional Required Activities (10 items)	Click here for further details				



**USACE:
1st
Agency**



Involvement in U.S. GEO

White House (OSTP) report to Congress calls out IOOS:
"Achieving and Sustaining Earth Observations: A Preliminary Plan Based on a Strategic Assessment by the U.S. Group on Earth Observations"

- Zdenka Willis is the NOAA rep to US GEO
- Engagement with US GEO agencies
 - Same as IOOC agencies, but
 - Different people at the table
- US GEO drafting new work plan for 2011
- Work plan to reflect need for stronger ocean and coastal representation in GEO

Communications

- IOOS produced 11 background papers

In FY2010:

- Wrote 5 press releases
- Sponsored sessions at:
 - AGU Sciences
 - Oceanology International
 - EU Maritime Stakeholder Conf
 - AGU Americas
 - CA World Ocean Conf
 - MTS Oceans 2010
 - West Coast Ocean Acidification Workshop

IOOS® INTEGRATED OCEAN OBSERVING SYSTEM

Linking IOOS® to the National Water Quality Monitoring Network

Improving Water Quality Nationwide

Overview:
Our inland water systems contribute to the overall health of our oceans, coasts, and Great Lakes. Contaminants and sediments can travel for miles, impacting our watersheds, coasts and oceans. To monitor waters long term - including inland and coastal areas - a new system was needed to better understand water quality status and trends to reduce the impacts people and their activities have on our waters.

What is IOOS?
The Integrated Ocean Observing System (IOOS) is a federal, regional, and private sector partnership providing new tools and forecasts to improve safety, the economy, and our environment. The effort includes 17 federal agencies and 11 regions.

Integrated ocean information is now available in near real time, and retrospectively. Easier and better access to this information is improving our ability to understand and predict ecosystem events such as habitat degradation, harmful algal blooms, and beach closures. This knowledge is used for management decisions such as earlier and more accurate forecasts for harmful contaminants that threaten fish populations and recreational use of our waters.

What is the Network?
The National Water Quality Monitoring Network (the Network) is an integrated approach to addressing a range of resource issues, from upland watersheds to offshore waters.

The nation's coastal bays and estuaries may require beach and shellfish bed closures due to problems such as pathogens, oxygen depletion, nutrient over-enrichment, toxic contamination, sedimentation, habitat degradation, and invasive species.

The Network supports ecosystem-based management by monitoring water quality. This allows better management of aquatic resources to avoid problems like dead zones, intrusion of invasive species, and loss of wetlands.

The Network will coordinate and expand on existing monitoring of both coastal and upland areas and provide scientific information to support management decisions.

The plan is a multi-year effort consisting of four phases: network design; completion



A national monitoring network will improve management of our waters - from inland to coasts to oceans. The Advisory Committee on Water Information and the National Water Quality Monitoring Council developed the initial design for a National Water Quality Monitoring Network. This photo shows how the Network can track substances such as the algae shown here in Lake Erie.

U.S. Department of Commerce
The National Oceanic & Atmospheric Administration
Integrated Ocean Observing System (IOOS®) Program

www.ioos.gov

February 2009



U.S. IOOS Programmatics

National Component

Regional Component

Interagency Collaboration

Challenges

DIF Project: Completed - Results

- 7 IOOS variables, 4 theme areas, IOOS Regions
- Standard data services operating at NOAA's NDBC, CO-OPS, CoastWatch, and 9 of the 11 IOOS Regions
- Successfully operational ocean data into NOAA's National Center for Environmental Prediction's (NCEP) operational data "tanks."
- Enhanced understanding of the effect of improved ocean state information on hurricane intensity
- Winds/Water Level integrated into Sea, Lake and Overland Surges from Hurricanes (SLOSH)
- Enhanced operational HAB-FS bulletin software, which integrates IOOS in-situ currents observations to assist analysts in HAB forecasting.
- With completion of the DIF we have transition to U.S. DMAC V 0.9.

IOOS Core Variables

1. Temperature
 2. Salinity
 3. Water level
 4. Currents
 5. Surface Waves
 6. Surface Winds
 7. Ocean color
 8. Dissolved oxygen
 9. pH
 10. pCO₂
 11. Heat flux
 12. Bottom character
 13. Pathogens
 14. Bathymetry
 15. Ice distribution
 16. Contaminants
 17. Stream flow
 18. Dissolved nutrients
 19. Optical properties
 20. Total suspended matter
 21. Colored dissolved organic matter
 22. Fish species
 23. Fish abundance
 24. Zooplankton species
 25. Phytoplankton species
 26. Zooplankton abundance
- 2010 (7)
2011 anticipated (8)
2011 maybe (1)

Data Integration – Support National and Regional Needs

IOOS Catalog [Help](#) *Service notice: We have found that Internet Explorer is slow to display this page, and we are investigating. Firefox, Safari and Chrome browsers work well.*

1444 Platforms 75 Rectangles.

Variables:

Cluster platforms
Click the dots for in-situ observations.
Click the rectangles for gridded data.

Recent observations w/in:
 No observations

Start:
End:

Regions:

Search by bounding box mode.
(Click a gridded data rectangle to filter platforms.)

Service types:

Servers:

Data Providers on this Server
All

Data Providers:

Data Products in overlapping rectangles:

[Bookmark this view \(right click this link.\)](#)
[Documentation for IOOS gridded data services](#)
[Download all SDS Platforms \(XML\)](#)
[Download all TDS Rectangles \(XML\)](#)

The screenshot displays the IOOS Catalog interface. On the left is a control panel with various filters and search options. The main area is a satellite map of the United States, showing data points (green and red dots) and several green rectangular bounding boxes. The map includes navigation controls (compass, zoom in/out) and a scale bar (500 mi, 1000 km). The bottom right corner of the map area contains the text 'Imagery ©2010 TerraMetrics - Terms of Use'.

IOOS Coordinated Rapid Response: *Deepwater Horizon* Oil Spill

Contributed Assets:

HF Radar Networks

USF, USM

Gliders

iRobot, Mote, Rutgers,
SIO/WHOI, UDeI, USF

Drifters & Profilers

Horizon Marine, Navy

Satellite Imagery

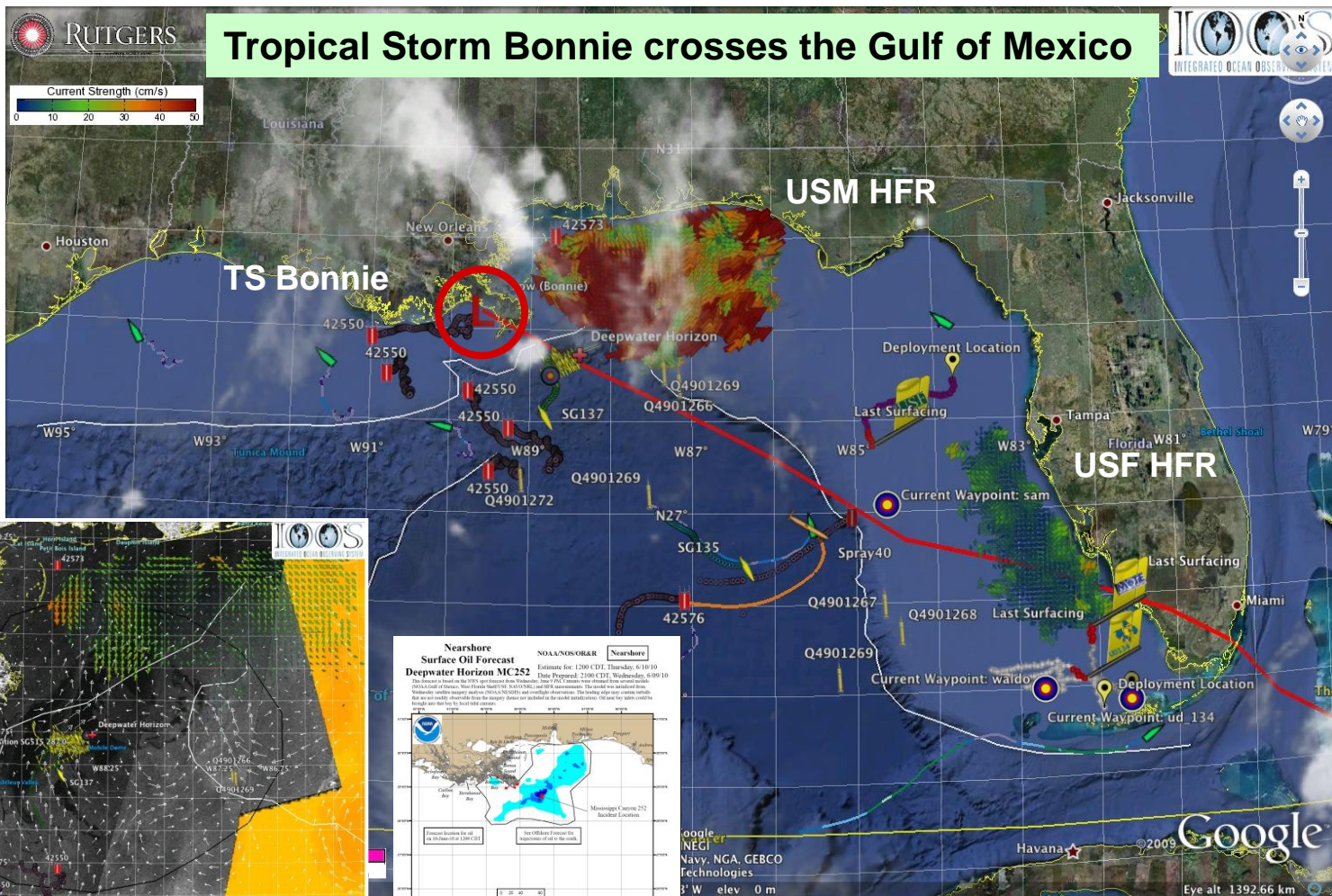
CSTARS, UDeI

Ocean Forecasts

Navy, NCSU

Data/Web Services

ASA, Rutgers, SIO



HFR used for Oil Slick Forecasts by NOAA/NOS/OR&R

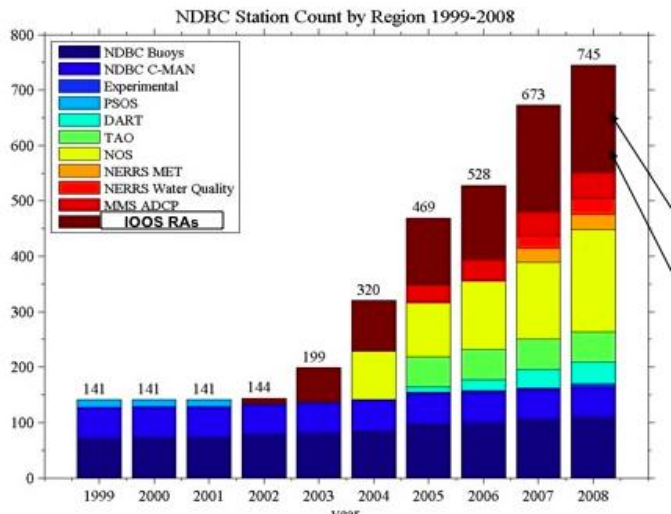


Sam Walker, DMAC Chair, deployed to Gulf

Biological Data Project

- **Top priority for next IOOS customer project**
- **Regional focus – Pacific/Hawai'i**
- **Portable – viable to other geographies**
- **Customer driven:**
 - Stock assessments
 - Fishery independent data (presence/absence/abundance)
- **Broad community participation**
 - PacIOOS, NOAA NMFS, CoML, OBIS, Univ. of HI , Papahan. Monument
- **Outcomes**
 - Defined set of **data service standards** that pertain to biological observation. Data from reef fish surveys, and also including metadata representation, transport, delivery, discovery, search, and exchange.
 - A **standards-based collection of biological observation data & metadata** easily accessible to the general public that satisfies the needs of the fisheries management community for collation of and comparisons across data gathered from entities across the Pacific.

Operational Partnerships Integrating IOOS Data: Multiple Delivery Methods



NDBC Station Count by Region

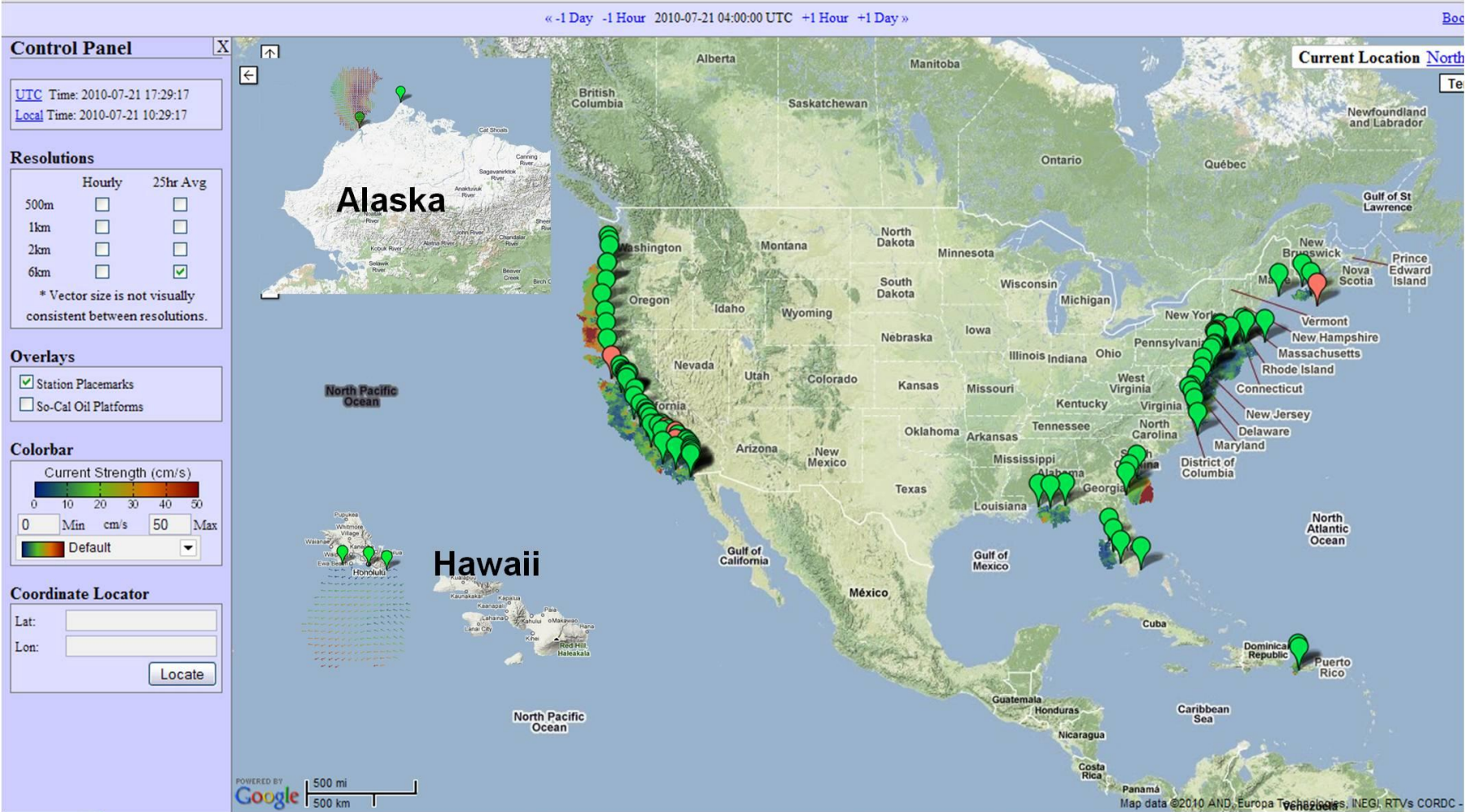


National Data Buoy Center

- Serving non-federal data from RAs
- Over 50% of data served by NDBC is from external partners, enabled by IOOS DMAC

Integrating IOOS data into NOAA's PORTS

- Waves: Chesapeake, San Francisco, Long Beach/Los Angeles and Mouth of Columbia River (through MOU with USACE & PORTS)
- Currents: Underway for NY/NJ Harbor
- Methodology established that allows for other sites to be incorporated



Current Uses:

Oil Spill Trajectories
HAB
Larval/Phytoplankton

Search & Rescue
Ice Transport
Model Validation

Navigation Marine Debris
Outfall Monitoring
Circulation Modeling Input

Operational Links – Waves Plan

Plan Results:

- Additional Sensors
- USACE Pres Bud (FY11)
- PacIOOS - O&M
- CDIP served by CO-OPS to PORTS[®] and NDBC via IOOS Sensor Observation Service

Wave Buoys - All

Shellfish Industry Partnership

- Shellfish Industry loss of production from corrosive waters
- Demonstrated value of IOOS real-time data for operational decisions
- Coastal Customer as a partner and advocate



- West Coast Shellfish growers Ocean Acidification (OA) Workshop
 - IOOS and Sea Grant sponsored review of Science, Technologies, & Observing



- Recommendations
 1. West Coast coordination group
 2. West Coast Data exchange integrated with IOOS
 3. Expand West Coast OA observing network including biological data

(Use Regional IOOS as platforms of opportunity)

Is Ocean Acidification Affecting Shellfish?

A NOAA Sea Grant West Coast Workshop Seeks Answers
July 7-8, 2010, Costa Mesa, CA

No new Pacific oysters recruiting to oyster "beds," Shellfish larvae dying at commercial hatcheries. Corrosive, acidified seawater measured for the first time off the Pacific Coast.

These and other observations, beginning in 2005, prompted members of the West Coast shellfish industry to seek help from scientists to explore what is causing the shellfish losses, what role ocean acidification and other factors might be playing, and how to adapt to sustain West Coast shellfish resources.

An organizing committee planned a face-to-face meeting as a logical first step to frame the problems, assess what information is available and what is needed, and to suggest future actions. The West Coast Ocean Acidification-Shellfish Workshop was held July 7-8, 2010, in Costa Mesa, CA, with 51 invited participants, including biologists, oceanographers, state and federal agency managers, industry members and representatives from the Sea Grant Program in Washington, Oregon and California.

This brochure summarizes the information shared and recommended next steps.



Importance of U.S. West Coast Shellfish

West Coast shellfish (wild harvest and aquaculture) provide significant socioeconomic and recreational benefits to coastal communities in Washington, Oregon and California, in addition to providing nutritious, delicious seafood. Equally important, problems with shellfish portland potentially significant changes in marine ecosystems.

Wild harvest shellfish - Average annual (1998-2009) revenue to fishermen (dockside value) from shellfish fisheries is \$169 million for Washington, Oregon and California combined.

Shellfish contribute about 50% of total commercial fishery dockside revenue in Oregon and Washington, and about 40% in California.

• In Washington, Oregon and Northern California, the most important species for commercial fisheries are Dungeness crab and Pacific Ocean (pink) shrimp.

• In Southern California, market squid, sea urchin, spiny lobster and spot drawn are important commercial fisheries. Shellfish represent 63% of total commercial fishery revenue in this region with most of that value contributed by squid.

• Recreationally important species include clams, oysters and geoducks in Washington and Oregon, abalone in Northern California, and spiny lobster in Southern California.

Aquaculture shellfish production - Annual producer revenue is \$117 million to coastal economies in Washington, Oregon and California (\$278 million wholesale).

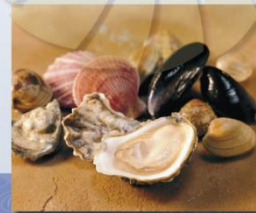
• Accounts for 3,000+ jobs in coastal communities.

• Cultured species are oysters, clams, geoducks, mussels and scallops.

• Pacific oyster production (a 2-4 year crop) declined 22% between 2005 and 2009.

• In Willapa Bay, Washington, the largest oyster-producing region on the West Coast, wild oyster larvae failed to "set" in six consecutive years, resulting in steep declines in harvest rates.

• In Washington and Oregon, two of the three major West Coast oyster seed hatcheries experienced production declines of up to 90% from 2006 to 2009.



Recommendations and Next Steps...

West Coast Ocean Acidification-Shellfish Workshop participants reviewed existing research, identified information gaps, and proposed modifications and potential solutions to improve the state of knowledge of ocean acidification on the West Coast and to address problems faced by shellfish hatcheries, growers and harvesters.

Recommendations included:

(1) A West Coast Ocean Acidification Research Coordination Working Group* should be established to provide recommendations on best practices and standardized research methods to achieve a coordinated network of ocean observations and experimental studies, in order to observe, understand and quantify the evolving threats posed by ocean acidification along the West Coast of the United States.

(2) A West Coast Ocean Acidification Data Exchange, integrated with IOOS, and consisting of a single website that serves as an entry point to data and information, should be established to provide easy access to available data sets and information regarding ocean acidification processes affecting West Coast fish and shellfish.

(3) The proposed NOAA West Coast Ocean Acidification Observing Network should be enhanced and expanded to include sites on the West Coast where in-field biological response studies are conducted.

The workshop organizing committee thanks all the workshop participants and invites others to participate in future efforts.

*Nine participants volunteered to serve on a steering committee to develop the framework for the working group.

All workshop materials and related information are posted online at: www.sccwrp.org/Meetings/Workshops/OceanAcidificationWorkshop.aspx

Workshop Organizing Committee:

Robin Danewey, Pacific Coast Shellfish Growers Association

Richard Feely, NOAA Pacific Marine Environmental Laboratory

Bass Holt, California Sea Grant

Penny Ballam, Washington Sea Grant

Steve Brandt, Oregon Sea Grant

Phyllis Coleman, U.C. Sea Grant

Diane Pleschner-Skeele, California Shellfish Producers Association

Bruce Steele, California Sea Grant

Lise Washburn, University of California, Santa Barbara

Stephen Wainberg, Southern California Coastal Water Research Project Authority

Workshop sponsors:



Photography courtesy of Robert Wilson (cover background), Willapa Bay, WA; Halogen Associates of WA and WA; and Oregon Sea Grant. Photo by photo shop.com with permission. High-Cool Energy (cover background), San Diego, CA; Oregon Sea Grant; Oregon Sea Grant; Oregon Sea Grant; Oregon Sea Grant.



U.S. IOOS Programmatics

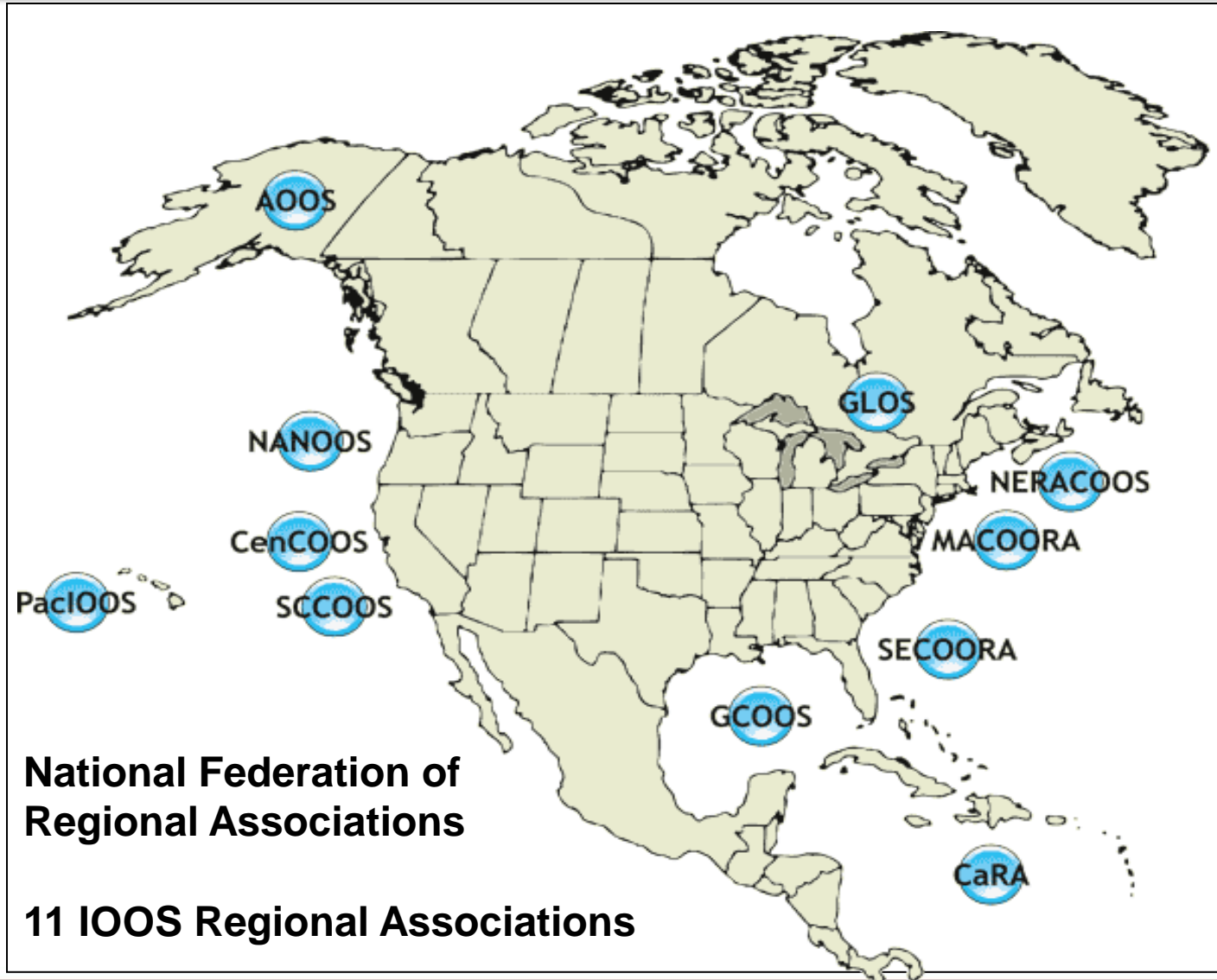
National Component

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Interagency Collaboration

Challenges

Regional Oversight



Regional Governing Boards

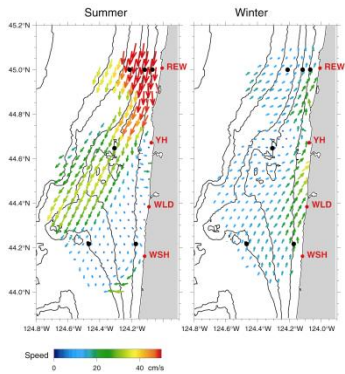
Region	Type of Governance	Total Number of members of Governance board	Government				Research Institute	Industry	NGO ²	Foreign (all sectors)
			State ¹	Local	Tribal	Federal				
AOOS	MOU	16	4			4	7		1	
CaRA	MOA	12	3				1	6	2	
CeNCOOS	MOU	15	2			2	8		3	
GCOOS	MOU	15	2			2	3	5	3	
GLOS	501C3	10		1		2	2	4		1*
MARACOOS	501C3	15	2			3	8		2	
NANOOS	MOA	15	2		2	2	4	3	2	
NERACOOS	501C3	20	5			2	6	4	1	2
PacIOOS	MOA	14	5			2	1	3	1	2
SCCOOS	MOU	11				1	7		1	2
SECOORA	501C3	25	2			1	13	6	3	
ACT		5					4	1		

¹ includes Sea Grant and territorial governments

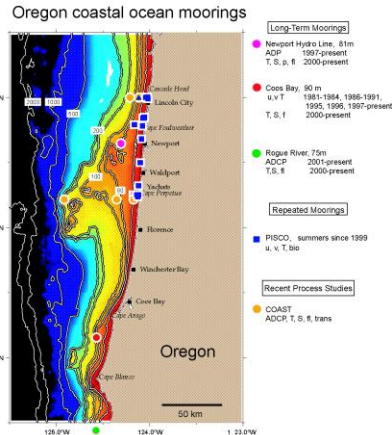
² includes Fishery Management Councils

* "bi-national" joint commission

RCOOS Capabilities



Current mapping



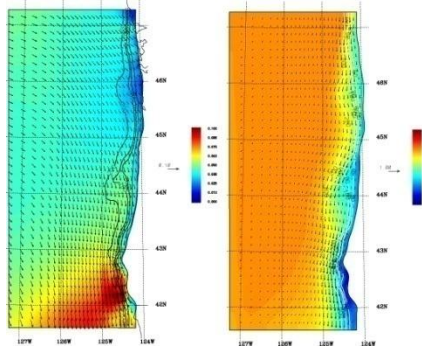
Shelf moorings



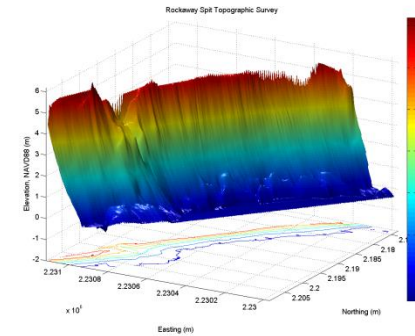
Beach/shoreline monitoring



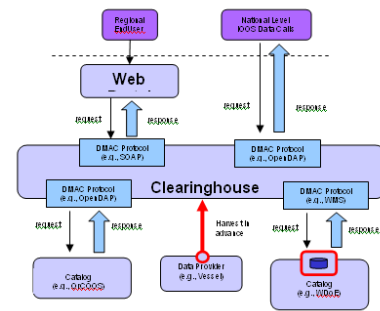
Estuary monitoring



Circulation models



Shoreline change models



Data Management & Communications



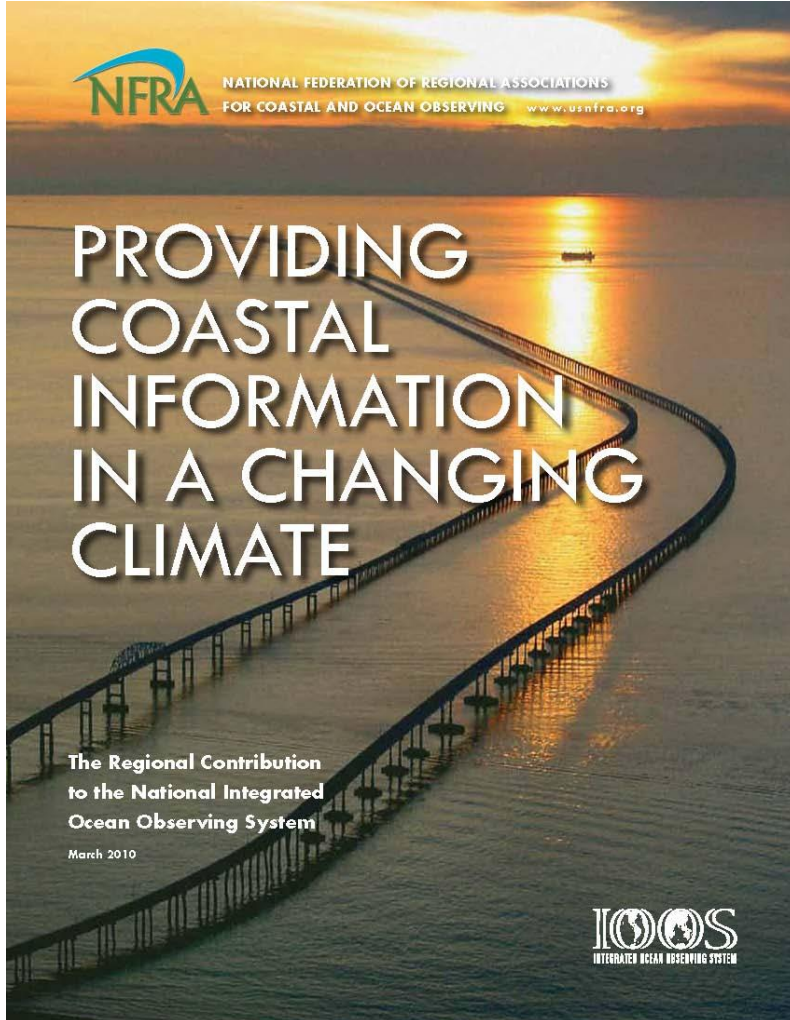
Education/Outreach

Sensor Verification and Validation



- A third-party testbed for evaluating sensors and sensor platforms
- Conducted 226 instrument performance tests in the laboratory and the field under a wide range of environmental conditions and different deployment applications
- In 2010, published performance validation tests on fixed location (*in situ*) pCO₂ sensors

Regional Priority Themes



Marine Operations

Climate Variability and Change

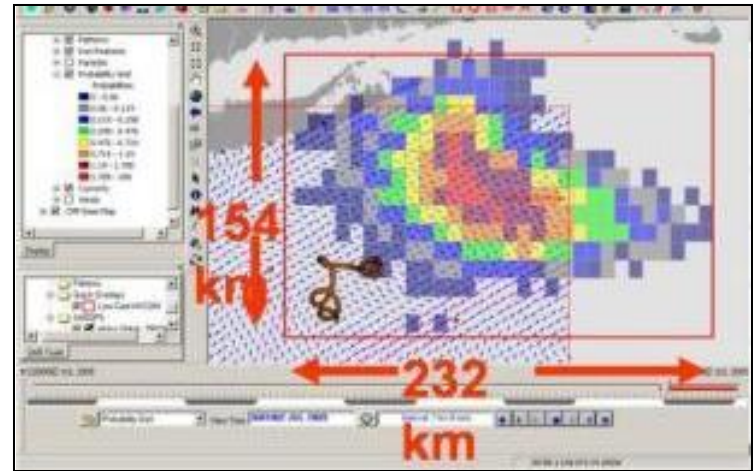
Ecosystems, Fisheries, and Water
Quality

Coastal Hazards

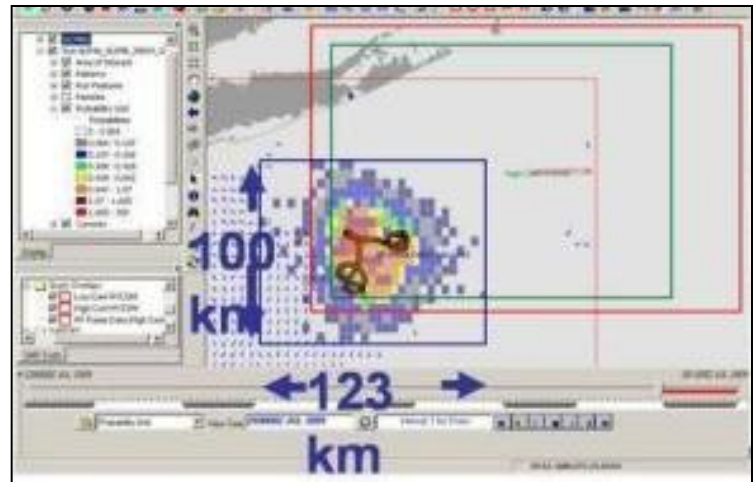
Coastal and Marine Spatial Planning

Search and Rescue (SAR)

- Integrated into USCG Operational SAR in Mid-Atlantic
- Nationwide adoption in 2011
- Refines search zone



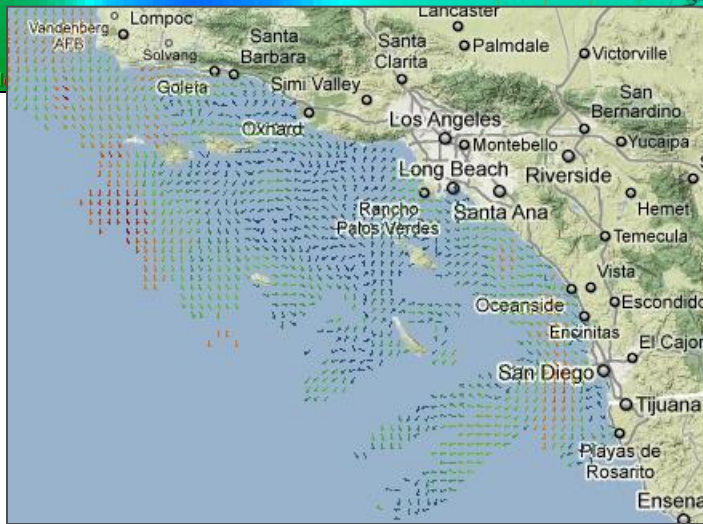
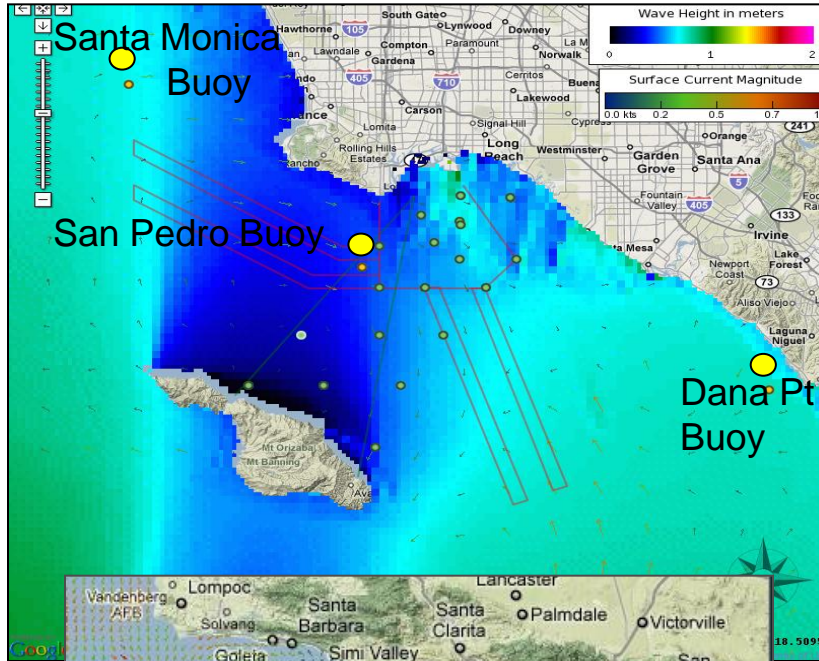
96 hr: Without HFR (36,000 Km²)



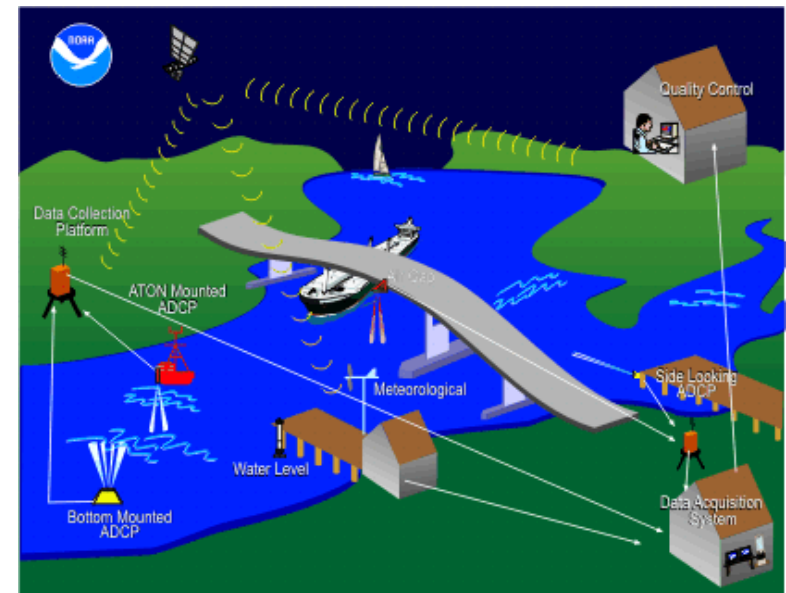
96 hr: With HFR (12,000 Km²)



Safe and Efficient Navigation



- Coastal Data Information Program (CDIP) providing wave observations, nowcasts, and forecasts.
- SCCOOS providing HF Radar surface currents.
- NOAA Physical Oceanographic Real-Time System (PORTS)

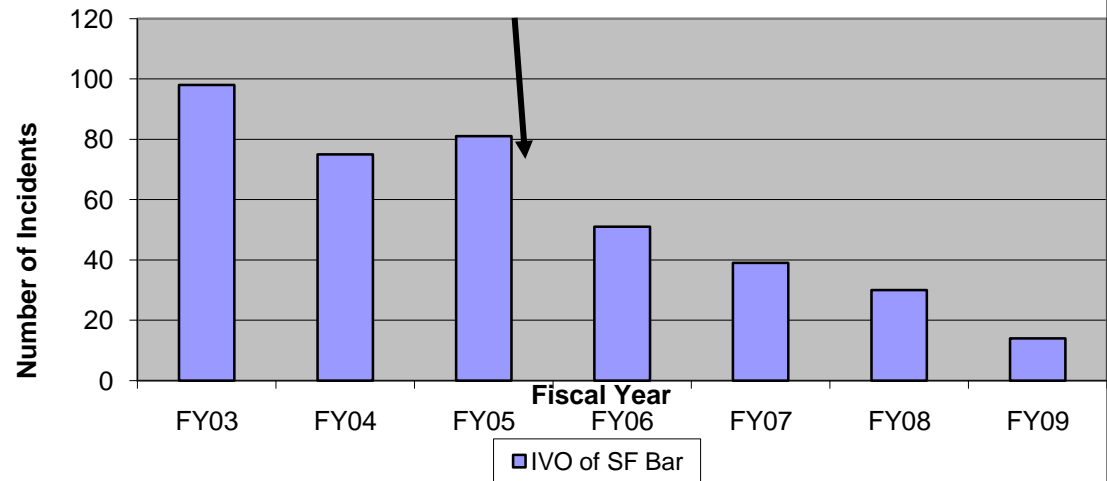


San Francisco - SAFETY

Fiscal Year (FY)	Surf Cases	IVO of SF Bar	Total
FY03	32	98	130
FY04	28	75	103
FY05	29	81	110
FY06	18	51	69
FY07	20	39	59
FY08	19	30	49
FY09	11	14	25
TOTAL:	116	203	319

Marine Incidents (rescues) near SF Bar

Bar Forecast Begun by MTR



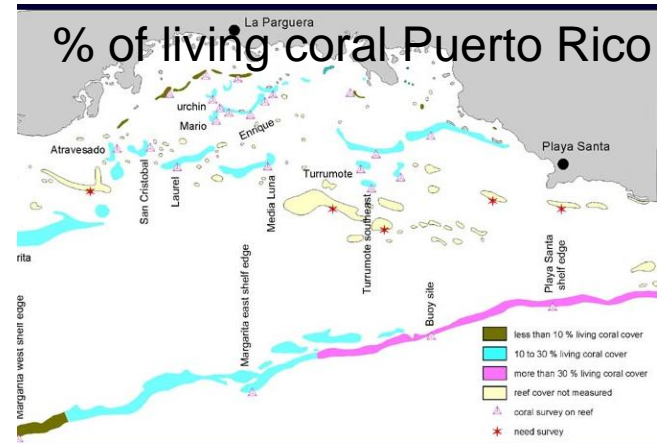
Incidents in the Vicinity of SF Bar (IVO)

Data supplied by the Coast Guard. Assimilated and Disseminated by the SF NWS Office.

IOOS RA Climate Change Activities



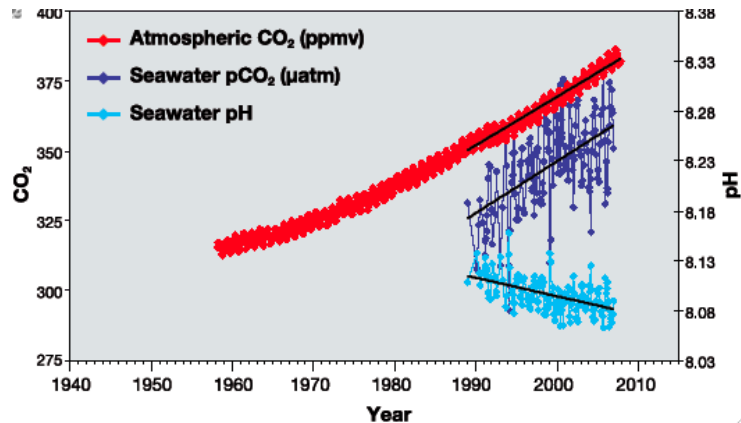
Observations Single system – multiple uses
 NOAA PMEL working with RAs to deploy CO₂ sensors:
 NANOOS; PacIOOS; CaRA, NERACOOS, etc.



Integrated Coral Reef Monitoring

Data Management

RT, trends, public display



What is Climate Change?

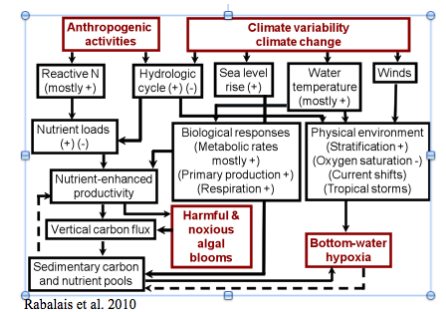
- Long term changes in the weather, over the course of decades, affecting temperature, rainfall, cloudiness, etc.

How does Climate Change affect Pacific Islands?

- Sea level rise.
- Coastal flooding.

Education/Outreach Materials

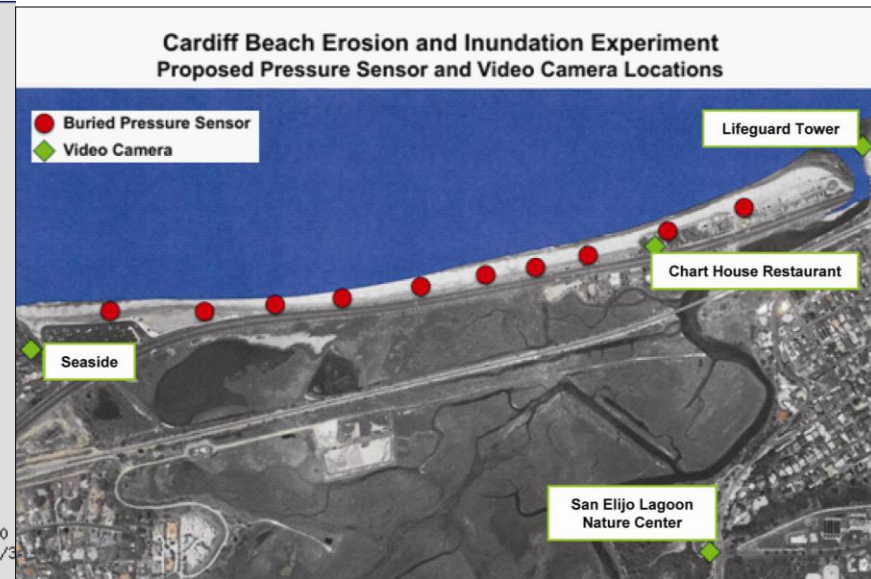
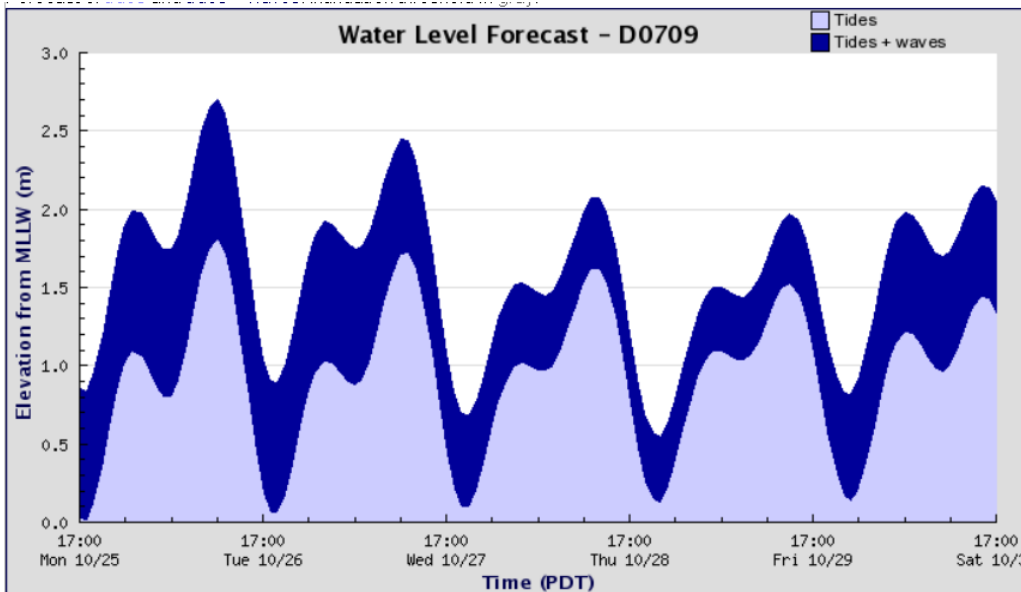
Modeling



Rabalais et al. 2010

Climate Products: Inundation/Sea Level

Most RAs work with users on inundation and SLR



*Automated 3-day
E-mail warnings of
potential inundation
sent to City of Encinitas.*

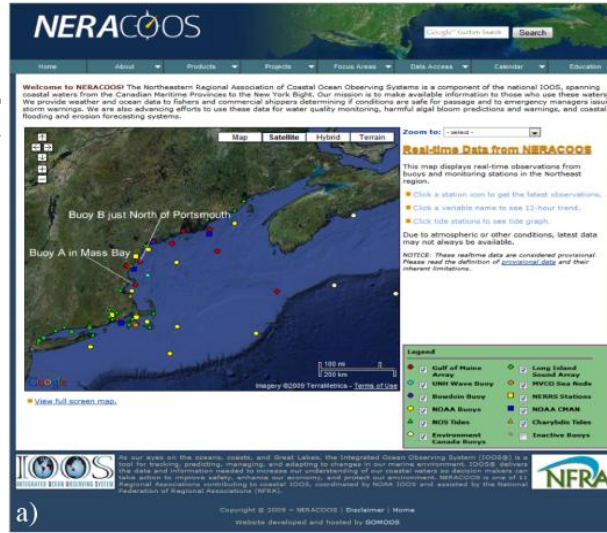


Bring it Together- A HAB example

- Priority for IOOS RA and at the Federal Level.

- ACT: 2 workshops on evaluating sensors

- Leveraged with State and Federal Programs

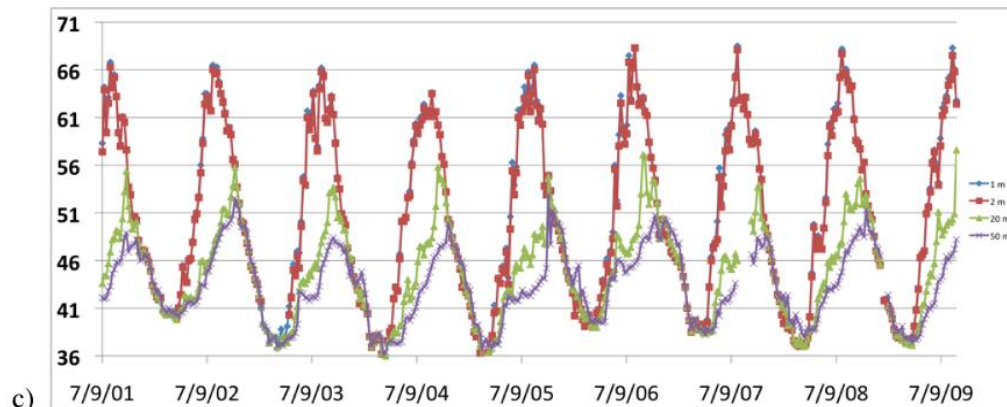


ellas and Sarasota Counties. No
uesday, October 14.

n identified approximately 30 miles
(0/4-9). Very low concentrations of
rasota, and Charlotte Counties
been identified approximately 15
onal samples taken alongshore
hern Collier County, and Monroe
(0/5-12).

analysis. Imagery (10/8, not shown)
ongshore of Pinellas County. One
g several not present samples
n-harmful blooms of various algal
west Florida. Imagery (10/8, not
) miles offshore Lee and northern
 $\mu\text{g/L}$). This chlorophyll feature is
e and northern Collier Counties.
ave decreased.

is likely to remain in its present

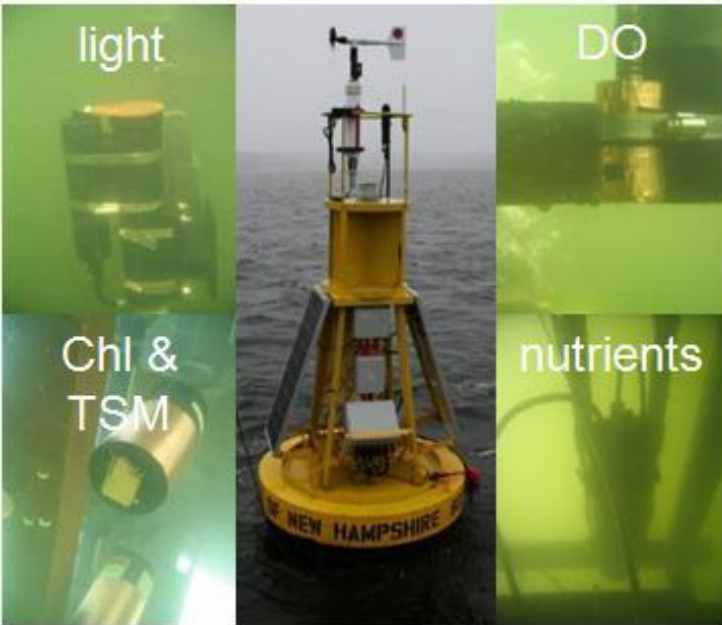


ntly unavailable. MODIS imagery is

will be issued twice weekly on Mon-
algal bloom.

NERACOOS buoys provide data used in modeling for *Alexandrium fundyense*.

Water Quality and Ecosystems

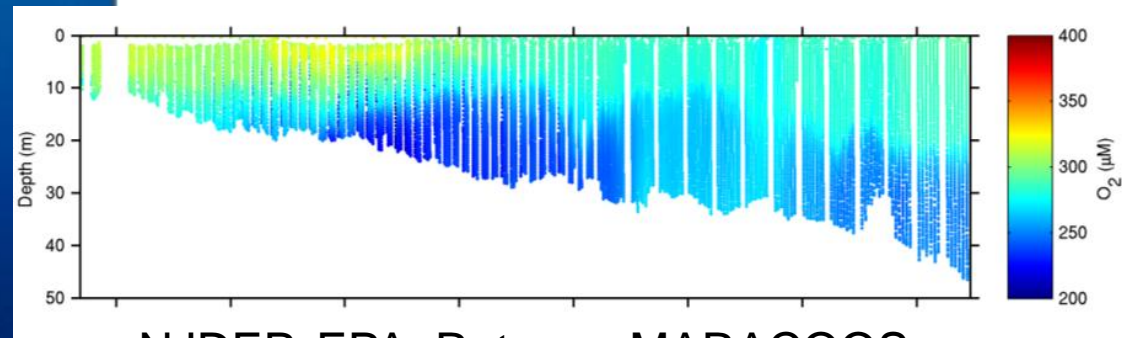
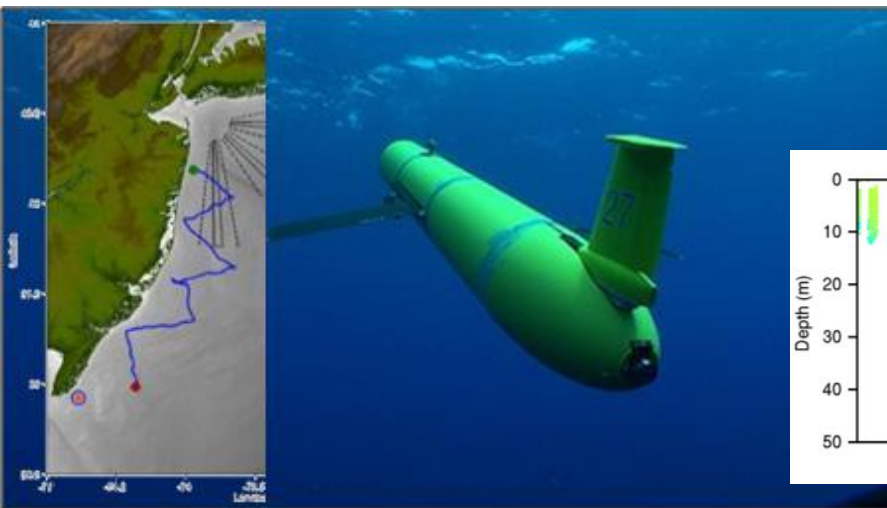


Buoys

- Capture high resolution temporal features
- Unraveled controls of light penetration in Great Bay Estuary, NH helping protect critical eelgrass habitat through developing nutrient criteria
- Unraveled causes and help predict low DO in the Long Island Sound

Gliders

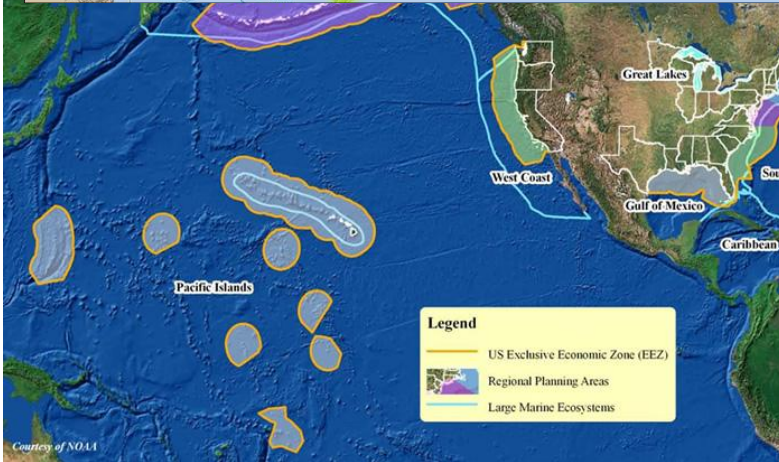
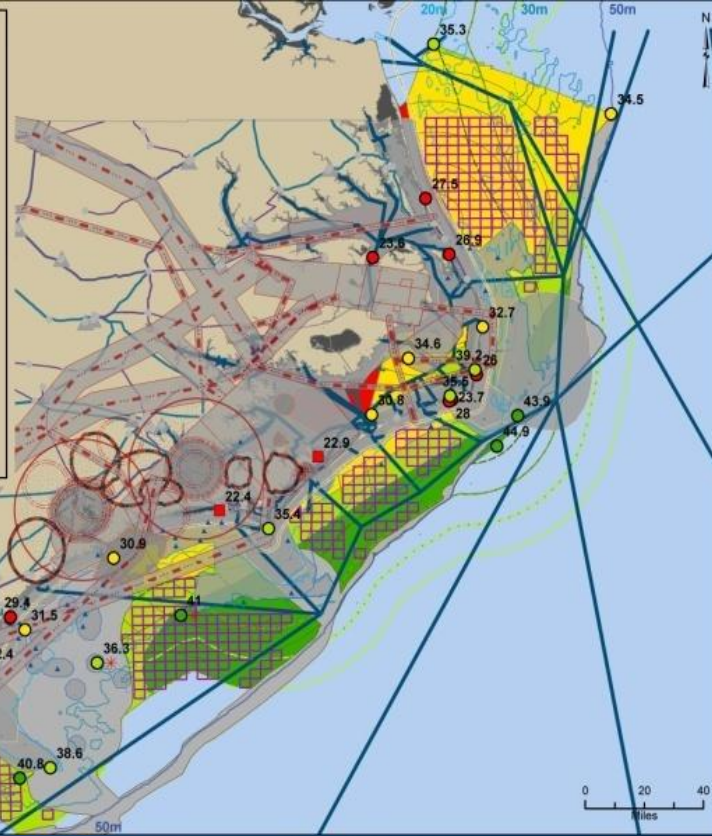
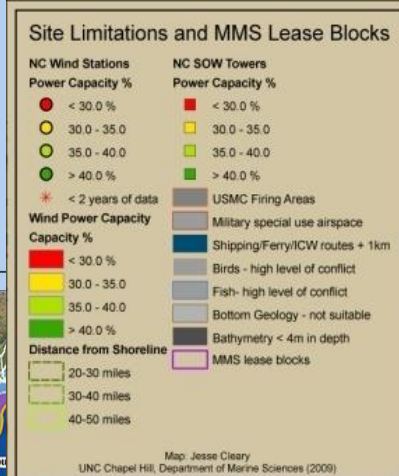
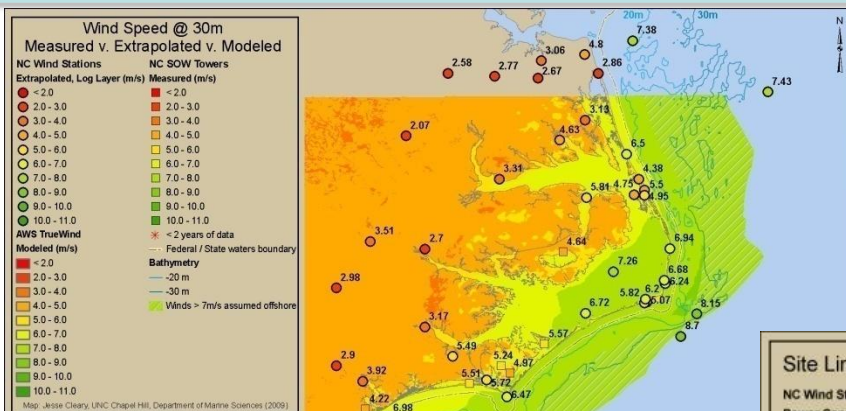
- Capture spatial features
- DO Part of NJ water quality monitoring



NJDEP, EPA, Rutgers, MARACOOS

CMSP- Regional Approach

IOOS can provide:
Stakeholder engagement, data integration, and monitoring





Follows recommendations from the IOOS Modeling and Analysis Steering Team

- improve cyber infrastructure,
- support development of community models,
- ease the transition of models to operations.

Testbed Advisory
Evaluation Group

Cyber
Infrastructure

Shelf Hypoxia

Estuarine
Hypoxia

Coastal
Inundation

ACT Successes in 2010

- Completed pCO₂ analyzer Demonstration
 - Benefits for developers and users
 - Addressing climate change and ocean acidification
- Supported development of HAB detection technologies and methodologies
 - Benefits for developers and users
 - Working regionally in California and Florida
- Collaborating with USGS and NWQMC on Methods of Environmental Measurements and Observations (MEMO)
 - Linking ACT technology and NEMI methods databases
 - Searches of environmental parameters resulting in both standard methods and commercial instruments
- Reorganized and initiated program evaluation
 - Board of Directors (5), Advisory Council (11), Partner Institutions (6)



U.S. IOOS Programmatics

National Component

Regional Component

Interagency Collaboration

Challenges

USACE RA Participation

- ◆ Board Representative
- ◆ Board Representative Identified
- ◆ RA Participant



PacOOS ◆ Todd Barnes, Chief Engineering and Construction Division
 POH ◆ Thomas Smith, Jessica Podoski

AOOS ◆ Patricia Opheen, Chief Engineering Division
 POA ◆ Ken Eisses, Bruce Sexauer

NANOOS Doris McKillip, Rod Moritz, David Michalsen
 NWS, NWP

SCCOOS ◆ Richard Leifield, Chief Engineering Division
 SPL ◆ Arthur Shak

GCOOS ◆ Jennifer Wozencraft, Director JALBTCX
 MVN, SAM, SAJ ◆ Jennifer Colee, Jay Ratcliff, Mathew Schrader, Jason Engle

SECOORA ◆ Kaiser Edmond, Mathew Schrader, Jason Engle, Jeff Hanson
 SAD, SAJ, CHL

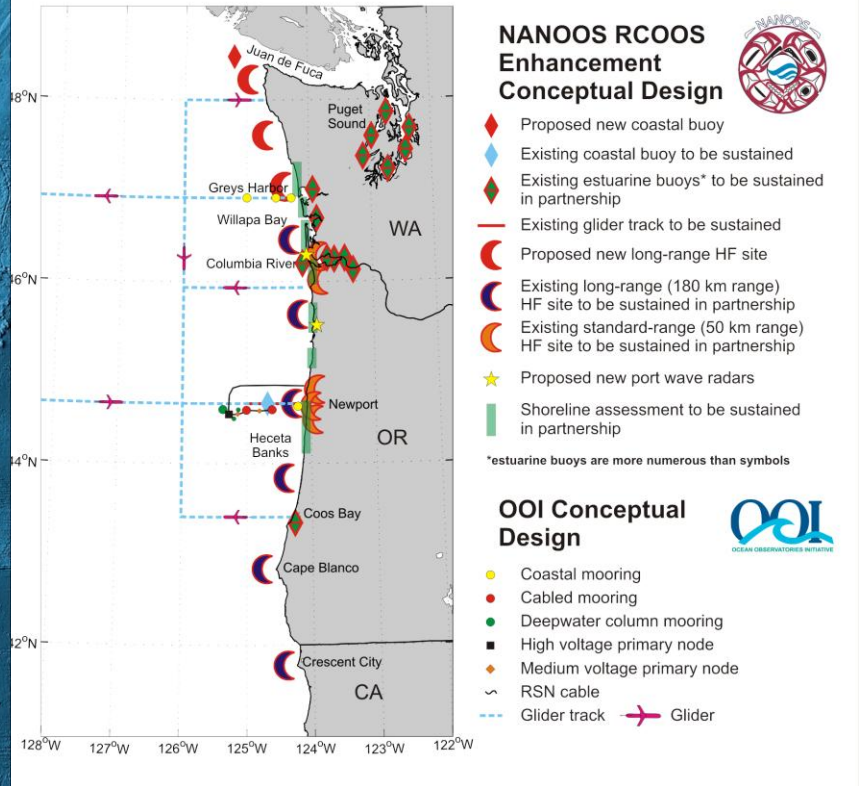
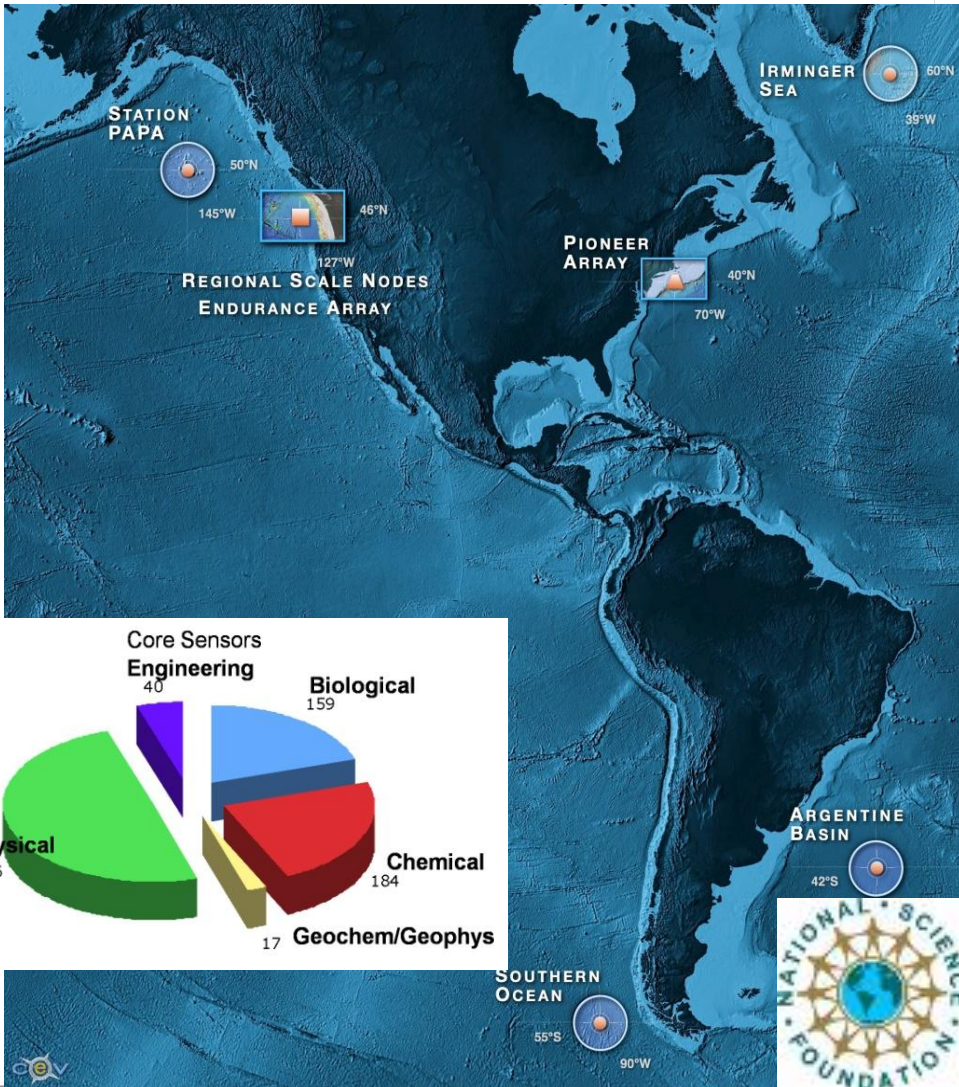
MACOORA ◆ Roy Messaros
 NAN

NERACOOS ◆ Roy Messaros, John Winkelman
 NAN, NAE

GLOS ◆ James Selegean, Scott Thieme
 LRE



Interagency Partnerships



Observations, Data Management



U.S. IOOS Programmatics

National Component

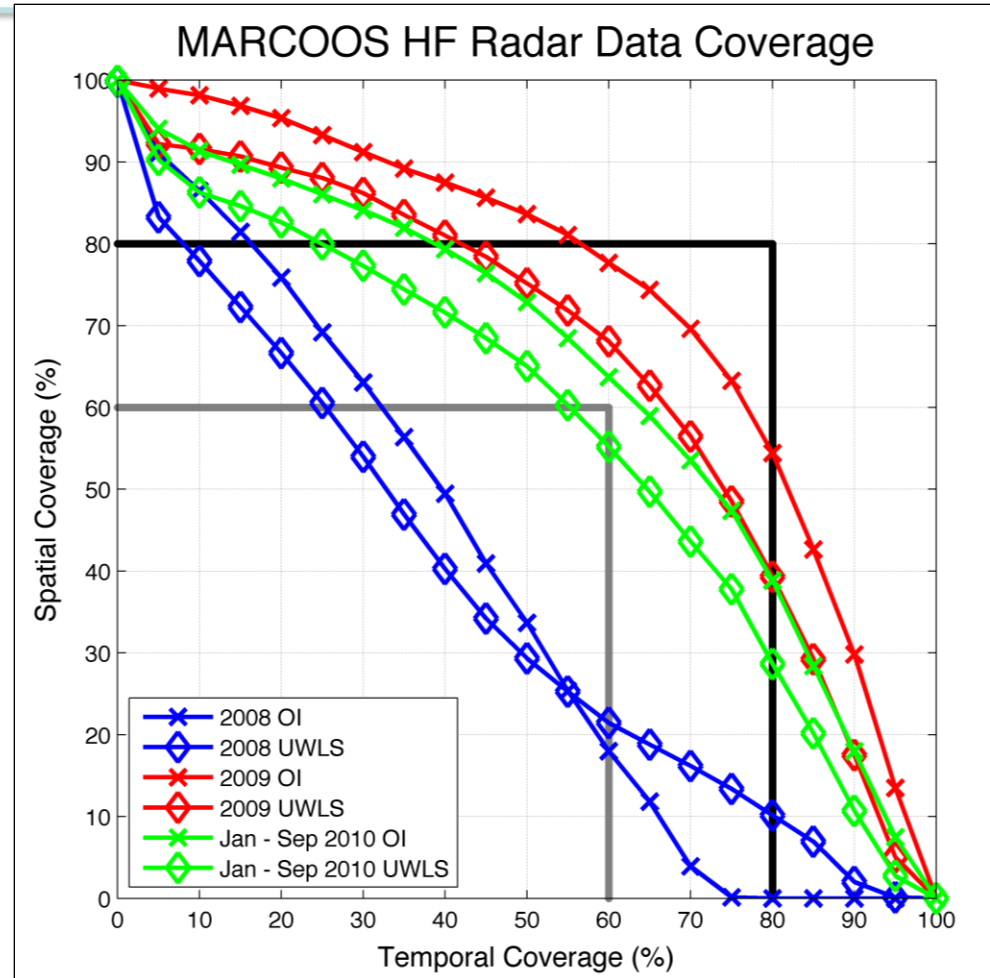
Regional Component

Interagency Collaboration

Challenges

Sustaining Capability

**USCG Target:
80% Spatial Coverage
80% of the Time**



2008 to 2009 – Increase due to a focus on resiliency

2009 to 2010 – Decrease due to a lack of spares

What we heard from our Regions

- Regional Component Workshop Nov 16-18
- RA raised questions/comments such as:
 - Do other Federal observing agencies recognize and understand the role of the Regional Component as necessary for the success of IOOS?
 - How will the Federal coordinated budget process work?
 - RAs are looking for stronger National engagement at the Regional level.

US IOOS – A National Endeavor

- IOOS is a comprehensive system
- Integration of data is critical
- Sustaining the enterprise requires engagement by all of us

The screenshot shows the homepage of the Integrated Ocean Observing System (IOOS). At the top, the IOOS logo is displayed alongside the text "INTEGRATED OCEAN OBSERVING SYSTEM". Below the logo is a navigation bar with links for Home, About, NOAA Program, Our Partners, Other Resources, and Contact. A search bar is located on the right side of the navigation bar. The main content area features a "U.S. IOOS®: Our Eyes on Our Oceans, Coasts, and Great Lakes." section, which includes a brief description of the system's purpose and a list of key activities. A sidebar on the left lists "Of Special Note" items, including various mapping plans, workshop materials, and strategic plans. The main content area is divided into six sections: OBSERVATIONS (with a map of the United States), DATA MANAGEMENT (with an image of a buoy), COMMUNICATIONS (with an image of a satellite), REGIONAL PARTNERS (with a map of the United States), INTERAGENCY PROGRAMS (with an image of a coastline), and GLOBAL OBSERVATIONS (with the IOOS logo). The footer contains copyright information and a note that the website is hosted by NOAA.