

# Delivering Benefits: The Integrated Ocean Observing System (IOOS<sup>®</sup>)

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National Oceanic and Atmospheric Administration

May 19, 2010



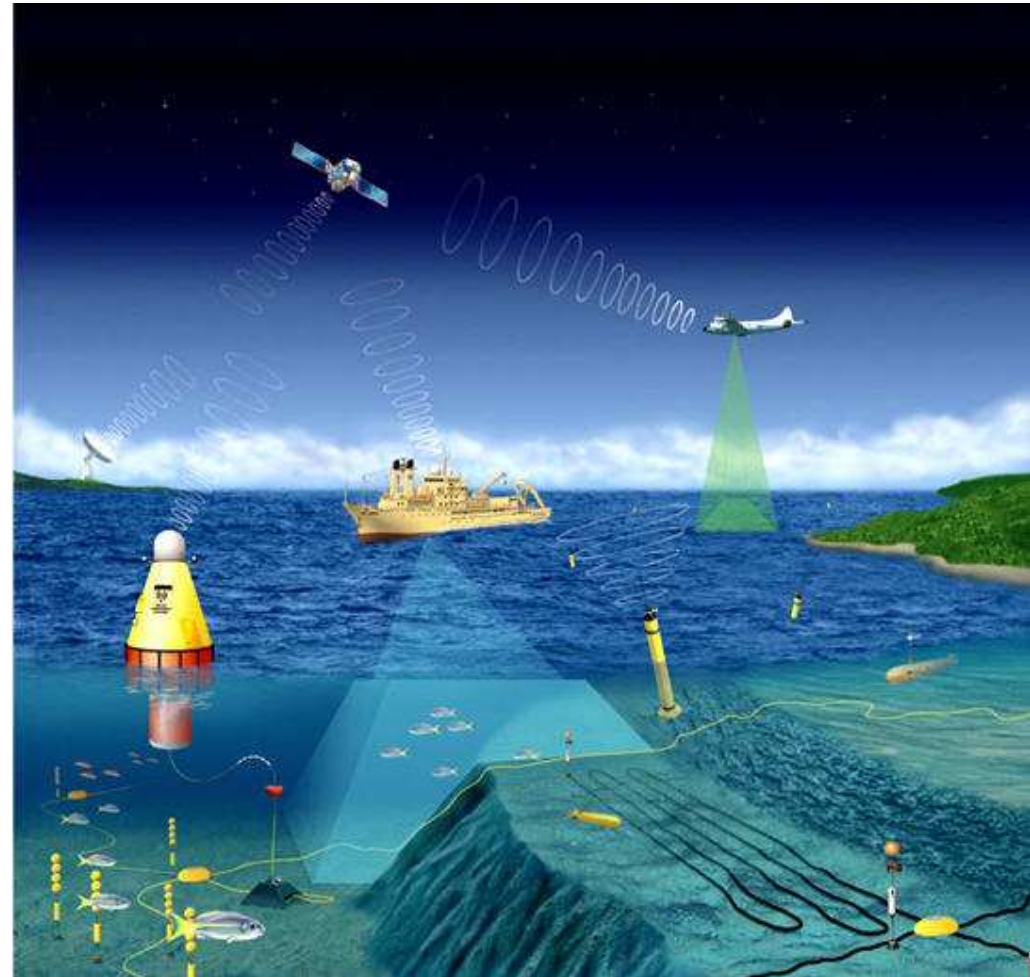
What is IOOS<sup>®</sup>?

Delivering Benefits

Progress Through Partnerships

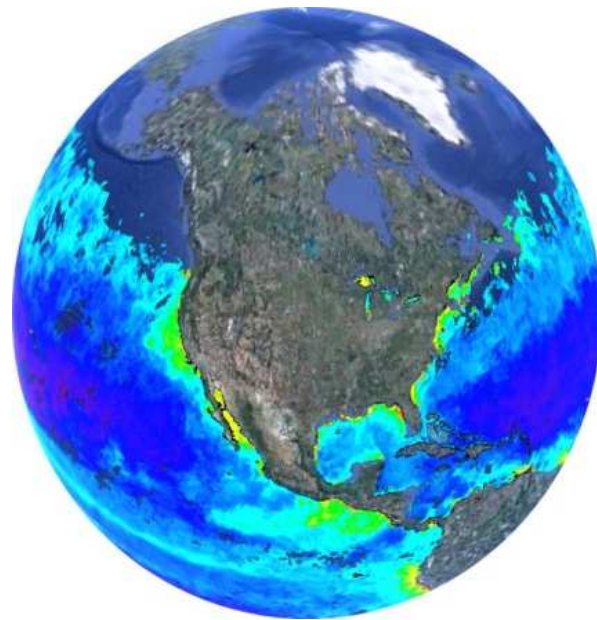
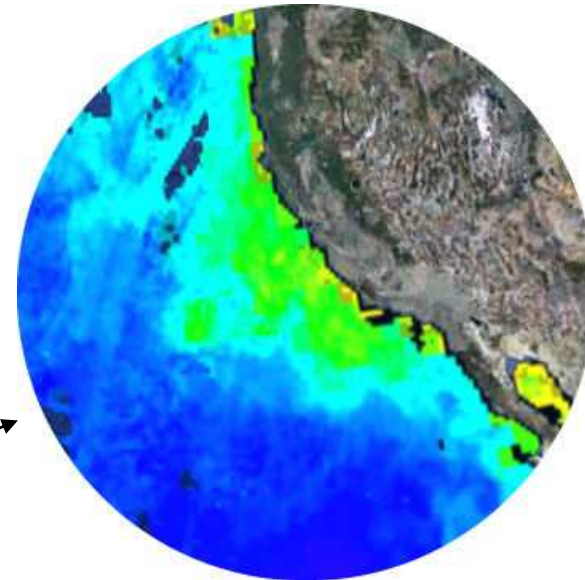
# What is IOOS<sup>®</sup>?

- An Integrated and Sustained Ocean and Coastal Observing and Prediction System.
- A collaborative framework.
- A network of many different land-, water-, air-, and space-based facilities and technologies:
  - Platforms
  - Instruments and Sensors
  - Telecommunications Systems
  - Computer Systems
- Contributes to the Global Ocean Observing System (GOOS)



# A National and Regional Collaboration

## 17 Federal Agencies



## 11 Regional Associations



# U.S. Data Management & Communications

Other Third Party Users

## IOOS/GEOS

*Data also returned to providers with processing.*

National Observing Systems  
Regional Observing Systems



Data  
Management  
Modeling

## End Users (YOU!)

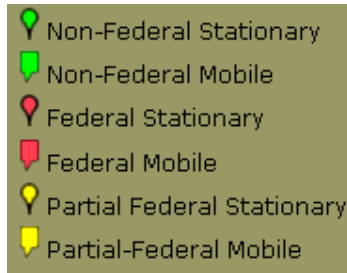


Federal States    Industry    Local Tribes    Academia    NGOs

## Data Providers

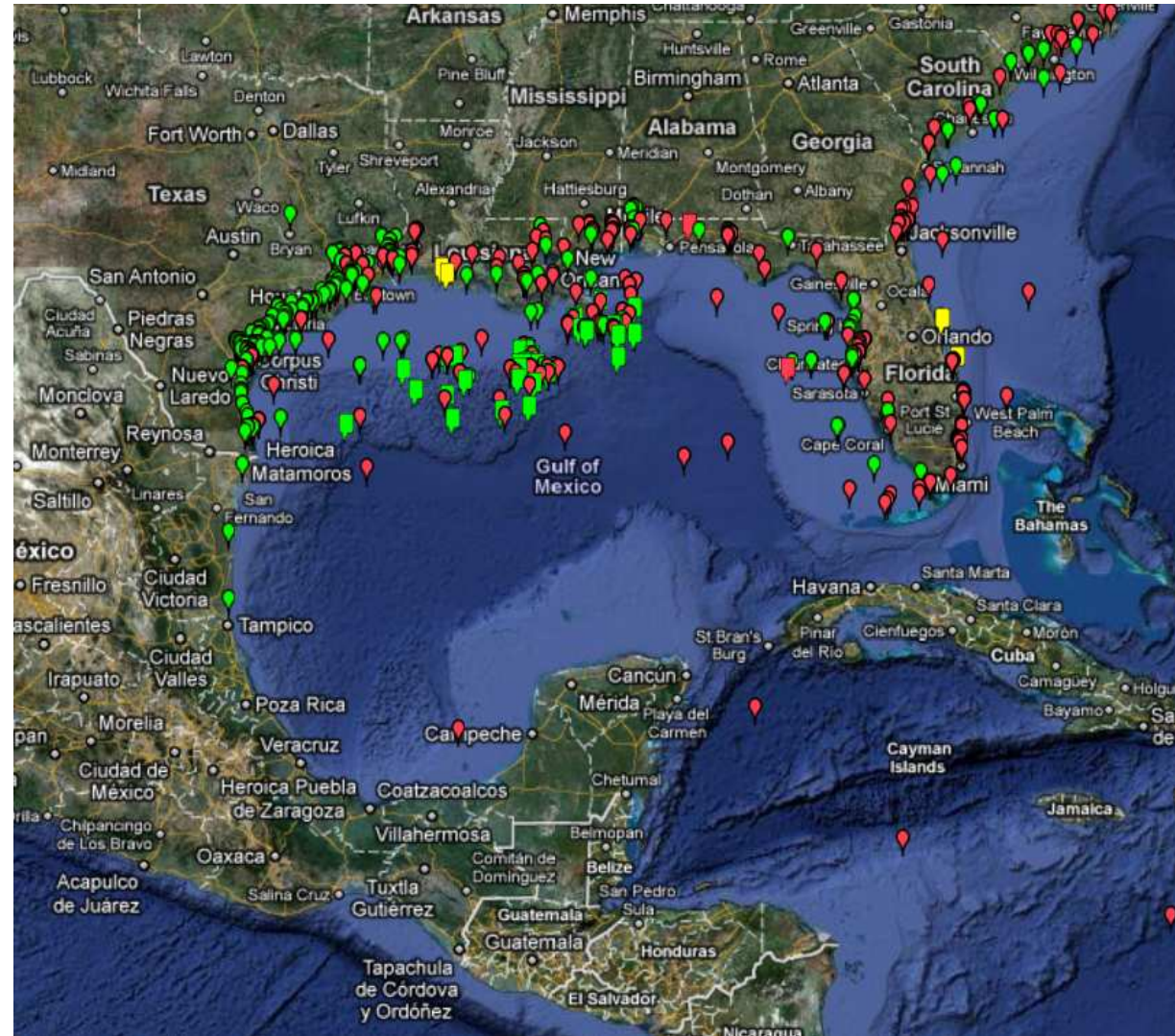


# All Observing Assets in GOM (Fed/Non-Fed)



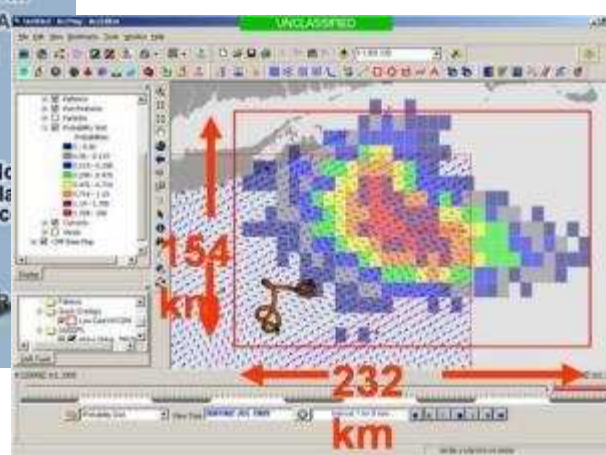
Includes: Private, Academic, State, NOAA/NDBC, NOAA/CO-OPS, NOAA/IOOS\*

\* Includes IOOS Regional Associations

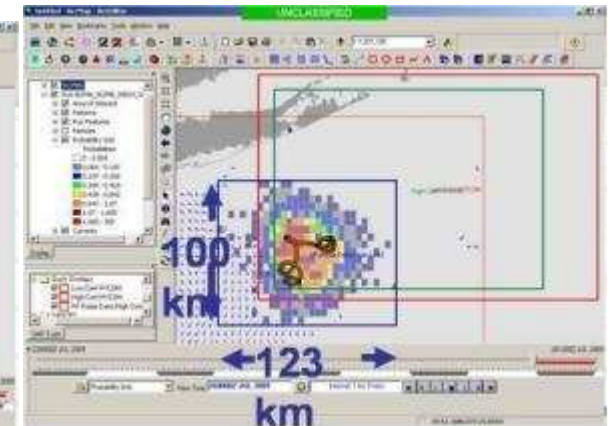


# US IOOS<sup>®</sup>: Delivering New Observing Capability

- >100 Coastal High Frequency Systems
- Uses: SAR; Oil Spill; Harmful Algal Bloom; Ocean Circulation



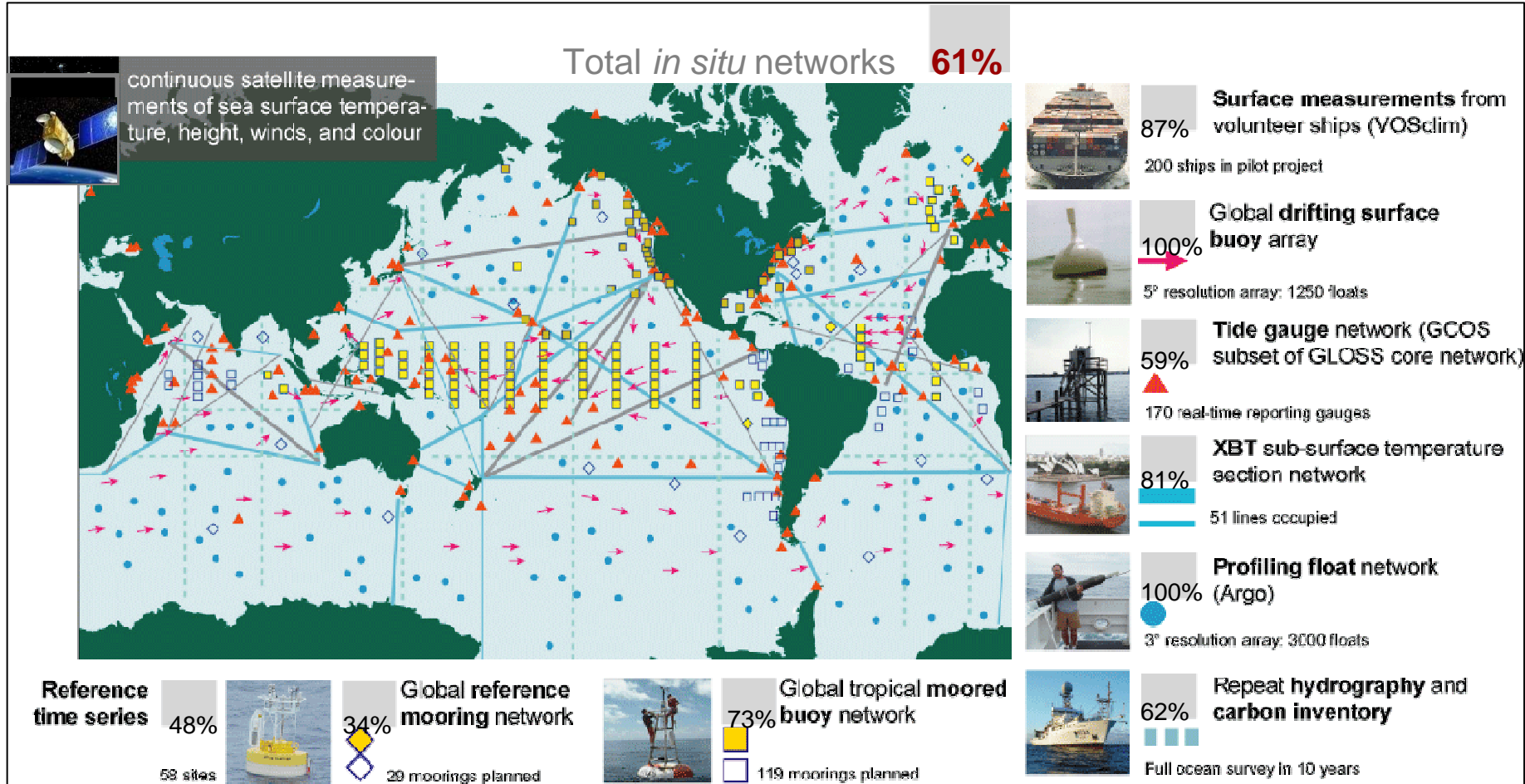
96 hr: Without HFR  
36,000 Km<sup>2</sup>



96 hr: With HFR  
12,000 Km<sup>2</sup>

# The Initial Global Ocean Observing System for Climate

## Status against the GCOS Implementation Plan and JCOMM targets





# IOOS<sup>®</sup>: Delivering the Benefits

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## Improve Safety



## Enhance Our Economy



## Protect Our Environment





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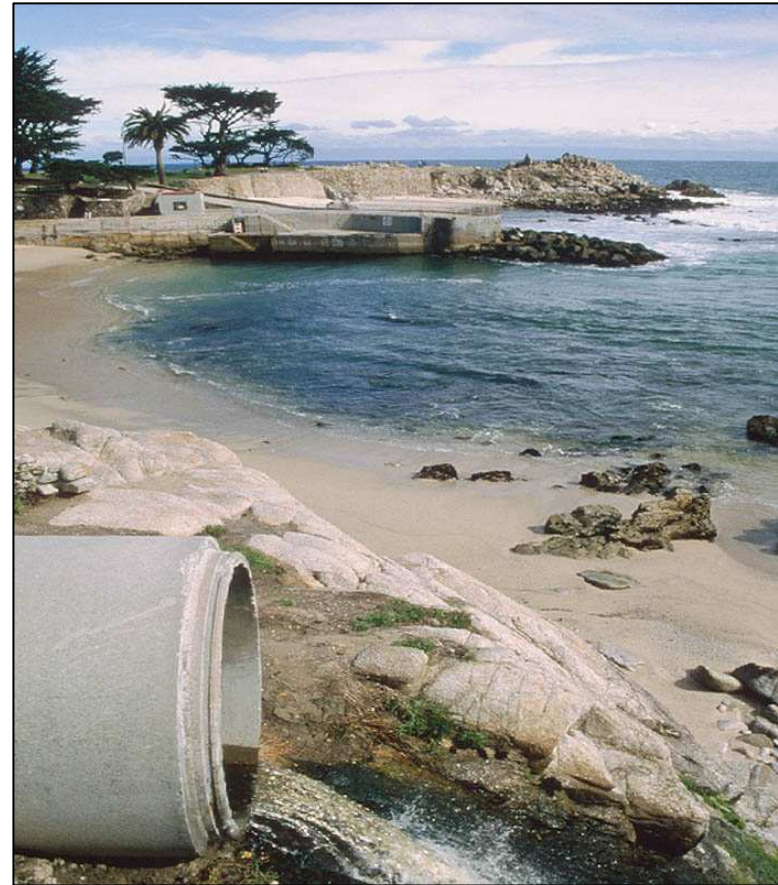
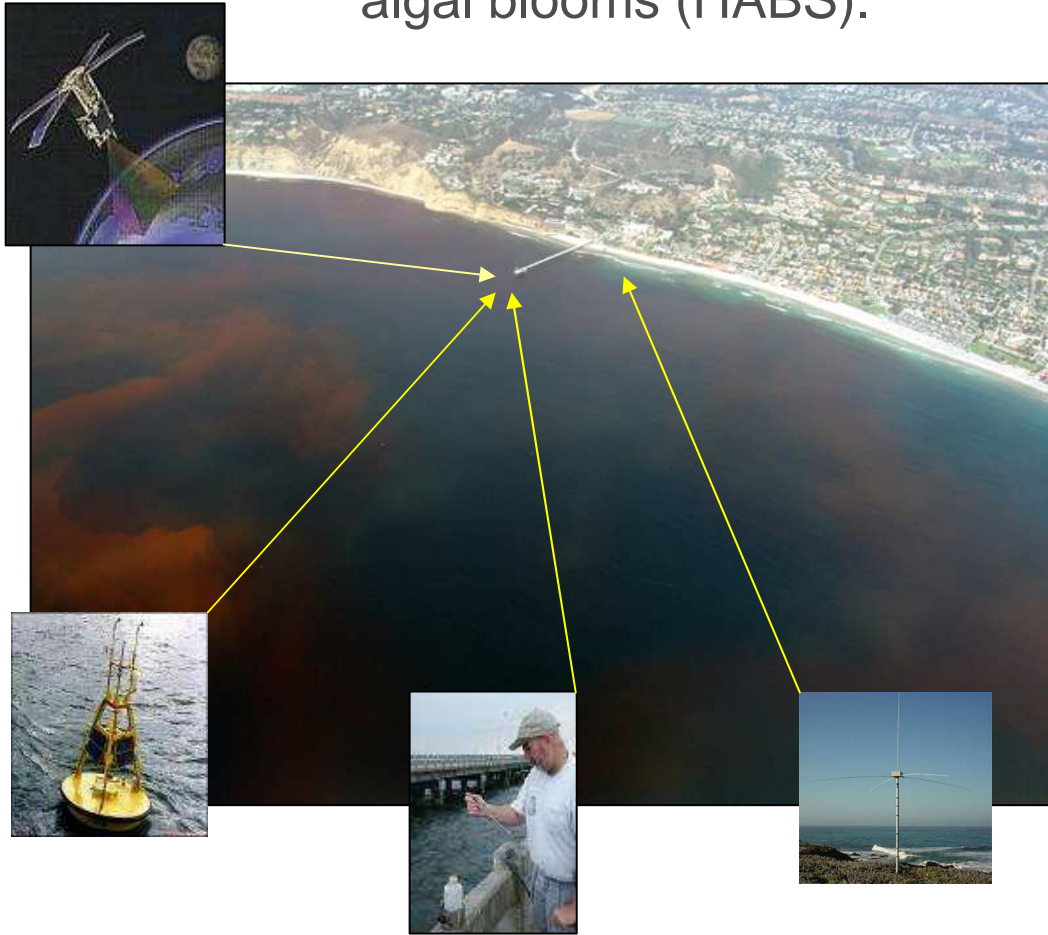
# Protecting Coastal Communities

- Hazard and ecosystem assessment
- Oil and hazardous materials spill response
- Support for coastal management
- Habitat loss management
- Environmental mapping



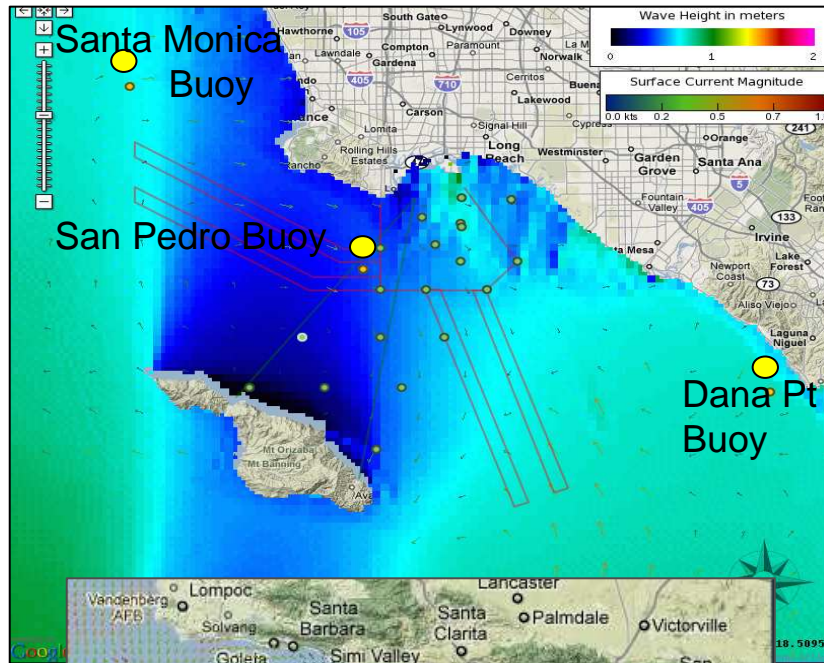
# Reduced Public Health Risks

Increasing warning of harmful algal blooms (HABS).

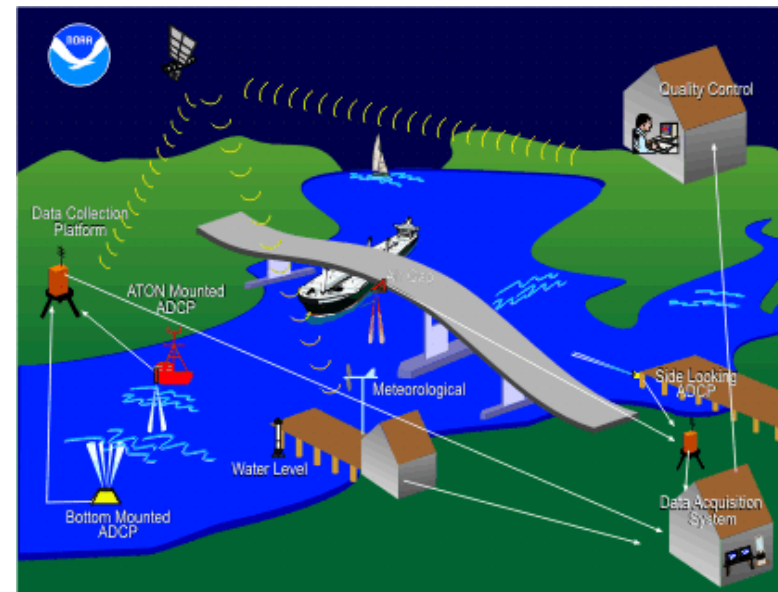


Managing pollutants from storm water to reduce beach closures.

# Safe and Efficient Navigation

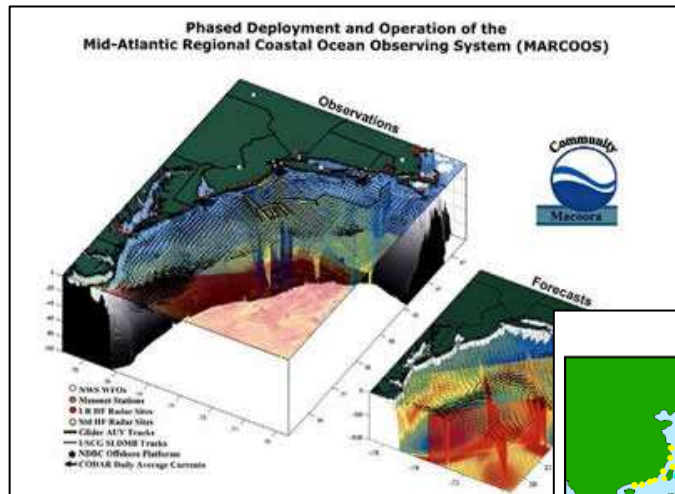


- Coastal Data Information Program (CDIP) providing wave observations, nowcasts, and forecasts.
- SCCOOS providing HF Radar surface currents.
- NOAA Physical Oceanographic Real-Time System (PORTS)

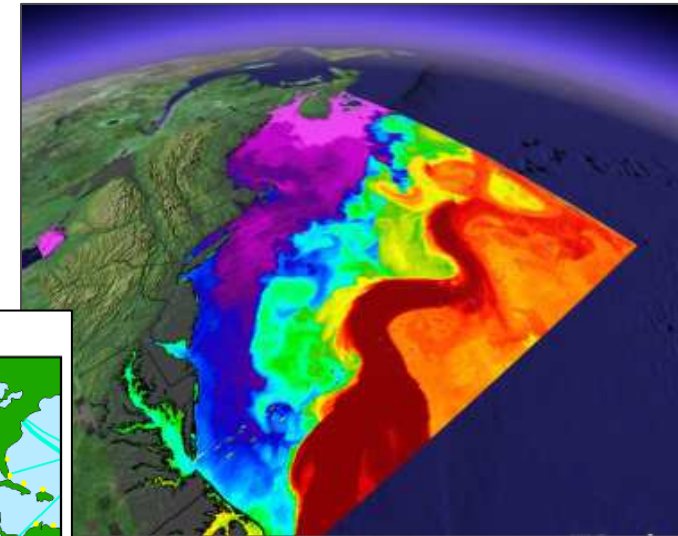


# Benefits Across Disciplines

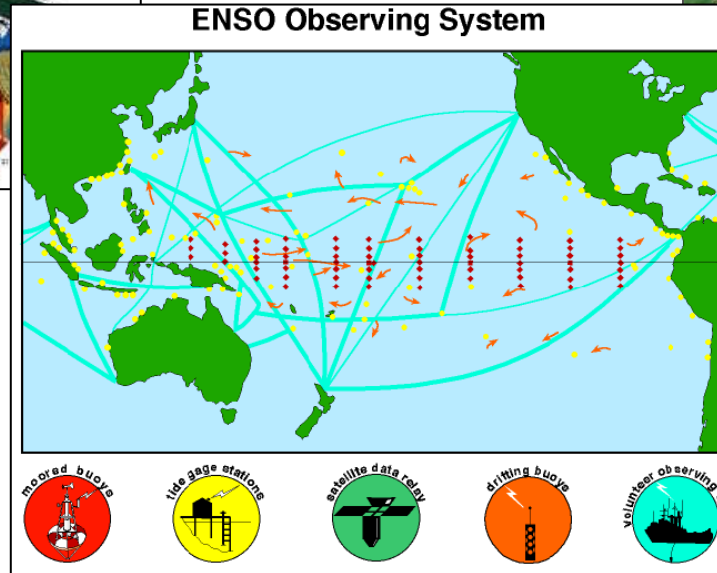
## Public Utilities



## Ecological Management



## Weather & Climate ENSO Observing System

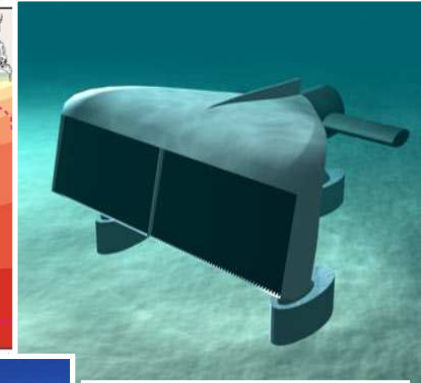
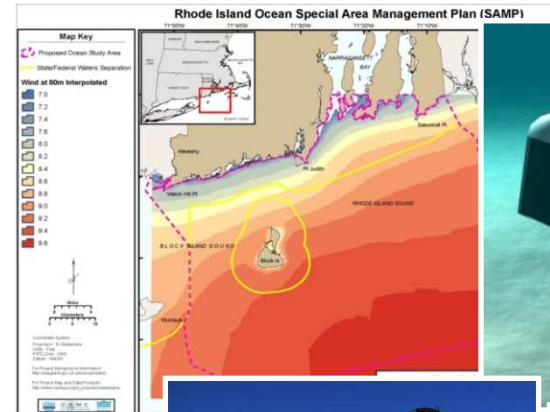


...Water Supply, Agriculture, Commercial Fishing, Energy, Tourism and more...

# US IOOS<sup>®</sup> support to: Energy Sector

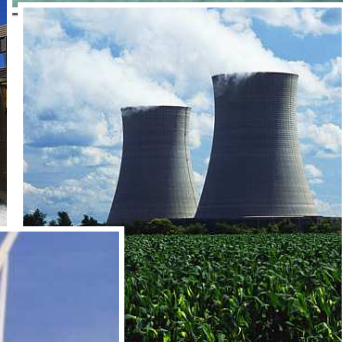
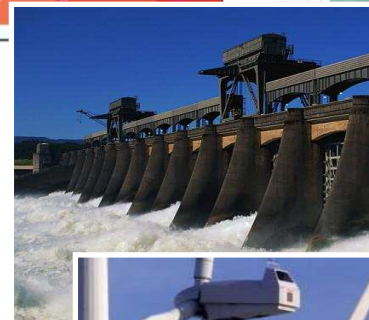
## ***Pre -Construction***

- Avian Studies
- Geophysical/Geotechnical Investigations
- Met Tower Installation
- Wave Sensor Deployment
- Staging Port Development



## ***Construction***

- Foundation Installation
- Sub-sea Electrical Cable Installation
- Offshore Substation Installation
- Turbine Installation



## ***Post-Construction***

- O&M Activities; Decommissioning



What is IOOS<sup>®</sup>?

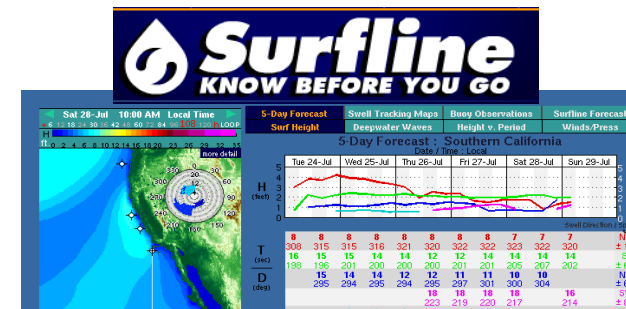
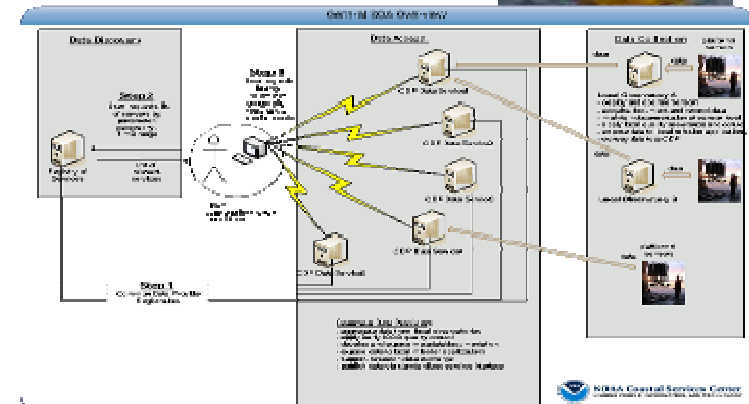
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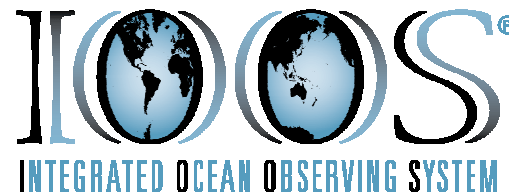
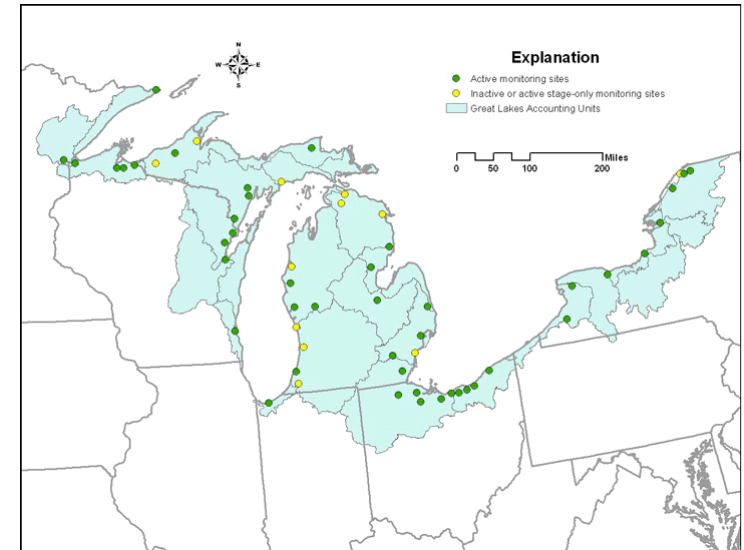
# Industry Participation

- 🌐 **The Observing Subsystem**
  - Buoys, gliders, gauges.
- 🌐 **DMAC Subsystem**
  - Boeing, SAIC, and ASA working with IOOS regions
- 🌐 **Modeling and Analysis Subsystem**
  - Noblis, Inc. helping create inundation forecasting (CIPS)
- 🌐 **Partnerships**
  - Shell and NOAA NDBC
- 🌐 **Value-Added Companies**
  - Surflines; ROFFS; Weatherflow



# US IOOS<sup>®</sup> and US National Water Quality Monitoring Network - example

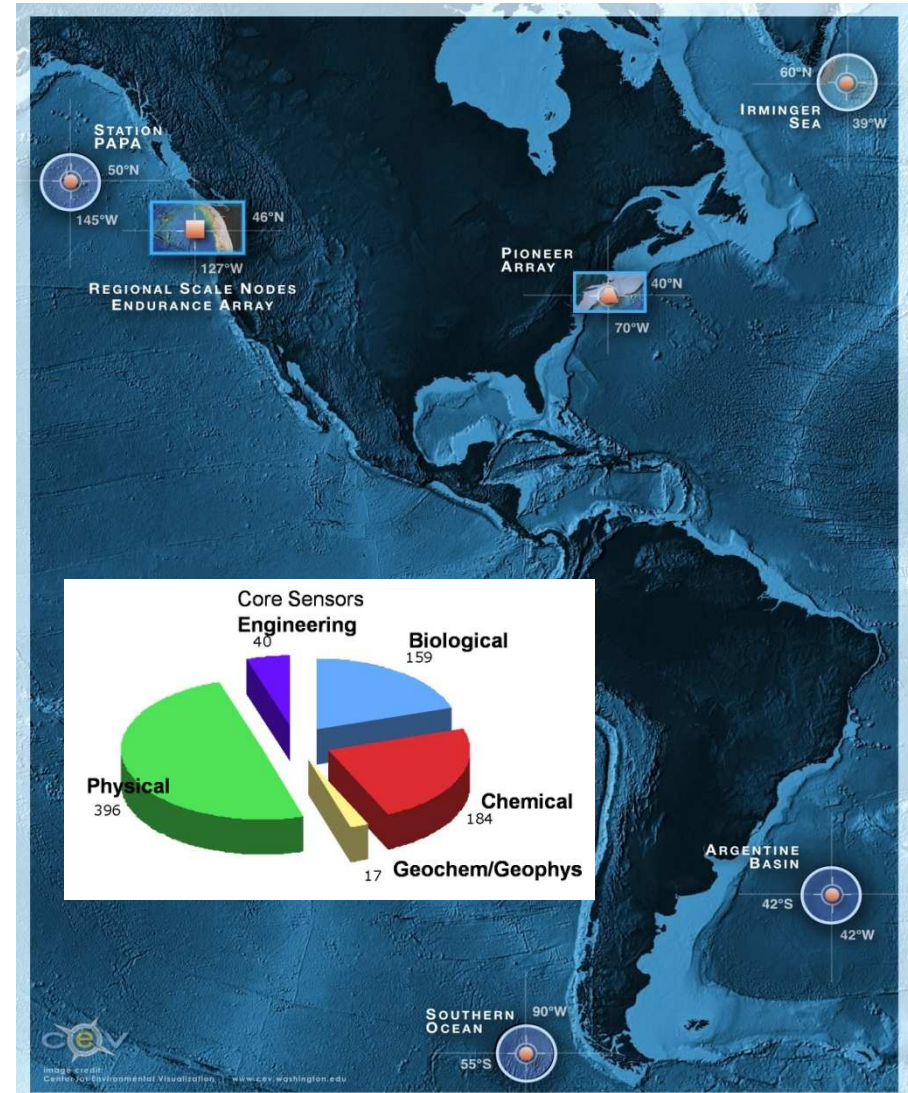
- Serve observational data according to common OGC/WMO standards
- Feeds multidiscipline prediction models for eutrophication, beach health, invasive sp., etc.
- Integrate watershed “circulation” model with GLOS/IOOS into a Virtual Observatory





# OOI: R&D Component of US IOOS

- 4 Global scale sites
- 3 Regional cabled sites in the NE Pacific
- Coastal scale arrays: Mid-Atlantic Pioneer Array, PNW Endurance Array
- Each scale incorporates mobile assets
- Cyberinfrastructure: enable adaptive sampling, custom observatory view, collaborative analysis
- Interfaces for education users
- Academic Institutions lead the building of OOI



# US IOOS<sup>®</sup> : Supports Sensor Verification and Validation



- A third-party testbed for evaluating sensors and sensor platforms
- A forum for consensus and capacity building
- An information clearinghouse for observing technologies

# The Future of U.S. IOOS

## Operational IOOS

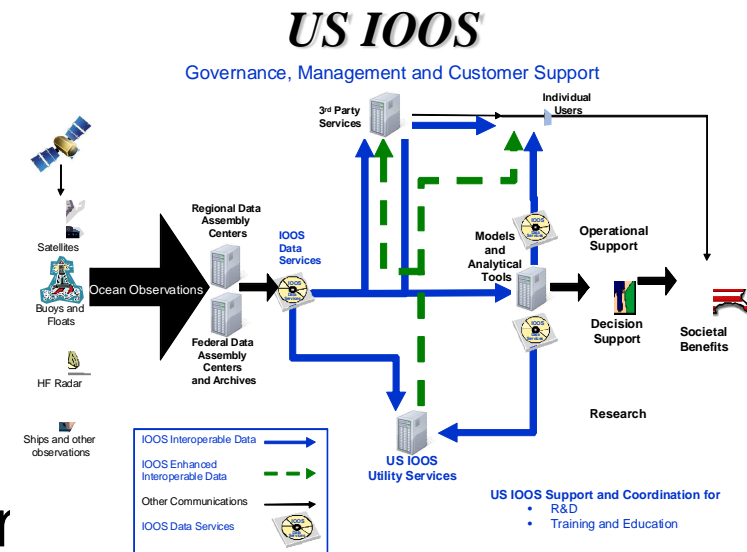
### – Network of Observations

- biological
- physical
- chemical

### – Fully developed Data Mar Communications (DMAC)

### – Robust Partnership with Regional Coastal Component

### – Models & decision tools at resolution to support coastal communities



# Questions

**IOOS INTEGRATED OCEAN OBSERVING SYSTEM**

Home About NOAA Program Our Partners Other Resources Contact Search

**Of Special Note**

- National Surface Current Mapping Plan
- 2009 Regional Workshop Materials
- Federal Funding Opportunities
- November 2009 Industry Workshop Flyer (pdf)
- Waves Plan
- Commemoration of Texas Tower 4 weather buoy 4406
- IOOS Timeline
- Business Case for Improving NOAA Management and Integration of Ocean and Coastal Data
- IWG00 IOOS Strategic Plan
- NOAA IOOS Program Strategic Plan
- FY 09 Regional Fact Sheets
- Coastal Inundation Collaboration Site now live

**U.S. IOOS®: Our Eyes on Our Oceans, Coasts, and Great Lakes.**

Providing the data and information needed to improve safety, enhance our economy, and protect our environment.

The Integrated Ocean Observing System (IOOS®) is a federal, regional, and private-sector partnership working to enhance our ability to collect, deliver, and use ocean information. IOOS delivers the data and information needed to increase understanding of our oceans and coasts, so decision makers can take action to improve safety, enhance the economy, and protect the environment.

<p><b>OBSERVATIONS</b></p>	<p><b>DATA MANAGEMENT</b></p> <p>Data Integration Framework (DIF) Data Management and Communications (DMAC) Participate in U.S. DMAC Standards DMAC Steering Team</p>	<p><b>COMMUNICATIONS</b></p> <p>Press Room Calendar of Events Messaging Materials Brochures, Videos, Podcasts Z-grams</p>
<p><b>REGIONAL PARTNERS</b></p>	<p><b>INTERAGENCY PROGRAMS</b></p> <p>Ocean Observatories Initiative Marine Protected Areas National Water Quality Monitoring Network</p> <p>more...</p>	<p><b>GLOBAL OBSERVATIONS</b></p> <p>Global Ocean Observing System NOAA's Global Component of U.S. IOOS Group on Earth Observations</p>

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