Monitoring: systematic collection of mission driven environmental data to determine current conditions, trends, variation
Observing: collection of real-time environmental data for a host of uses
Research: scientific investigation and scholarly pursuit of knowledge
Education: presentation of information in a manner that people can take action
...the many layers of an integrated coastal ocean observing system

- Existing agency monitoring
- Surface current measurements
- Satellite and aircraft remote sensing
- Physical, bio-optical moorings
- Autonomous vehicles
- Meteorological measurements
- Modeling
- Distributed databases
- ...?

- Water quality
- Marine life resources
- Coastal hazards
- Educators
- Search and rescue
- Spill response
- Security
- Regional marine science
- ...?
Introduction to the U.S. Integrated Ocean Observing System (IOOS)

Slides from Dr. Mary Altalo and Dr. Tom Malone
Director
Ocean.US
The National Office for Integrated and Sustained Ocean Observations

Some edits by E.Terrill
1998 NORLC Charged by Congress
Integrated Ocean Observing System (IOOS)

Provide Data/Info Required for More Rapid Detection & Timely Prediction of Ocean and Coastal State Changes for Better Management Decisions

- Integrate all of the Ocean and Coastal Observing system assets of the U.S. into IOOS
  - Federal Assets- 10 agencies to start
  - Non- Federal Assets- state, local and private
- Focus these assets on answering societal questions
- Create Interagency Planning Office, Ocean U.S. to write the plan to accomplish this
IOOS is to be User Driven:
Seven Societal Goals

1. Predict climate change and effects
2. Mitigate natural hazards
3. Improve maritime operations
4. Improve national security
5. Reduce public health risks
6. Protect/restore coastal ecosystems
7. Enable sustained use of coastal and ocean resources

This is IOOS metric for success!
Committee on Ocean Policy
Chair CEQ
(Cabinet Level)

Interagency Committee on
Ocean Science &
Resource Management
Integration
Co-Chairs: OSTP & CEQ

ORRAP

JSOST
IWGOO

NSC PCC
Global
Environment

SIMOR

NFRA
Ocean.US
Integrated Ocean Observing System (IOOS)

NOAA’s Approach to Building an Initial Operating Capability
Outline

• Background
• NOAA’s IOOS Plan
• NOAA’s IOOS Program Office
  – Purpose & Function
  – Process to establish
• The IOOS Challenge: Data Integration
• NOAA’s Initial Operating Capability: Integrated Data Framework
• Summary
• Questions & Comments
NOAA’s IOOS Plan

<table>
<thead>
<tr>
<th>Organize for Success</th>
<th>Integrate Data</th>
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<tbody>
<tr>
<td>• Establish NOAA IOOS Program Office</td>
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<tr>
<td>– Lead and manage NOAA’s IOOS efforts</td>
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<td>• Support external collaboration</td>
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<td>– Identify and encourage similar data integration, test and evaluation approach by partners</td>
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<td>• Develop an Integrated Data Framework as the Initial Operating Capability</td>
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<td>– Integrate priority IOOS core variables and deliver to end users and models</td>
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<td>– Quantify product improvements</td>
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NOAA IOOS Definition:
The U.S. Integrated Ocean Observing System (IOOS) is a coordinated network of people and technology that work together to generate and disseminate continuous data on our coastal waters, Great Lakes, and oceans. IOOS is our nation’s ocean contribution to an international effort called the Global Earth Observation System of Systems (GEOSS), which is designed to continuously and comprehensively monitor Earth and transmit observations globally. IOOS supports both a coastal and global component of ocean observing.
NOAA’s IOOS Program Office: Purpose & Functions

Leveraging existing NOAA-wide capabilities

Observations

Data Management & Communications

Modeling & Analysis

NOAA Ocean Council

NOAA Observing System Council

NOAA Administrator

NOS Assistant Administrator

OAR Assistant Administrator

IOOS Program Office Director

IOOS Project Management

Program Operations

Interagency Committee on Ocean Science and Resource Management Integration (ICOSRMI)

Joint Subcommittee on Ocean Science and Technology (JSOST)

Interagency Working Group on Ocean Observations (IWGOO)

Ocean.US

Regional Coastal Component

Guidance & Requirements

Capacity & Capabilities
Steps and Timeline:

- **IOOS Director (0-3mos)**
  - On Feb. 5, Zdenka Willis, former Director of NOAA’s Oceanographic Data Center, was selected as the full time IOOS Director to manage NOAA IOOS activities
  - Organize existing staff to manage day to day IOOS operations
  - Director will develop full staffing and budget plans

- **IOOS Program Office (6-9mos)**
  - NOAA/NOS is working with NOAA and DOC to seek necessary approvals to form the IOOS Program Office
The IOOS Challenge: Data Integration

**Societal Challenges**
- Global climate not well understood
- Coastal populations at risk
- Ocean, coastal, and Great Lakes ecosystems at risk

**Information Needs**
- Characterize the state of the global climate system and its variability
- Improved models (e.g., hurricane intensity, coastal inundation, and harmful algal bloom model)
- Improved ecosystem assessments
- Updated management approaches
- Improved access to data, and scientific information

**IOOS Core Variables**
- Temperature
- Salinity
- Sea Level
- Surface currents
- Ocean color
- Bathymetry
- Surface waves
- Ice distribution
- Contaminants
- Dissolved nutrients
- Fish species
- Fish abundance
- Zooplankton species
- Optical properties
- Heat flux
- Bottom character
- Pathogens
- Dissolved $O_2$
- Phytoplankton species
- Zooplankton abundance

**Decision Tools**
- Hurricane Intensity Model
- Coastal Inundation Model
- Harmful Algal Bloom Model
- Integrated Ecosystem Assessment

**Integration**
Long-term data series, coordinated in space and time
NOAA’s Initial Operating Capability: Integrated Data Framework

**Future State:**
- Regional-coastal data integration for
- Regional scale data and information products and services
Summary

• NOAA is advancing IOOS through improved organization, management, and focus
  – The process for establishing a NOAA IOOS Program Office is underway
  – The NOAA IOOS Program Office is building an Initial Operating Capability (IOC) for IOOS
  – The IOC will be tested, evaluated, and benchmarked for success

• NOAA continues to coordinate larger U.S. IOOS efforts with federal and international partners through participation in inter-agency forums

• NOAA continues to support development of regional infrastructure and management to enable a fully configured and scalable U.S. IOOS
The U.S. Integrated Ocean Observing System

www.ocean.us
SCCOOS
Southern California Coastal Ocean Observing System
www.sccoos.org
TALK OVERVIEW

- History of the Southern California Coastal Ocean Observing System
- Organization Structure
• ~20 million people, representing roughly 25% of the coastal population of the U.S., live within 50 miles of the coast
• Beach usage in California is higher than the other 49 states combined
• 175 million users spend over $10 billion annually on tourism
SOME HISTORY

Sept 2002: Legislative Workshop held urging the establishment of an integrated coastal observation system in Southern California

• March 2003: Memorandum of Understanding signed by 11 organizations to initiate the formation of SCCOOS

• Feb 2004: CeNCOOS and SCCOOS sign an MOU establishing a Federation of California Regional Observing Systems.

• June 2004: SCCOOS awarded resources by NOAA Coastal Services Center to initiate formal stakeholder engagement

• June 2004: SCCOOS awarded resources from the NOAA COTS to implement pilot technologies

• March 2005: SCCOOS begins implementation of the State of California’s Coastal Ocean Currents Monitoring Program (COCMP)

• August 2005: Marine Resources Legacy Foundation fund a coordinated business plan development effort with SCCOOS/CeNCOOS

• Feb 2006: Formal Bylaws approved by the Board of Governors

• Feb 2006: Senior Advisory Committee elected

• Sept 2006: Senior Advisory Committee inaugural meeting held

• April 2007: SCCOOS submits continuation RCOOS proposal to NOAA

• June 2007: Senior Advisory Committee convenes meeting
SCCOOS Regional Association

- Senior Advisory Committee
- Board of Governors
- Executive Steering Committee

- Core programs
- New program integration
- Working groups
- Projects

Local, state, federal interests
Senior Advisory Committee

CA Office of Spill Prevention and Response
CA Sea Grant
Central Bight Water Quality Working Group
City Los Angeles
Marine Exchange of Southern California
Minerals Management Service
NOAA
NOAA Southwest Fisheries/PacOOS
Orange County Health Care Agency
Southern California Stormwater Monitoring Coalition
State Coastal Commission
State Coastal Conservancy
State Water Resources Control Board
Tijuana NERR
U.S. Coast Guard
U.S. Army Corps of Engineers
U.S. Geological Survey
USC Sea Grant
USN METOC