Marine Operations: Multiple Uses
Regional Association Activities Supporting Marine Operations: Multiple Responses - Navigation, Safety and Efficiency

Real Time Sea State Conditions

Customized Products
Integrating observations and model forecasts

Mass

Long Beach

NYC

Oahu

San Francisco

Emergency Response

Beach Safety

Ship Tracking
Operational Partnerships Integrating IOOS Data: Multiple Delivery Methods

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
Commonalities Across Regions: IOOS Sponsored 2 National Plans

- Developed with community support from academia, regions, and federal agencies (ACT facilitated plans)
- Identified critical gaps, technical needs and data management requirements
- Includes estimated cost based on decades of experience
- Framework to facilitate leveraging
San Francisco
Wave Map Browser
Safety, Efficiency

Understanding of Management Issues
## San Francisco - SAFETY

### Marine Incidents (rescues) near SF Bar

<table>
<thead>
<tr>
<th>Fiscal Year (FY)</th>
<th>Surf Cases</th>
<th>IVO of SF Bar</th>
<th>Total</th>
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<tr>
<td>FY03</td>
<td>32</td>
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<td>FY09</td>
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</table>

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

### Incidents in the Vicinity of SF Bar (IVO)
“This buoy allows for safer transits, safer pilot boat operations, and efficiency for the shippers that call at San Francisco Bay.”
Captain Bill Greig

“The valuable information available from this weather buoy plays a very crucial roll in my decision that relates to safe navigation of ships across the bar.” Captain Carl Martin, Jr.

“This station has been a great benefit to me as a San Francisco Bar Pilot in route planning and risk assessment.” Captain H.W. Kenyon
U.S. Coast Guard: Search And Rescue Optimal Planning System

National HF Radar Network – 151 Sites

Mid-Atlantic Operational Data Flow to SAROPS

SAROPS 96-Hour Search Area: **HYCOM = 36,000 km²**

SAROPS 96-Hour Search Area: **HF Radar = 12,000 km²**
IOOS Mid-Atlantic Bight: High Frequency Radar (HFR) Coverage

Annual Coverage Changes:
2008 to 2009 – Increase due to a focus on resiliency
2009 to 2010 – Decrease due to a lack of spares

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

Staffing Requirements:
MAB HFR Network = 14 LR HFRs + 14 SR HFRs.
National HFR Plan Recommends 8 Technicians.
IOOS Currently Supports 3 Technicians.
IOOS Coordinated Rapid Response: *Deepwater Horizon Oil Spill*

- April 20, 2010 – no systems operating
- April 24, 2010 – USF systems online
- May 1, 2010 – USM systems online

In 12 days, IOOS coordinated response resulted in 6 operating HF Radars in 2 networks.
IOOS Coordinated Rapid Response: Deepwater Horizon Oil Spill

Contributed Assets:
- HF Radar Networks: USF, USM
- Gliders: iRobot, Mote, Rutgers, SIO/WHOI, UDel, USF
- Drifters & Profilers: Horizon Marine, Navy
- Satellite Imagery: CSTARS, UDel
- Ocean Forecasts: Navy, NCSU
- Data/Web Services: ASA, Rutgers, SIO

Tropical Storm Bonnie crosses the Gulf of Mexico

USM HFR validation of SABGOM Forecast in region with satellite detected oil slicks

HFR used for Oil Slick Forecasts by NOAA/NOS/OR&R
Are there preferred locations for the fall Squid migration to the Middle Atlantic Bight outer continental shelf?

IOOS + NMFS data indicate Squid prefer persistent upwelling zones.

Tracking pollution from the Tijuana River plume in Southern California

3-Day Plume Dispersion
Discussion Questions

1. How do we continue to build the IOOS partnerships that support Maritime Operations?

2. How can we move forward with implementation of The National Wave Observation Plan and The National Surface Current Mapping Plan?

3. Are there additional National Plans that support Maritime Operations that IOOS could coordinate?
   - Data Based – Water Levels.
   - Technology Based – Gliders.
   - Product Based – Ocean Current Forecast Ensembles.

4. What additional data acquisition, aggregation and product delivery methods can be leveraged to support Maritime Operations? How can this be facilitated?