Interagency Task Force on Ocean Exploration and Research Technology and Infrastructure (TFORT)

Karen Kohanowich
Acting Deputy Director
NOAA’s Office of Ocean Exploration and Research
Co-Chair, TFORT
Established National Ocean Exploration program within the National Oceanic and Atmospheric Agency (NOAA)

Directed NOAA to “convene an ocean exploration and undersea research technology and infrastructure task force to develop and implement a strategy to:”

(1) Facilitate transfer of new exploration and undersea research technology

(2) Improve availability of communications infrastructure

(3) Develop a data management processing and sharing system

(4) Conduct public outreach activities

(5) Encourage cost-sharing partnerships
Interagency Task Force on Ocean Exploration and Research Technology and Infrastructure (TFORT)
Develop a catalog of priority Ocean Exploration and Undersea Research Technology Capabilities

Investigate technology solutions

Communicate technology needs, solutions, and technology partnership opportunities

Identify potential funding to further the use of high priority ocean exploration and undersea research technologies
Ocean Exploration and Research Technology Program Components

Requirements

Data Parameters

Technology Capabilities (Catalog)

Solutions

Program Mechanisms
What are Ocean Exploration Priorities?

1800-1900
Because it’s there and unknown

1900-2000
Because it’s important
  - Environmental Quality
  - Environmental Forecasting
  - Seabed Assessment
  - Living Resources

2000-now
Because it’s important and still unknown
- Year of the Ocean (1998)
- President’s Panel Report (2000)
- Ocean Exploration 2020
  National Forum (2013)
Ocean Exploration AND Research

• “Exploration is an early component of the research process;
  • it focuses on new areas of inquiry and
  • develops descriptions of phenomena that inform the direction of further study,
  • it is the collection of basic observations that later allow hypotheses to be posed to connect those observations with laws of physics, chemistry, and biology.”

Baseline Characterization

**Basin-Scale**
- Arctic
  - Beaufort Sea
- Gulf of Mexico
  - Pulley Ridge
- Atlantic
  - Mid-Atl ECS
- Pacific Monument
  - Challenger Deep
- Caribbean
  - Puerto Rican Trench

**Feature-Scale**

**Topographic**
- Canyons
- Ridges
- Seamounts
- Abyssal Plains

**Biological**
- Deep Sea Coral
- Fish
- Populations
- Microbial

**Chemical/Physical**
- Methane Hydrate
- Hydrothermal vent
- CO2
- Ocean Currents

**Cultural**
- Shipwreck
- Marine Debris
- Trawling Scars

**Identify, Quantify, Characterize**

**Rock Type**
- Soil Composition
- Subbottom Profile

**Species Identification**
- Quantitative measurement
- Interactive Ecology

**Quantitative measurement**
- Change analysis

**Wreck ID and investigation Descriptions**
Technology and Resolution

Months

TIME

Minutes

Meters

SPACE

1000’s Kms

[Diagram showing various technologies and their time and space resolutions]
Ocean Exploration and Research Technology
Priority Criteria

1) Marine data for Baseline Characterization

2) Increase the pace, scope and efficiency of marine baseline characterization data collection

3) Technology Readiness Level (TRL) 6-8
   - Testing applications of new technologies

4) Address high priority ocean exploration themes
President’s Panel 2000 Priorities

1) **Mapping**
   - U.S. Exclusive Economic Zone (EEZ) and continental margin
   - Arctic
   - Southern oceans and inland seas

2) **Exploring ocean dynamics and interactions at new scales**
   - Sea Surface
   - Organic/Inorganic dynamics

3) **Developing new sensors and systems for ocean exploration**
   - Remote sensing
   - 4D visualization
   - Capitalization of assets

4) **Reaching out in new ways to stakeholders**
   - Data Management
   - Communications mechanisms (telepresence)
   - Partnerships
Ocean Exploration 2020 National FORUM

Priorities

1) Mapping:
   - Water column
   - Arctic/Antarctic

2) Processes/Phenomena
   - Ocean Acidification
   - Under ice communities

3) Sensors
   - Autonomous vehicles
   - Alternative sampling

4) Engagement
   - Citizen science
   - Telepresence (mobile)

Oceans 2013 Spoiler:
Ocean Exploration 2020: A Town Hall on a National Ocean Exploration Program
Thursday 8:30 AM
Pacific Salon 3
Part II: Funding Opportunities
Ocean Exploration and Research Technology Funding Opportunities

- BON: Biodiversity Observation Network
- MARES: Marine ARctic Ecosystem Study
- Marine Sensor and Observing Technologies
- Ocean Exploration
- Ocean Mapping Grand Challenge
Attaining an Operational Marine Biodiversity Observation Network (BON) Synthesis Report

Steering Committee: Linda Amaral-Zettler, J. Emmett Duffy, Daphne Fautin, Gustav Paulay, Tatiana Rynearrow, Heidi Sosik, and John Stachowicz
FY2014 Demonstration of a U.S. Marine Biodiversity Observation Network (Marine BON)

SUMMARY

- Demonstrate how an operational Marine Biodiversity Observation Network (Marine BON) could be developed for the nation by establishing a prototype network of observation sites and observation systems

PRIORITIES

1) Deep sea (pelagic realm and benthic seabed)
2) Continental shelves
3) Estuaries and nearshore regions
4) Coral reefs
FY2014 Demonstration of a U.S. Marine Biodiversity Observation Network (Marine BON)

FUNDING OPPORTUNITY
NOAA-NOS-IOOS-2014-2003803
released Aug 15, 2013 on Grants.gov

FUNDING
- $500K to $2M per year for up to five years.

TIMING
- December 2, 2013, 5:00 pm, (EST) Monday
- Start date on proposals: June 1, 2014
GOAL

Improved understanding of the seasonal and interannual variability in physical and chemical processes and patterns and related effects on Arctic biological communities and human interactions

- Aspects of Interest
  - Emphasis on automated data collection (e.g., gliders, animal-borne sensors, etc.)
  - Physical
  - Biological
  - Social
  - Ecosystem Integration
**Marine Arctic Ecosystem Study (MARES)**

**FFO:** By end of 2013

**FUNDING:** $5M, evaluating additional agency and industry funding

**TIMING:** Pilot project to begin 2014

**PROPOSAL COMPONENTS:**

1. Research Framework
2. Field data collection
3. Synthesis and integration of data
4. Description of human interactions with the marine ecosystem
5. Numerical modeling of biogeochemical processes and human interactions
FY2014 Marine Sensor and Other Advanced Observing Technologies Transition Project

SUMMARY

Sponsored by U.S. IOOS Program and the NOAA Ocean Acidification Program

1) Ocean Observing marine sensor transitions

2) Ocean Acidification observing technologies for impacted industries or stakeholders
FY2014 Marine Sensor and Other Advanced Observing Technologies Transition Project

**Marine Sensor Transition Topic:** Increase the rate that new or existing marine sensor technologies are transitioned into operations mode
a) Multi-sector teams of partners
b) Meet the demonstrated operational needs of end-users
c) Sensors that are at or above TRL 6.

**Ocean Acidification Topic:** Measurement of at least two out of the four measurable carbon parameters: pH, DIC (dissolved inorganic carbon), pCO2, and total alkalinity.
a) Support the monitoring needs of industries or stakeholders
b) Technologies operate within an enclosed facility or be hand-held, moored in place, deployed from vessels, or shipboard flow-through systems.
c) Sensors that are at or above TRL 4
FY2014 Marine Sensor and Other Advanced Observing Technologies Transition Project

**FFO:** NOAA-NOS-IOOS-2014-2003854 released Aug 15, 2013 on Grants.gov

**FUNDING**

- IOOS: up to $8 million
- NOAA Ocean Acidification Program: $1 million
- Awards: $250,000 to $1 million per year for up to three years

**TIMING**

- Letters of intent: November 1, 2013, Friday, 5:00 PM EST
- Full proposals: February 21, 2014, Friday, 5:00 PM EST
SUMMARY: To search, investigate, and document poorly-known and unknown ocean areas through interdisciplinary exploration, and to advance and disseminate knowledge of the ocean environment and its physical, chemical, archaeological, and biological resources.

Geographic priorities:
- Gulf of Mexico
- Caribbean
- Arctic
- Deep water U.S. EEZ
- Extended Continental Shelf (ECS)

Thematic priorities:
- Surveys
- Characterizations
- Processes
- Technology
- Marine Archaeology
FY2014 Ocean Exploration
Funding Opportunity

**FFO** OAR-OER-2014-2003874  [www.grants.gov](http://www.grants.gov)
http://explore.noaa.gov/

**FUNDING:** Up to $3M total including costs for ship and submersible assets
Target for support: 8-15 proposals; 1-2 year duration

**TIMING:**
Pre-proposals: October 15, 2013, 5:00 pm (EDT)
Full proposal submissions: December 20, 2013, 5:00 pm (EST)

**CONTACT:** [oer.ffo2014@noaa.gov](mailto:oer.ffo2014@noaa.gov)
Other Opportunities

Office of Naval Research
Broad Agency Announcements
Departmental Research Initiatives

MARGINAL ICE ZONE PROGRAM

http://www.apl.washington.edu/project/project.php?id=miz
GRAND CHALLENGE: Ocean Mapping

TBD FY14
QUESTIONS

Karen.Kohanowich@noaa.gov
Chris.Beaverson@noaa.gov