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

PUBLIC LAW 111-11 (2009)

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

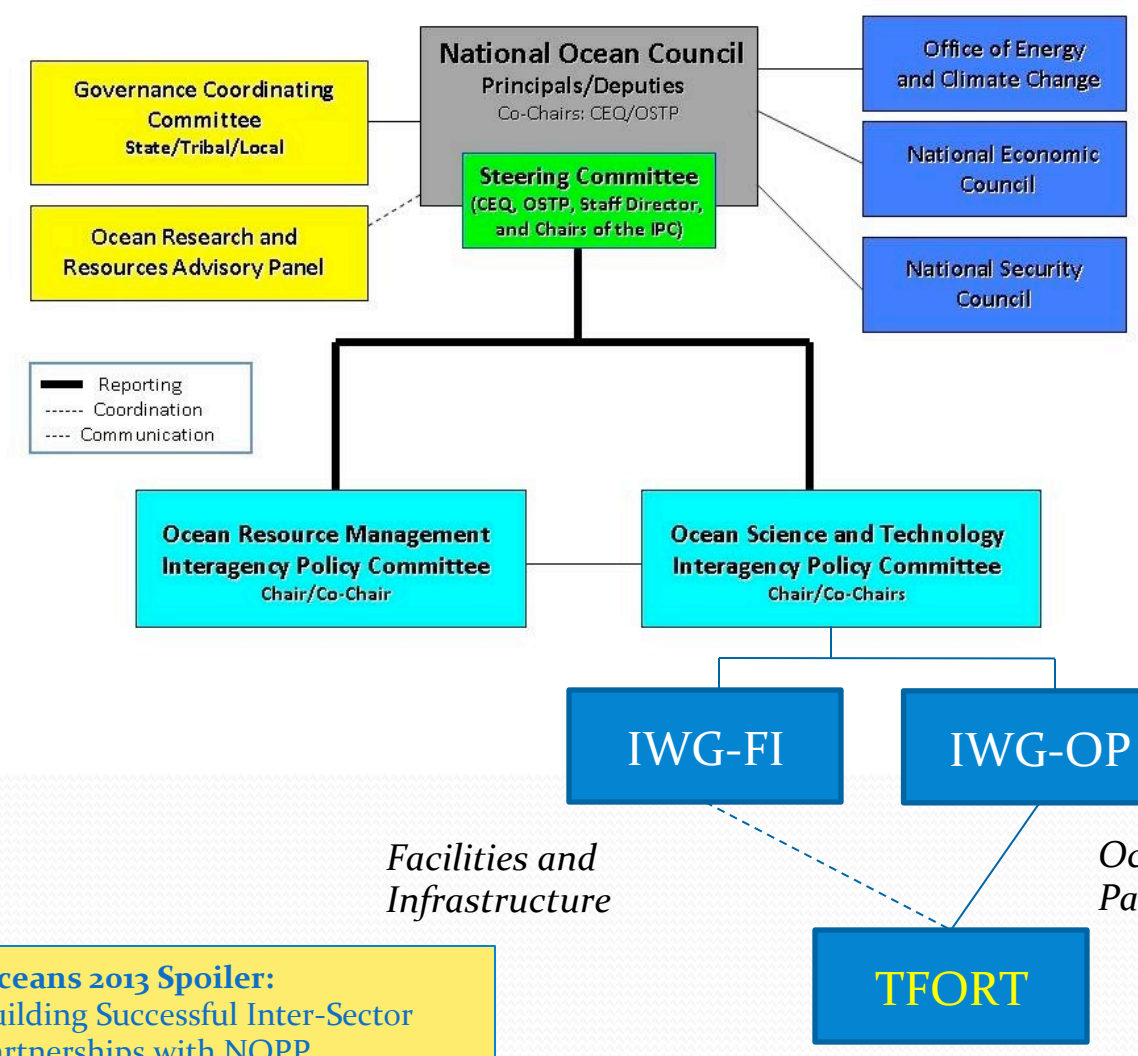
(2) Improve availability of communications infrastructure

(3) Develop a data management processing and sharing system

(4) Conduct public outreach activities

(5) Encourage cost-sharing partnerships

National Ocean Council



NOPP

Oceans 2013 Spoiler:
Building Successful Inter-Sector Partnerships with NOPP
Wednesday 1530
Pacific Salon 2

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

Technology

Resources

$$$

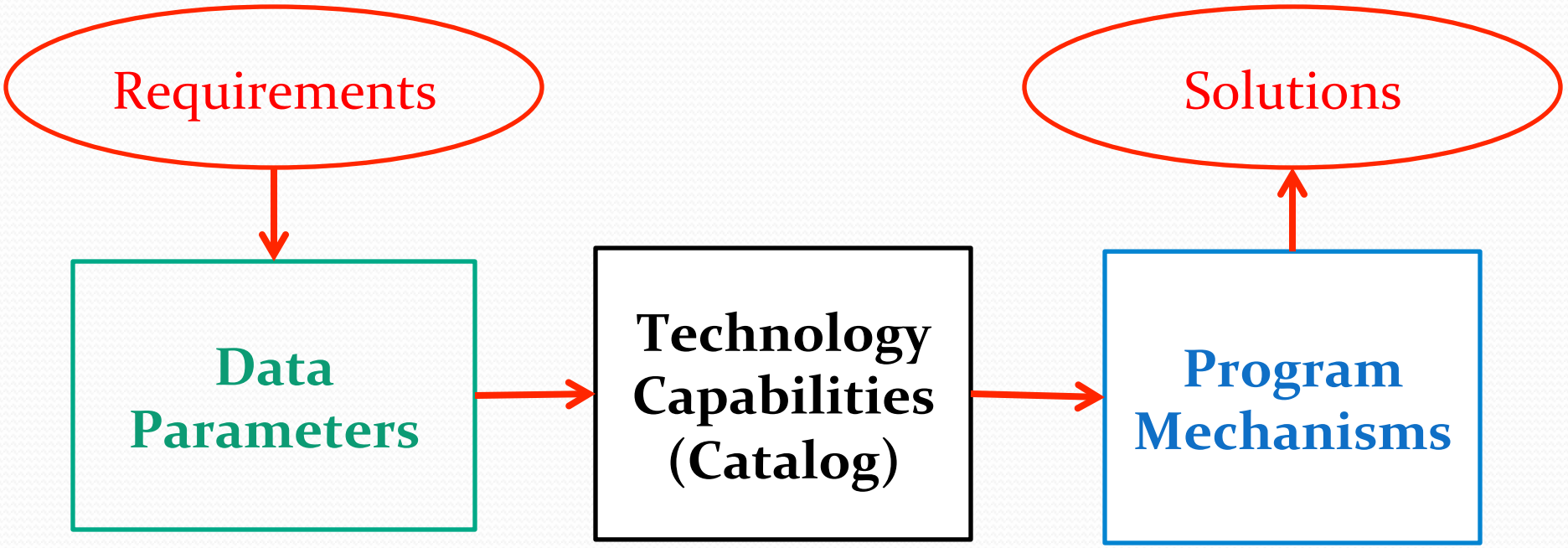
User

TFORT 5 Year Plan 2013

- 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



What are Ocean Exploration Priorities?

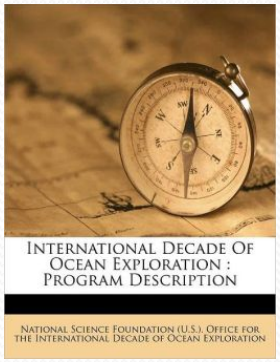
1800-1900

Because it's there and unknown

1900-2000

Because it's important

- International Decade of Ocean Exploration (1970-1980)
  - Environmental Quality
  - Environmental Forecasting
  - Seabed Assessment
  - Living Resources

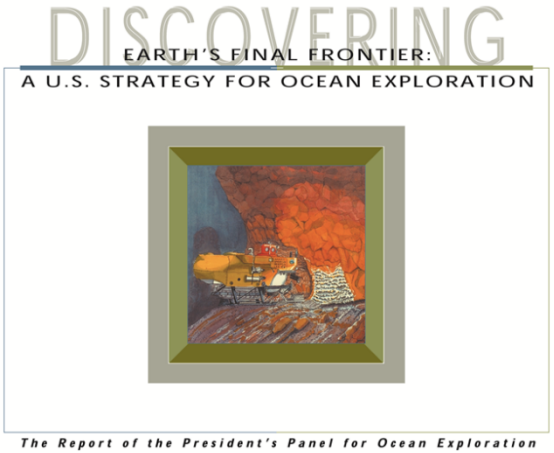


2000-now

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."**

Exploration of the Seas: Voyage into the Unknown.
National Academy of Sciences, 2003 p. 17

Baseline Characterization

RESOLUTION

Basin-Scale

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

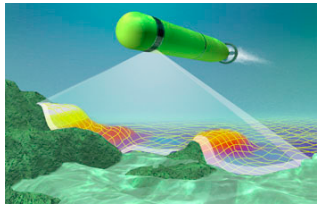
Feature-Scale

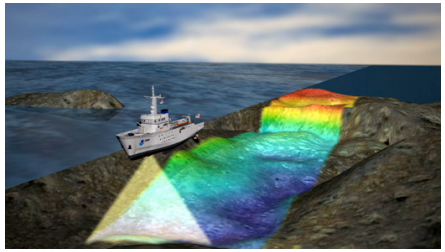
Topographic	Biological	Chemical/ Physical	Cultural
Canyons Ridges Seamounts Abyssal Plains	Deep Sea Coral Fish Populations Microbial	Methane Hydrate Hydrothermal vent CO_2 Ocean Currents	Shipwreck Marine Debris Trawling Scars

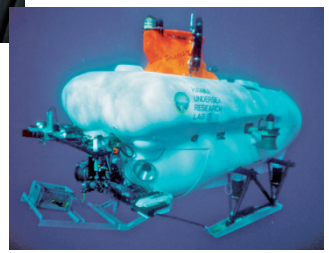
Identify, Quantify, Characterize

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

T
I
M
E

Minutes

Meters

SPACE

1000’s Kms

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

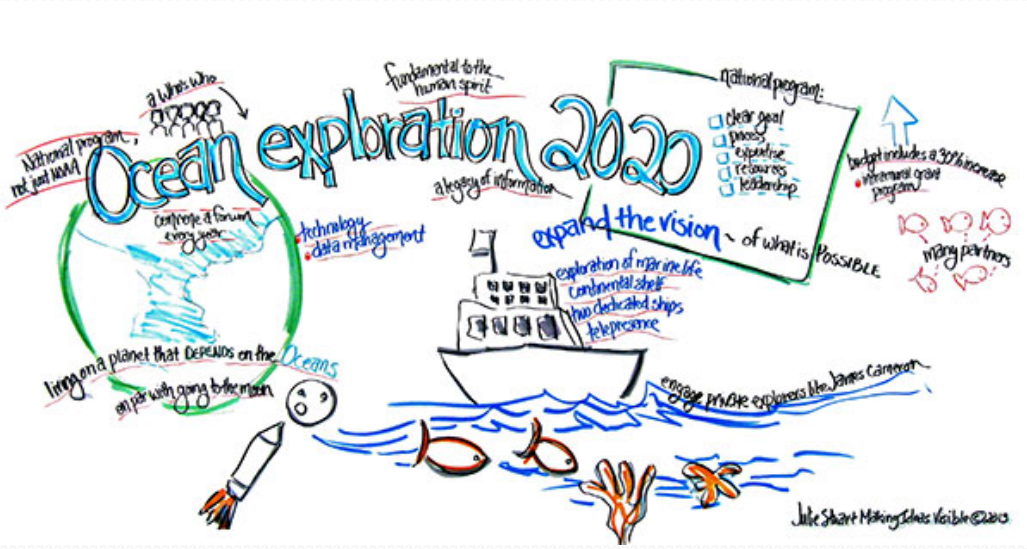
Ocean Exploration 2020 National FORUM Priorities

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 Rynearson, 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

IOOS®
INTEGRATED OCEAN OBSERVING SYSTEM

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.

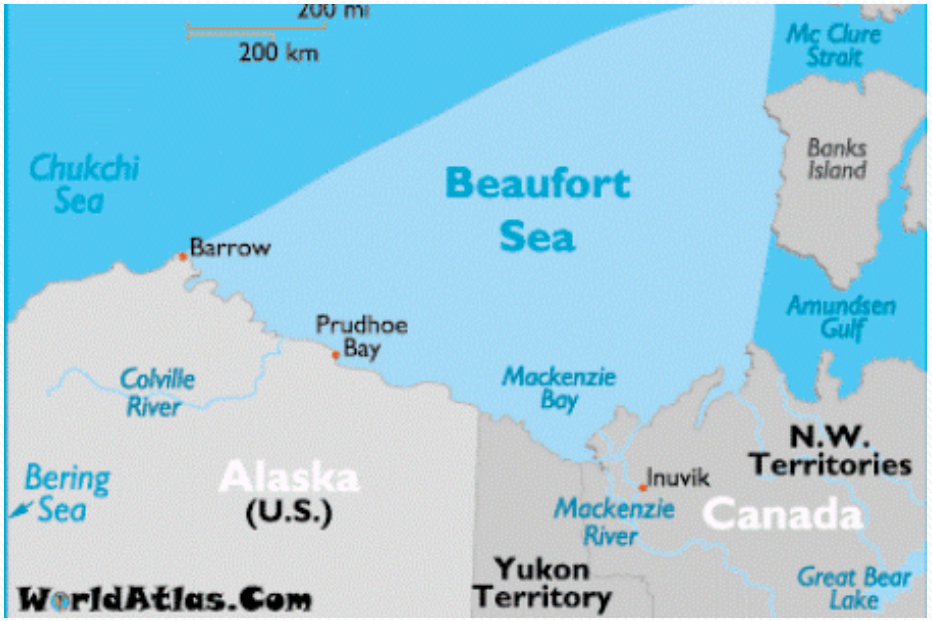
TIMING

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

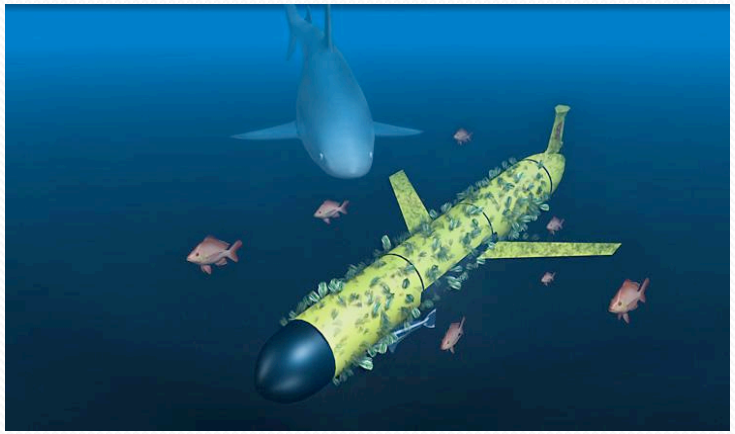
Marine Arctic Ecosystem Study (MARES)

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



BOEM
Bureau of Ocean Energy Management

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), pCO_2, 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

FY2014 Ocean Exploration Funding Opportunity

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://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

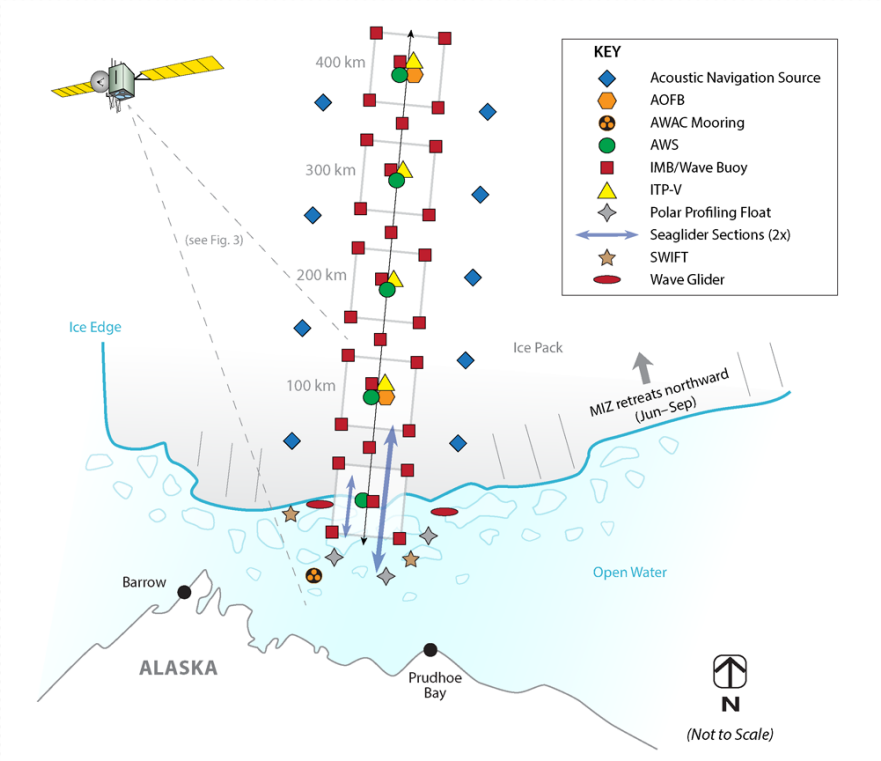
Other Opportunities

Office of Naval Research

Broad Agency Announcements

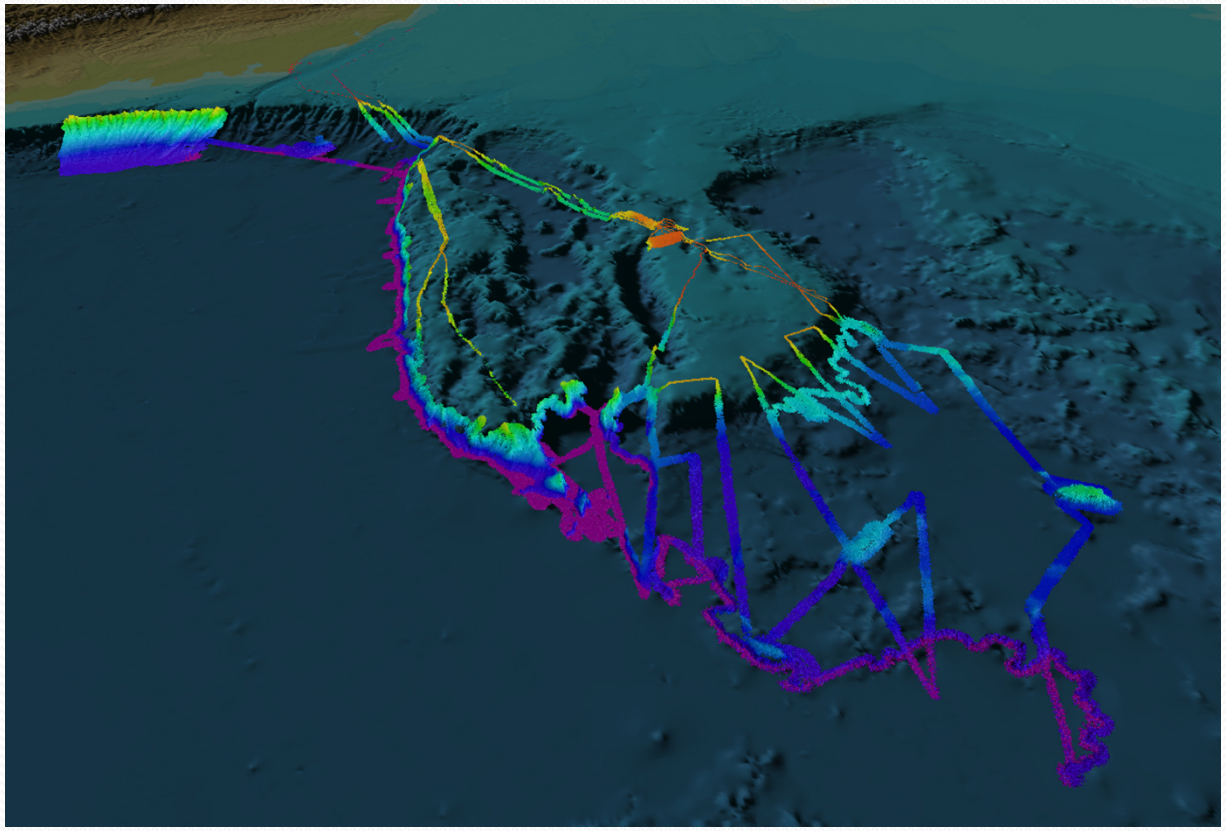
Departmental Research Initiatives

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