Ocean Exploration and Research

Multi-year Campaigns:
Marshalling U.S. Agency Resources to Investigate NOAA and National Priorities

Campaign Characteristics

- A multi-year voyage of discovery to a geographic area or theme of priority interest
- Complementary expeditions using a wide variety of ships, platforms, and strategies to foster exploration
- Package of data and information across platforms serves as foundation of environmental intelligence
- Robust education and outreach efforts are integral activities
- OER and partners focus messaging on the breadth of work

Approach: A Rising Tide…

The flexibility and adaptability of a dedicated vessel is critical to campaign successes. We often adjust *Okeanos Explorer* operations up to the last minute – even during cruises. Our approach enhances both our productivity and that of other vessels. Overall success is not determined by what one ship or one office can accomplish, but what multiple platforms and groups can achieve together.

General Campaign Objectives

Campaigns include science, education, outreach, and data management objectives that support management decisions at multiple levels. A subset of goals include:

- *Address priorities included in the NOAA Habitat Conservation Team Action Plan* and support a key principle of the NOAA Habitat Blueprint: "integrate and improve the delivery of habitat science across disciplines to facilitate conservation actions"
- *Share data and products across platforms* to guide and refine expedition plans in near real time
- *Capitalize on complementary capabilities* of NOAA and external assets to produce integrated, coherent data and information products
- *Supplement NOAA investments* with external resources
- *Support NOAA Integrated Ocean and Coastal Mapping* efforts;
- *Expand NOAA Extended Continental Shelf Mapping* efforts
- *Engage NOAA networks* (e.g., Sea Grant) to identify key constituents and education opportunities
- *Share significant discoveries* of natural and cultural features with the public and key decision makers

Overarching Priority:

Systematically collect baseline information in unknown or poorly known areas to provide a foundation of critical environmental intelligence, timely actionable data and information products to improve management and spur further exploration and research.

NOAA Ocean Exploration and Research

Challenges and Opportunities

Challenges:

- Greatly increases complexity of planning efforts
- Platform scheduling processes are not conducive to organizing multi-ship missions
- Requires closer and more frequent communication among partners
- Potential fallout if NOAA or partners cannot deliver the expected resources
- Maintain awareness that too much flexibility and adaptability can lead to program becoming purely reactionary

Opportunities:

- Enables application of complementary capabilities by NOAA, UNOLS, and other vessels
- Enhances the volume and breadth of available resources
- Uses exploration to better integrate NOAA and external efforts
- Expands the external scientific expertise available to address NOAA priorities
- Increases NOAA responsiveness to emerging deepwater science and management priorities
- Heightens public awareness and attention on ocean issues

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Northeast U.S. Atlantic Canyons:

An Evolving Campaign

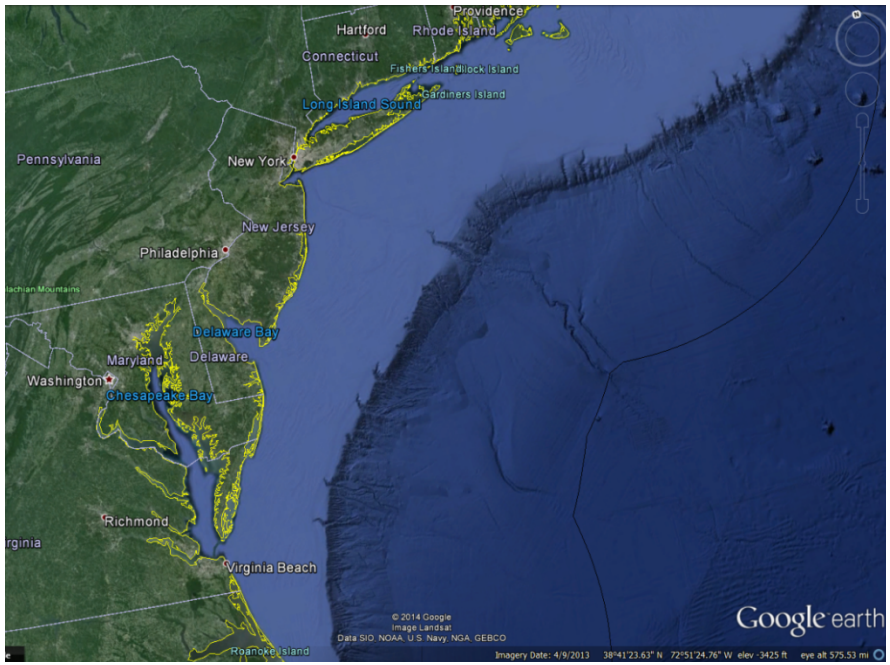
Then: Northeast U.S. Atlantic Canyons

Context: Way back in 2010…

Shelf break and slope off the northeastern US supports a diversity of habitats including more than 70 canyons ranging from ~100m to ~3500m depth:

- Substantive work in area during ‘70s and ‘80s. Very limited work in ‘90s and ‘00s.
- Some fishing pressure. Potential for oil and gas development
- Managers relying on outdated and imprecise data:
  - Museum records from early exploratory trawling expeditions
  - Very little publicly available data

Federal government budget challenges



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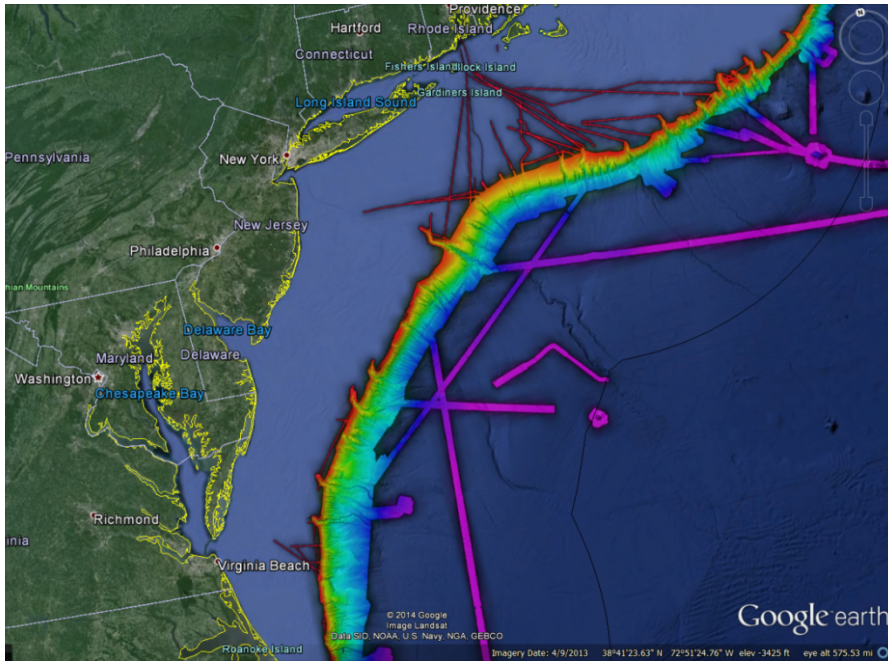
Now: Northeast U.S. Atlantic Canyons

Fast forward to Autumn 2014…

- >23 cruises on five NOAA ships
- Mapped all or part of every canyon south of Canada: > 90,000 km^2
- >65 towed camera and 104 ROV dives
- >500 water column seeps discovered
- Most data are publicly available
- Potential for oil and gas development after 2017
- All work completed with existing resources
- Multiple regional fishery management organizations and Mid-Atlantic Regional Council on the Ocean using NOAA data to consider protections
- Partnered with National Aquarium during the Star Spangled Spectacular



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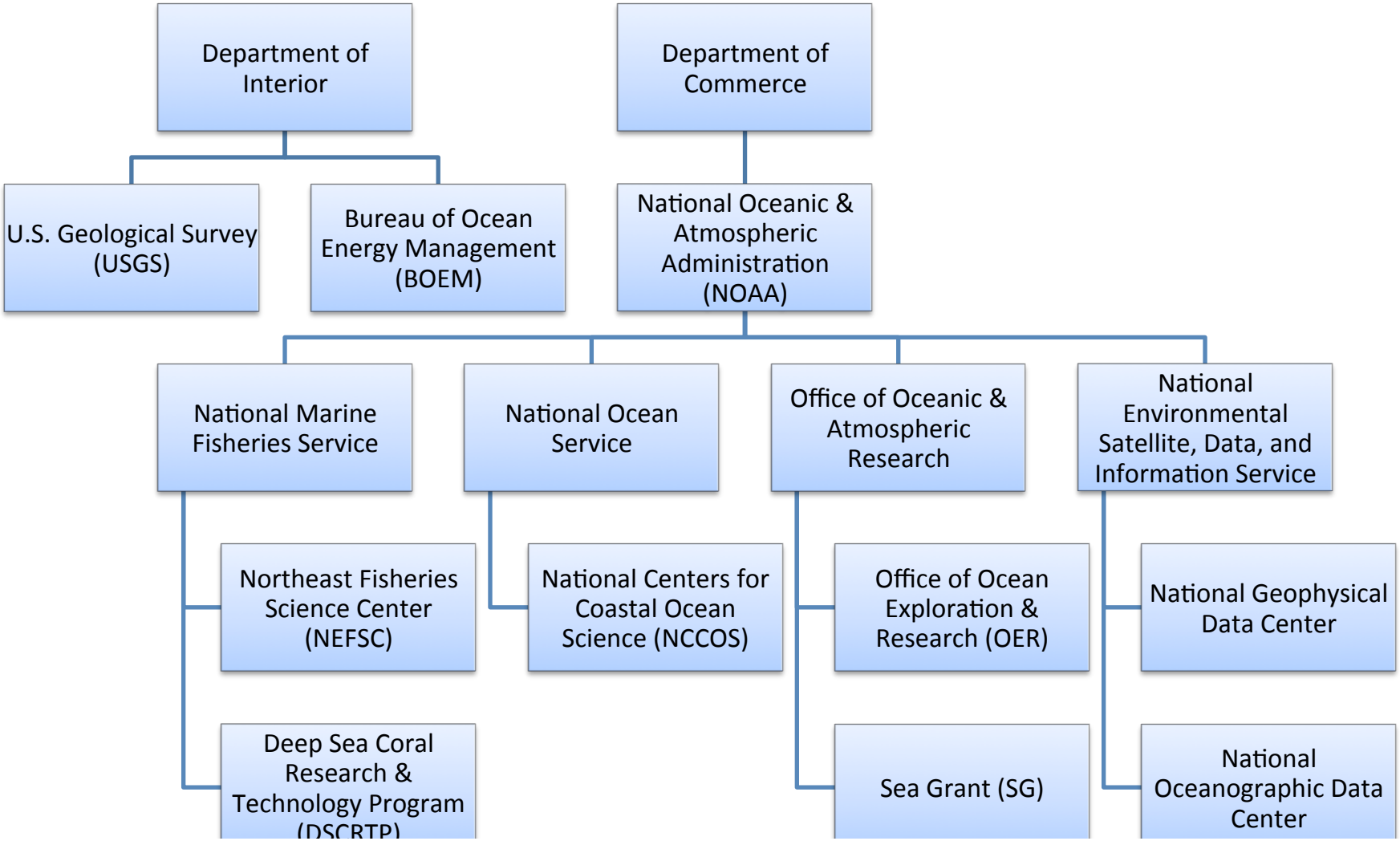
Key U.S. Federal Partners

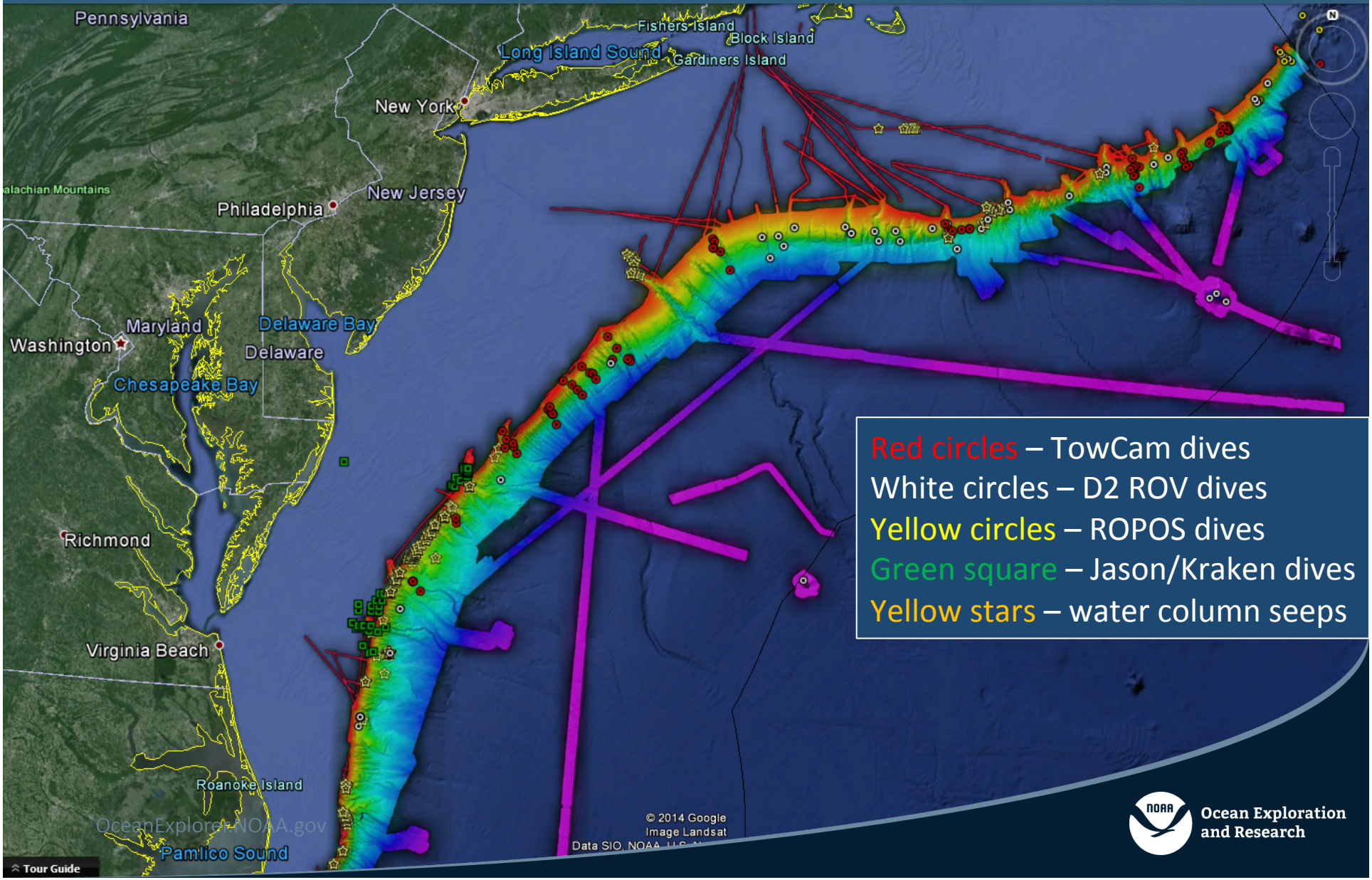


Three Component Initiatives:

- Mid-Atlantic Canyons Project: BOEM-USGS-OER
- Northeast Regional Initiative: NMFS/ DSCRTP & NEFSC
- NOAA Ship *Okeanos Explorer:* OER

Academic scientists critical to success of every mission

2011-14 Field Operations Summary



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CAPSTONE:

Campaign to Address Pacific monument Science, Technology, and Ocean NEeds

Upcoming Campaign

Upcoming: Pacific Monuments and Sanctuaries

Why the Pacific Monuments and Sanctuaries?

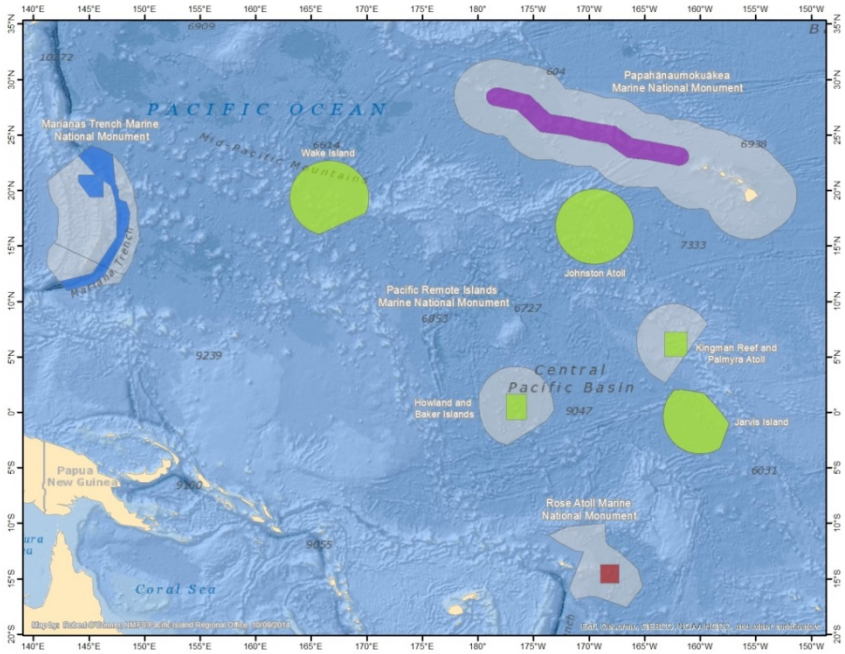
- ~200,000 square miles of emergent land, coral reef, ocean habitat, and maritime heritage
- Relatively pristine marine ecosystems; numerous protected species, undiscovered shipwrecks ,and maritime landscapes
- Original designation was unprecedented
- Previous NOAA work helped justify their establishment
- Expansion of Pacific Remote Islands MNM
- Remoteness creates substantial challenges
- Most deepwater areas remain poorly known and are of high interest to federal and state agencies

FY15 Plans: Hawaiian Archipelago

- Three integrated legs:
  - 13 Jul to 03 Aug (22 DAS)
  - 10-Aug to 01-Sep (23 DAS)
  - 07-Sep to 30-Sep (24 DAS)
- Three mapping, two with ROV
- Expand on recent *Falkor* work
- Open data policy
- Ship and shoreside science
- Focus on vicinity of Papahānaumokuākea MNM, Hawaiian Islands Humpback Whale NMS
- Potential for work in Pacific Remote Islands MNM expanded area near Johnston Atoll

Pooling LO Days At Sea

OAR, NMFS, and NOS are all contributing varying numbers of DAS for *Okeanos Explorer* shiptime in FY15. The cross-LO Team is pooling the DAS to develop an integrated field program focused on baseline characterization of deepwater habitats. Focus of the FY15 work will be in the Hawaiian Archipelago

FY16 and Beyond?

- West Coast shakedown
- Shift toward Western Pacific
  - Mariana Trench MMN
  - NMS of American Samoa
  - Pacific Remote Islands MNM
- Build out 'package' of NOAA activities, including education and outreach
- Opportunities with *Sette, Falkor, Nautilus,* others
- Coordinating FY16 shiptime requests
- Link to potential European Union partnership in the Indian Ocean