



Ocean Exploration  
and Research

# Ocean Exploration and Research Update

Fourth Meeting of the Ocean Exploration Advisory Board

St. Petersburg, Florida

January 20-21, 2016

# Overview

- Draft OER Strategic Plan Elements
- National Ocean Exploration Forum 2015
- FY 2016 Appropriation and Report Language
- Discussion of FY 2016 (with FY 2015 detail)
- National Ocean Exploration Program Campaigns
- Update on Planned FY 2016 Activities
- Update on Mid-South Atlantic Campaign

# Draft OER Strategic Plan Elements

## **OER's VISION**

*A fully explored ocean results in discoveries that provide lasting benefits for the nation's environmental, economic, and societal needs.*

## **OER's MISSION**

*Explore the ocean for NOAA and national benefit*

# Draft OER Strategic Plan Elements

**GOAL 1** *Conduct place-based and theme-based ocean exploration to make discoveries that provide scientific, economic, and cultural value--with an emphasis on the U.S. Exclusive Economic Zone and Extended Continental Shelf.*

*Objective 1.1:* Map and characterize ocean basin features of interest.

*Objective 1.2:* Discover and characterize geological, physical, chemical, and biological ocean processes and phenomena.

*Objective 1.3:* Discover and characterize potential ocean resources.

*Objective 1.4:* Discover and characterize submerged cultural resources in the ocean including shipwrecks, aircraft, and paleolandscapes.

# Draft OER Strategic Plan Elements

***GOAL 2*** Advance the pace, scope, and efficiency of ocean exploration and discovery through technology innovation

*Objective 2.1:* Stimulate new development and improvement of ocean exploration sensors, technology, and methods.

*Objective 2.2:* Transition new innovations between NOAA and academia, industry, and the not-for-profit sector.

*Objective 2.3:* Lead and coordinate new ocean exploration technology development throughout NOAA.

# Draft OER Strategic Plan Elements

**GOAL 3** *Provide easy and open access to all of the information OER produces*

*Objective 3.1:* Manage OER information to advance national and community priorities for ocean exploration data interoperability and access.

*Objective 3.2:* Distribute OER and partner exploration information through free and open data and information portals

*Objective 3.3:* Transfer data management techniques to ocean exploration partners

*Objective 3.4:* Communicate the outcomes of exploration discoveries and technical innovations across sectors to facilitate the transition of exploration results to research, application, and management.

# Draft OER Strategic Plan Elements

***GOAL 4*** *Develop the next generation of ocean explorers, scientists, and engineers*

***Objective 4.1:*** Expand the quantity and variety of materials and activities capable of inspiring and educating students about ocean exploration, science, engineering, and related careers.

***Objective 4.2:*** Increase opportunities for participation in ocean exploration-related Science, Technology, Engineering, and Mathematics activities by historically underrepresented groups and individuals.

***Objective 4.3:*** Increase opportunities for participation in ocean exploration activities for undergraduate students, graduate students, and early career scientists and engineers.

# Draft OER Strategic Plan Elements

**GOAL 5** *Build the U.S. National Ocean Exploration Program through planning and exploration partnerships that advance national ocean exploration priorities.*

*Objective 5.1:* Engage national ocean exploration program stakeholders to identify ocean exploration priorities, needs, and capabilities.

*Objective 5.2:* Work across federal agencies, non-governmental organizations, and the private sector to encourage coordination of ocean exploration activities where interests intersect.

*Objective 5.2:* Collaborate with stakeholders to design strategic frameworks for multi-year, multi-platform, multi-partner ocean exploration campaigns in priority ocean basins.



# National Ocean Exploration Forum

## *Structure*

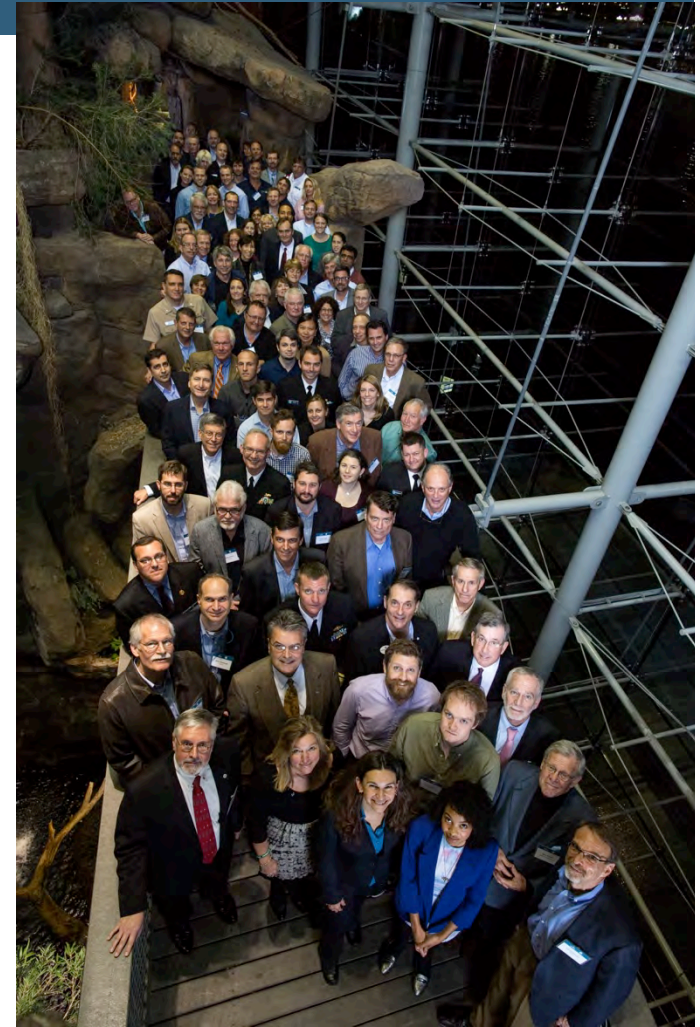
- Context
- Federal Requirements
- Non-government Requirements
- Marketplace
- Future Expeditions Discussions

## *Interim Results*

- Clear opportunity for OER to organize coordination at an appropriate scale
- Clear opportunity to use campaign concept as a foundation for national ocean exploration program activities

## *Report*

- Before report to Congress on NOAA coordination

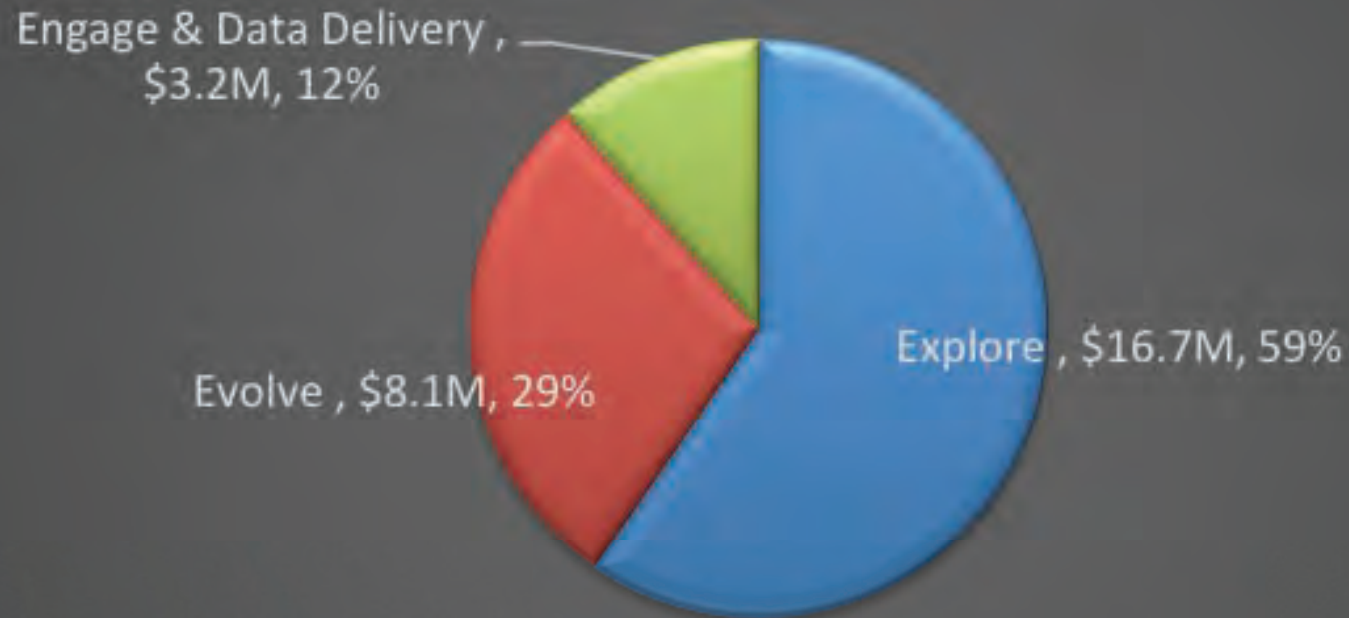


# FY 2016 Appropriation: \$32 Million

- Continue to make grants to OER partners “with ocean-going assets such as Autonomous Underwater Vehicles”
- Focus on providing open-source data
- “As in the past,” use academic and non-government “ships and other ocean-going assets”
- Continue to explore and survey the “world’s oceans” with a “primary focus” on the U.S. EEZ
- Exploration of deep water regions of marine protected areas of interest to NOAA laboratories encouraged
- Partnerships encouraged with government, academic, non-governmental agencies. Coordination plan required
- Continue ECS work, mindful of USGS and BOEM needs

# FY 15 by Strategic Categories

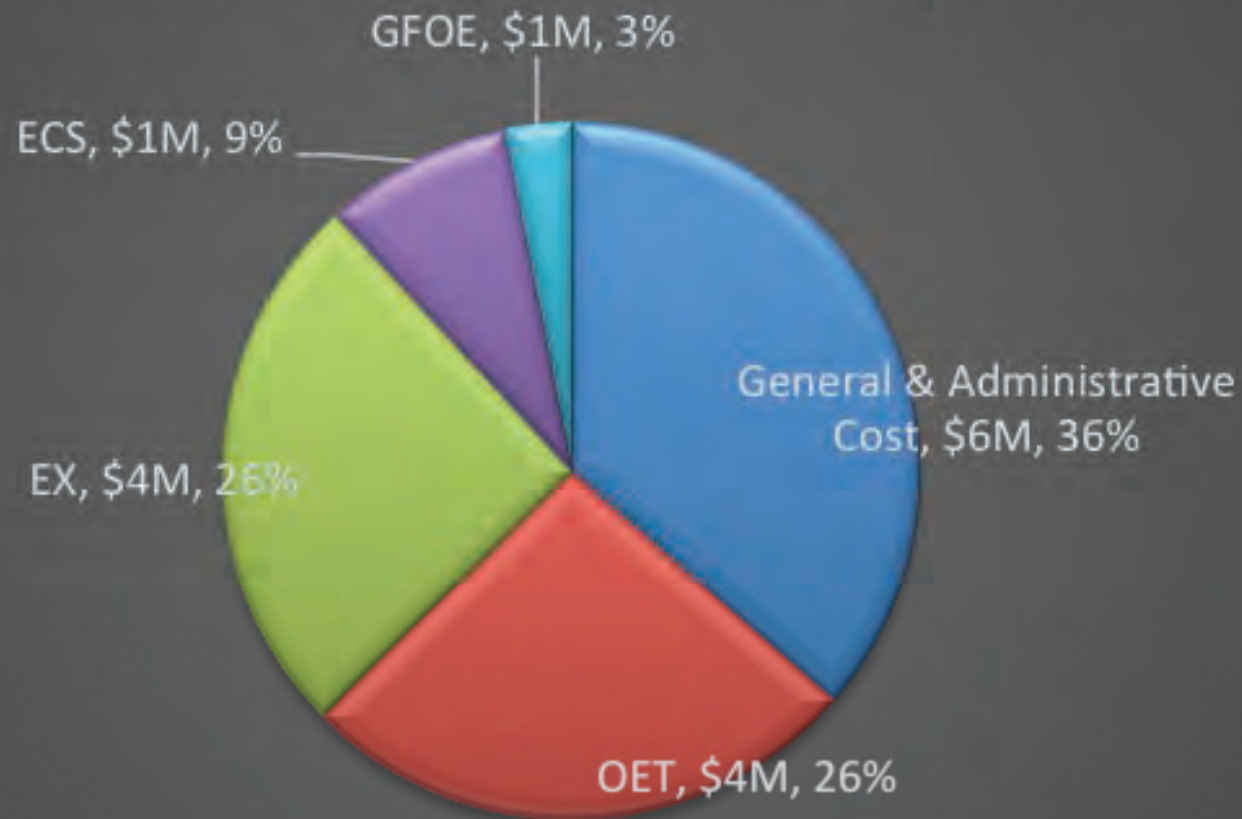
FY 2015 OER Enacted Amount \$28M



Explore Evolve Engage & Data Delivery

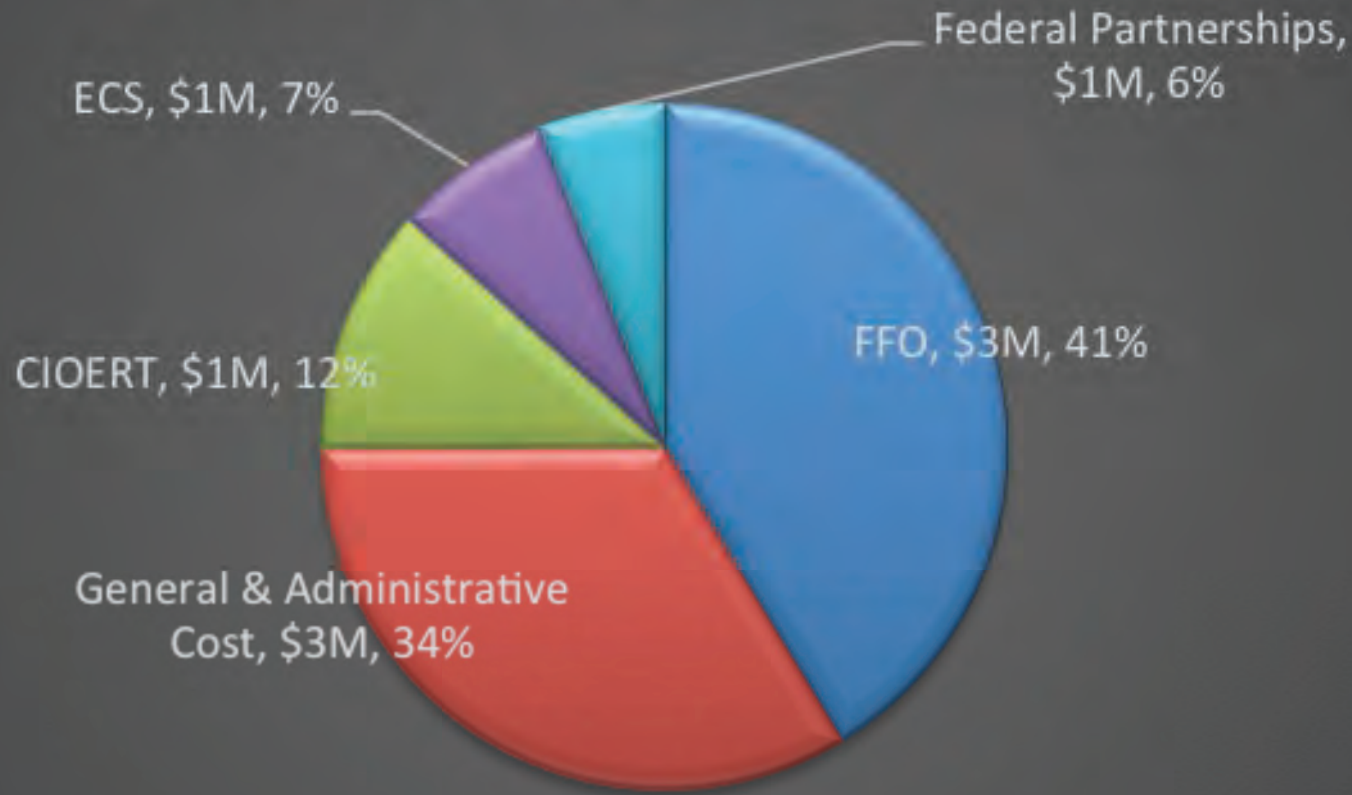
# FY15 - Explore

## FY 2015 OER Explore \$16M



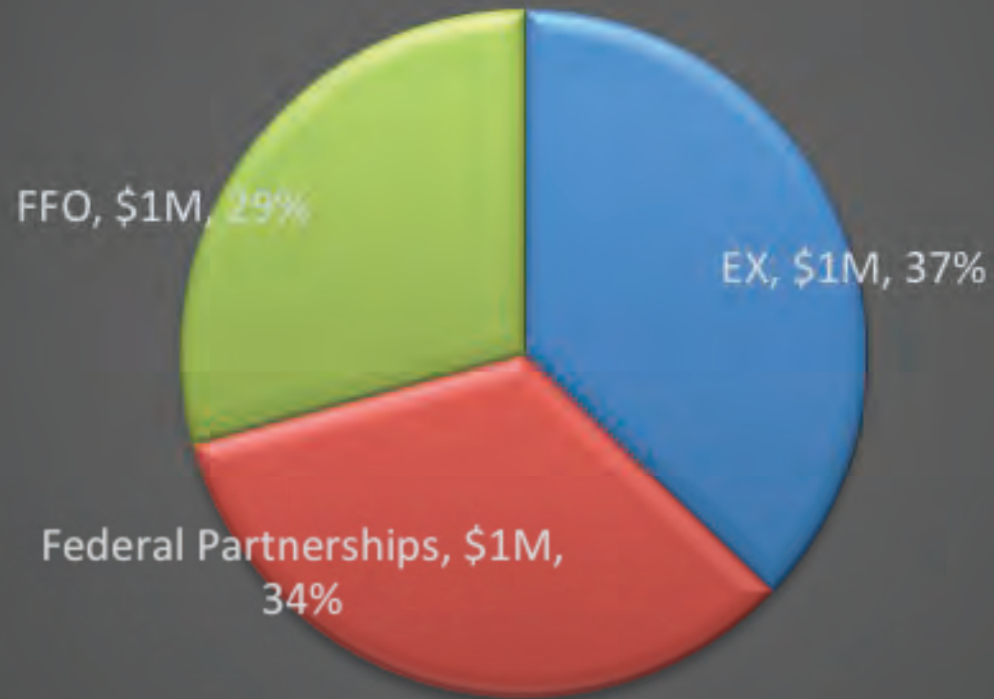
# FY15 - Evolve

## FY 2015 OER Evolve \$9M

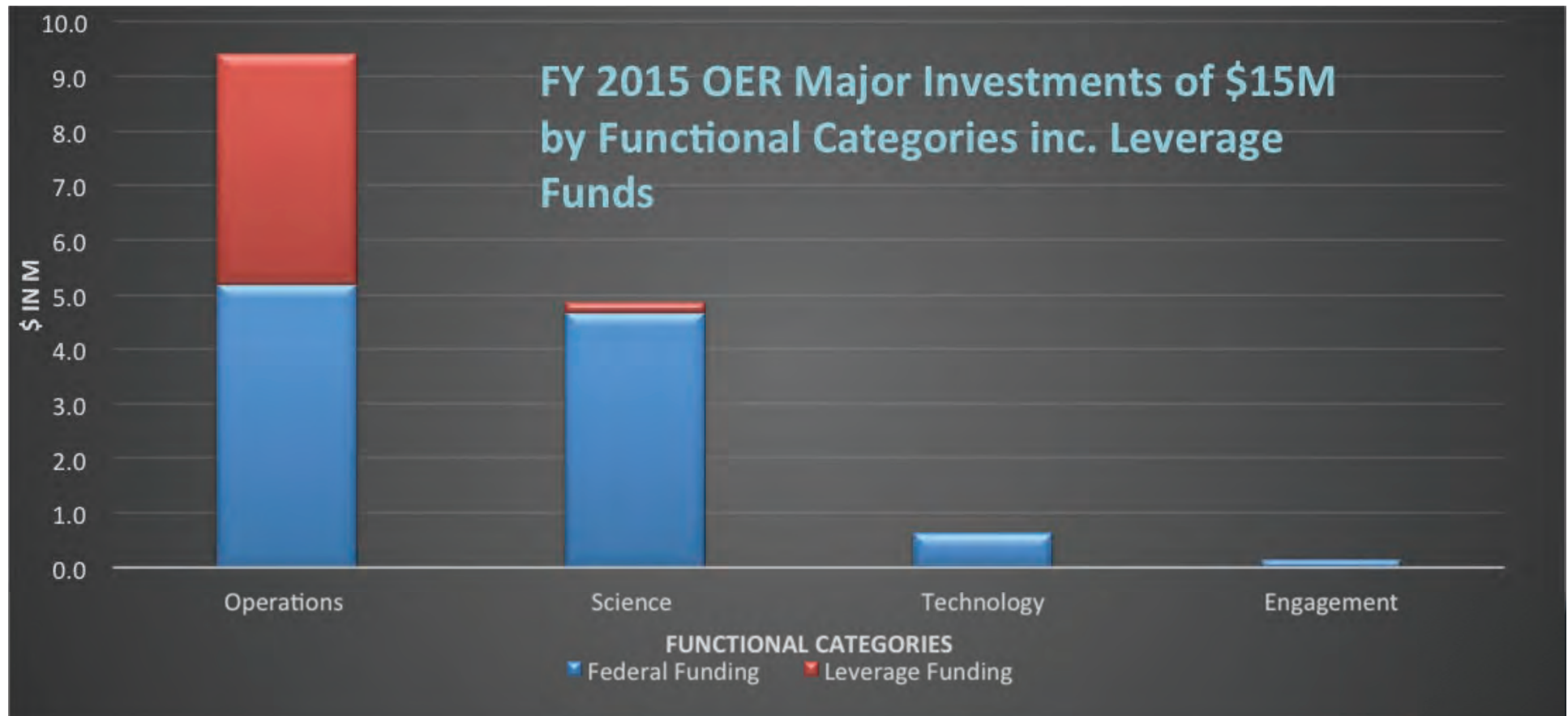


# FY15 - Engagement and Data Delivery

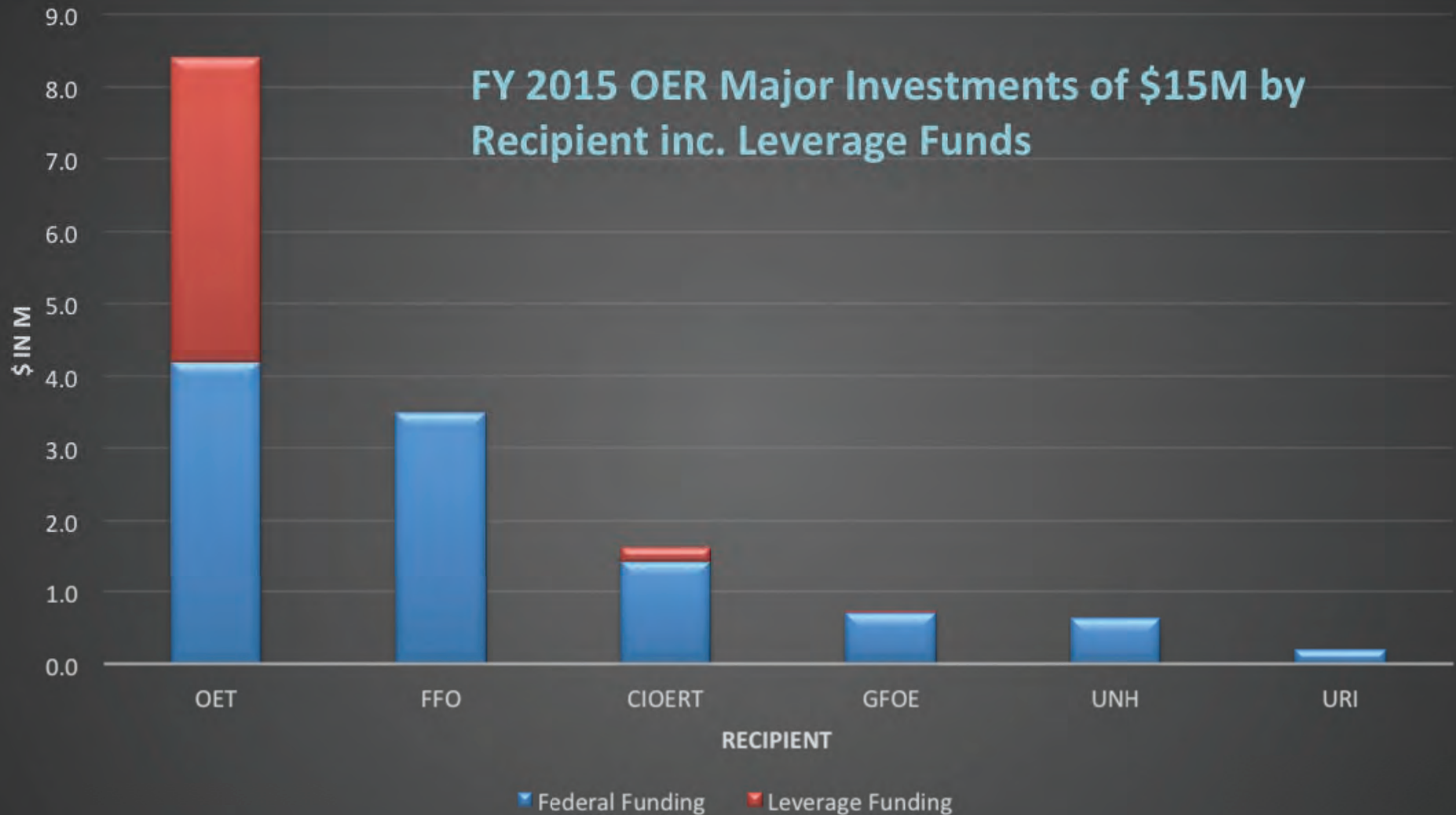
FY 2015 OER Engage & Data Delivery \$3M



# FY15 – Functional Categories



# FY15 – External Partners





# Campaigns: Operational Component of a National Ocean Exploration Program

## Campaigns:

- **Integrate multiple exploratory objectives** across cruises;
- **Share data and products across platforms** to guide and refine expedition plans in near real-time;
- **Capitalize on the complementary capabilities** of NOAA and external assets to produce integrated, coherent data and information products;
- **Supplement federal investments** with additional resources;
- **Expand Extended Continental Shelf Mapping** efforts;
- **Engage NOAA networks** (e.g., Sea Grant) to identify key constituents and education opportunities; and
- **Share significant discoveries** of natural and cultural features with the public and key decision makers.

[OceanExplorer.NOAA.gov](http://OceanExplorer.NOAA.gov)

## Overarching Priority

Leverage available federal and non-federal assets and expertise to systematically collect baseline information in deep water areas to provide a foundation of critical environmental intelligence, timely actionable data and information products to improve management and spur further exploration and research.

# FY16 Major Expeditions: Pacific

## Central Pacific ECS Mapping - *Ron Brown*

- Pacific Remote Islands MNM (Kingman/Palmyra)

## Central/Western Pacific – *Okeanos Explorer*

- Papahānaumokuākea MNM
- Pacific Remote Islands MNM (Wake Island)
- Mariana Trench MNM

## Western Pacific – *Falkor*

- Marianas Back-Arc

## Eastern Pacific – *Nautilus*

- *Pacific Northwest*
- *West Coast Sanctuaries*



# EX: CNMI/Guam, Wake Island & Papahānaumokuākea

## Papahānaumokuākea MNM

- East-to-west ROV leg maximizes opportunity in most remote areas

## CNMI and Marianas Trench MNM

- 3 integrated legs totaling 69 DAS
- Engaging regional constituents now

## Wake Island (PRIMNM)

- 2 integrated legs totaling 46 DAS
- 0 existing data; part of recently expanded Monument

## Pooling LO Days At Sea

Total of 171 DAS. Includes:

- 96 OAR – Base allocation
- 53 NMFS – Fleet Council 5%/PFDs
- 22 NOS – Fleet Council 5%

Cross-LO discussions critical to designing an extremely efficient schedule that minimizes transits and maximizes DAS in priority operating areas.

# FY16 Major Expeditions: Arctic

## Chukchi Sea – FY15 FFO

- USCGC *Healy*
- Oceaneering Global Explorer ROV
- Sea ice, pelagic, benthic habitats
- 11-years since prior cruise

## Arctic Shield – FY14 FFO

- USCGC *Healy*
- Originally funded as tech demo in FY14 and FY15
- No cost continuation of previous work

## Gulf of Alaska - FFO

- Glacier Bay National Park

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# FY16 Major Expeditions: Atlantic

## Mid & South Atlantic Bight Campaign

- Emerging FY16-20 Campaign
- Shelf edge mapping – NOAA's *Nancy Foster*
- AUV habitat mapping – NOAA's *Pisces*

## Gulf of Mexico – CIOERT (TBD)

- Sensor demo cruise



# FY17: PRIMNM, American Samoa, & Musician Seamounts

- Final year of CAPSTONE
- Targets remaining U.S. MPAs in central and western Pacific
- PIFSC, ONMS, OER submitted integrated package of ship time request for ~190 DAS
- Potential for some external funding for a few DAS
- Coordinated operations with R/V *Falkor* and ECS effort
- NWS technology testing opportunity?

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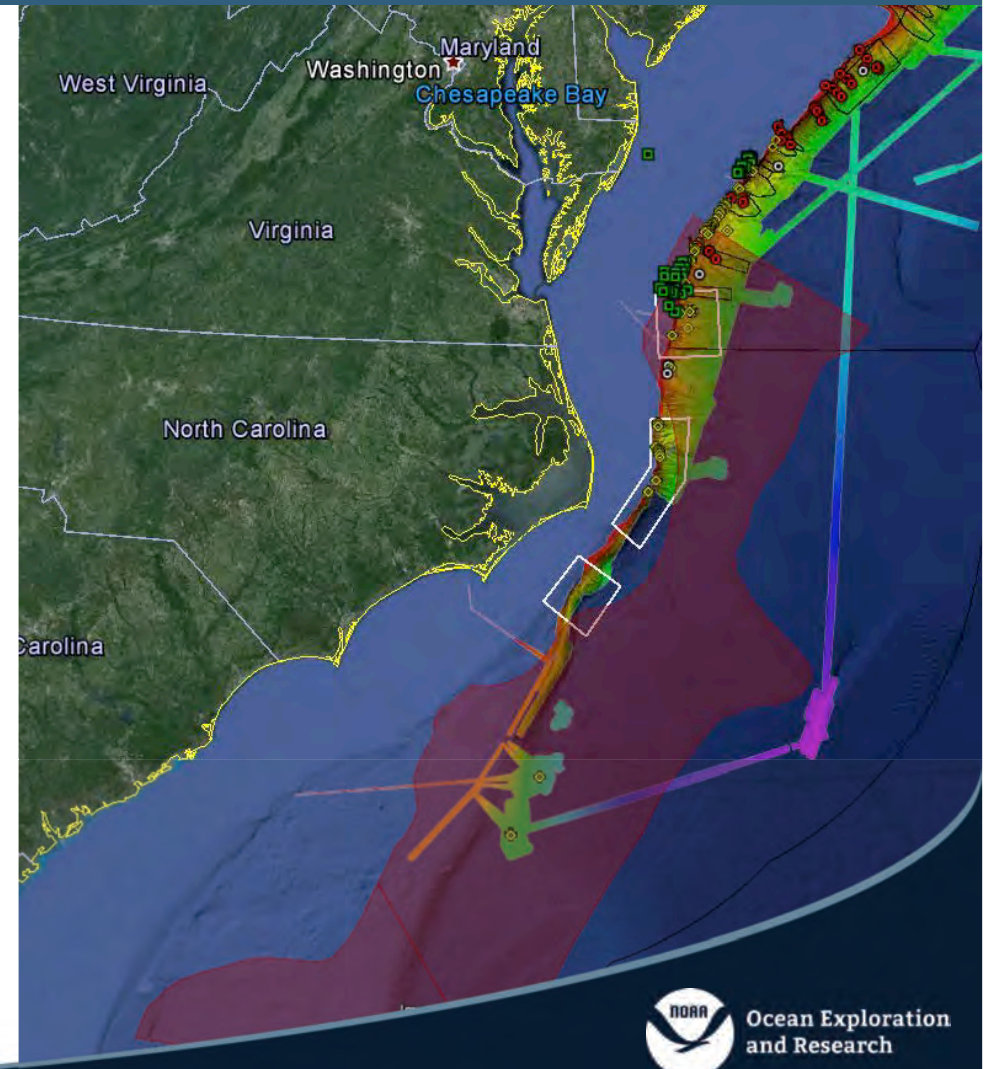
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# Aligning Interagency Priorities: NOAA, BOEM, & USGS

Mid-South Atlantic Campaign will:

- Define connectivity of vulnerable ecological communities
- Assist with tsunami prediction and hazards
- Guide wise use of living marine and energy resources

[OceanExplorer.NOAA.gov](http://OceanExplorer.NOAA.gov)





CENTRAL & WESTERN PACIFIC MPAs	FY15	FY16	FY17	FY18	FY19	FY20
<i>Okeanos Explorer</i>	X	X	X			
<i>Nautilus</i>				X	X	X?
<i>Falkor</i>		X	X			?
<i>Ron Brown</i>		X				
<i>Kilo Moana</i>		X				
<i>Investigator</i> (preliminary)				X	X	

WEST COAST US		FY16	FY17	FY18	FY19	FY20
<i>Okeanos Explorer</i>		X		X		
<i>Nautilus</i>		X	X			
<i>Shimada</i>		X				

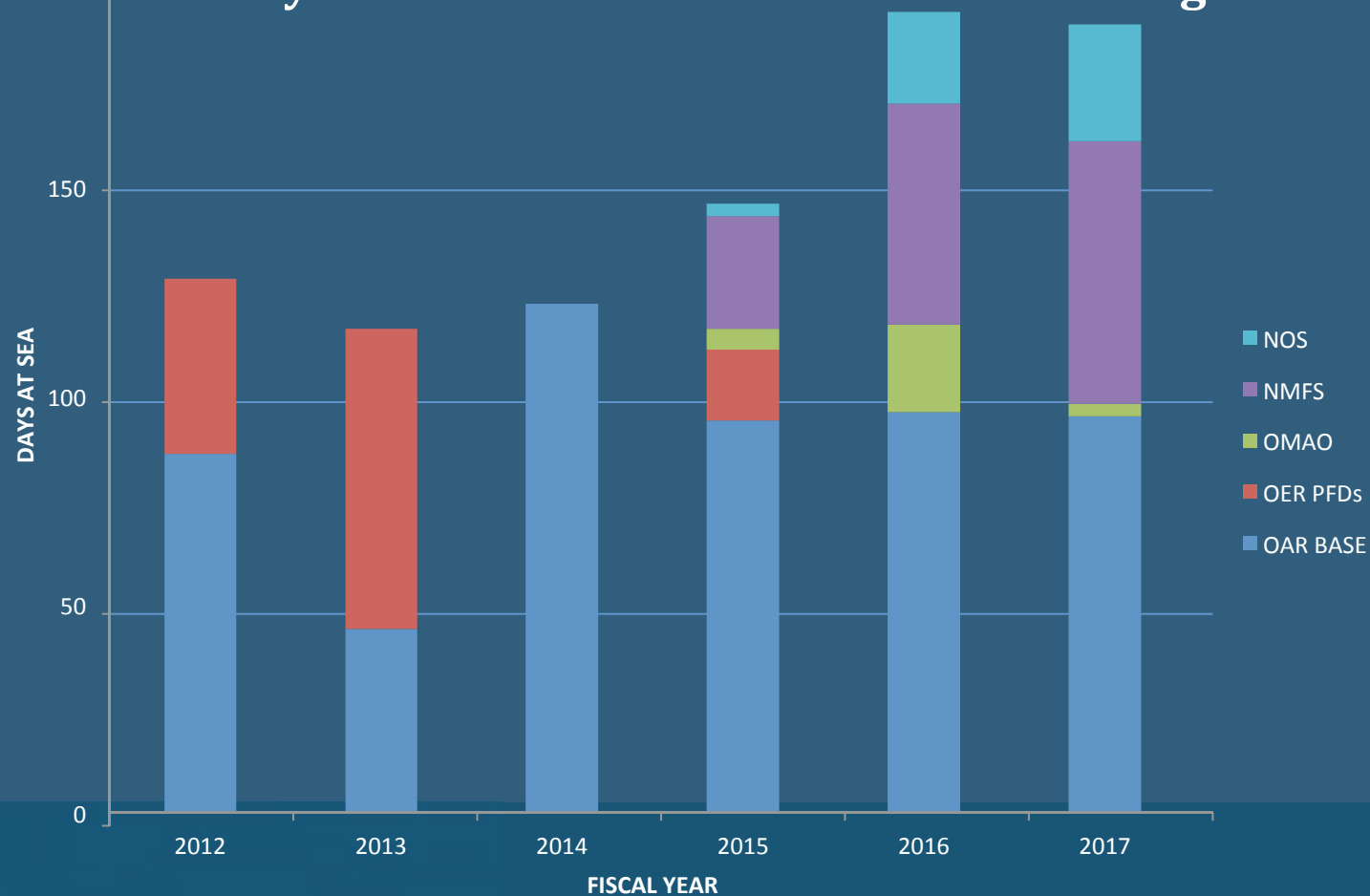




MID & SOUTH ATLANTIC BIGHT		FY16	FY17	FY18	FY19	FY20
<i>Nancy Foster</i>		X	X	X		
<i>Pisces</i>		X	X	X		
<i>Ron Brown</i>				X	X	
<i>Okeanos Explorer</i>				X	X	X

BROADER TRANSATLANTIC		FY16	FY17	FY18	FY19	FY20
<i>Okeanos Explorer</i>				X	X	X
<i>TBD EU Vessels</i>				X	X	X
<i>Alliance</i>					X	X
<i>Others</i>						X

# FY12-17 NOAA Ship *Okeanos Explorer* DAS: Breakdown by Line Office and OER Base vs OER Program-funding



\*FY17 is OER's desire. NOAA does not make even preliminary FY17 decisions until May



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# Questions?

[alan.leonardi@noaa.gov](mailto:alan.leonardi@noaa.gov)