

# OMAO *Okeanos Explorer* Update

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RADM David A. Score  
Ocean Exploration Advisory Board  
27 April 2016



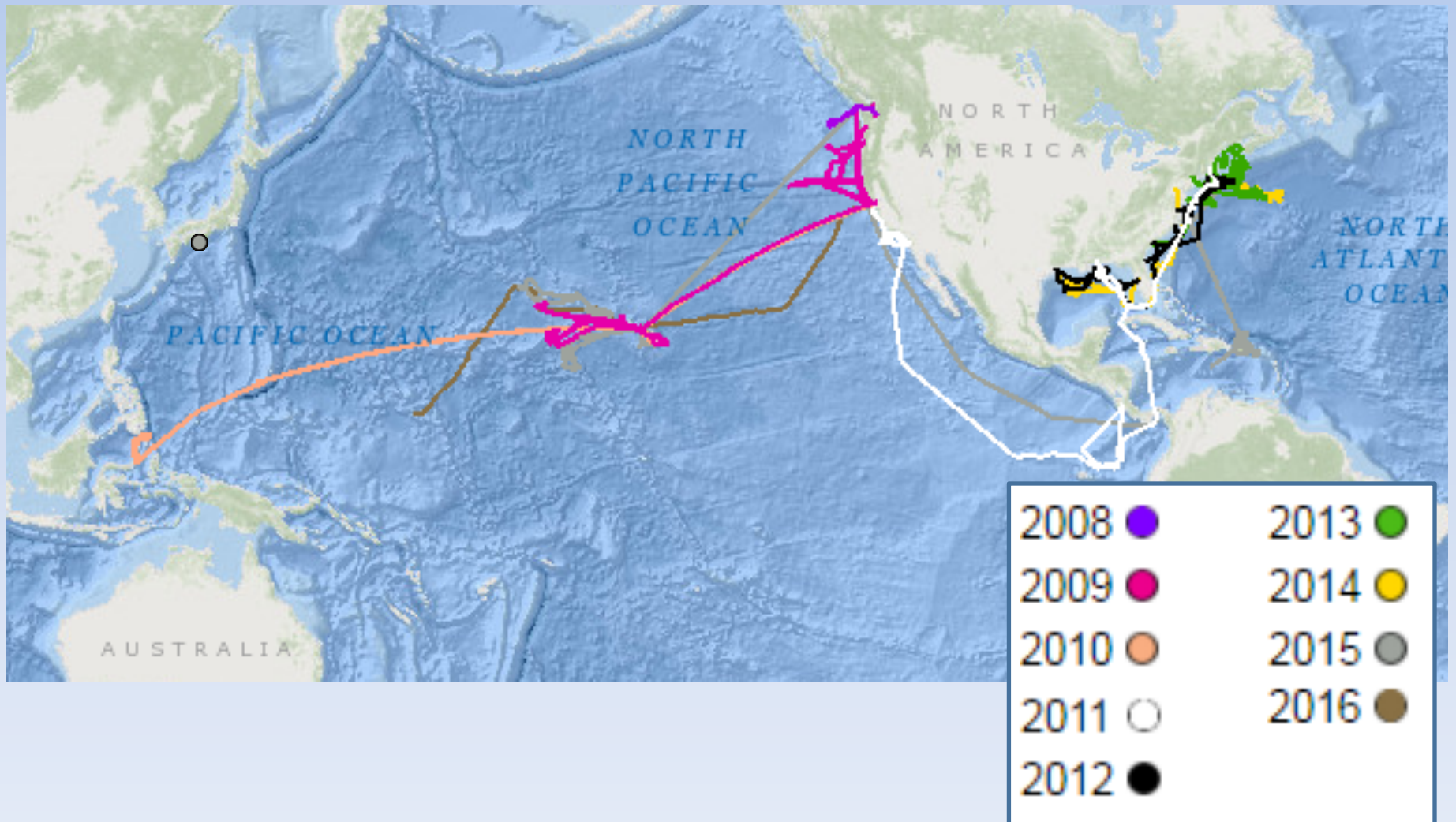
# OUTLINE

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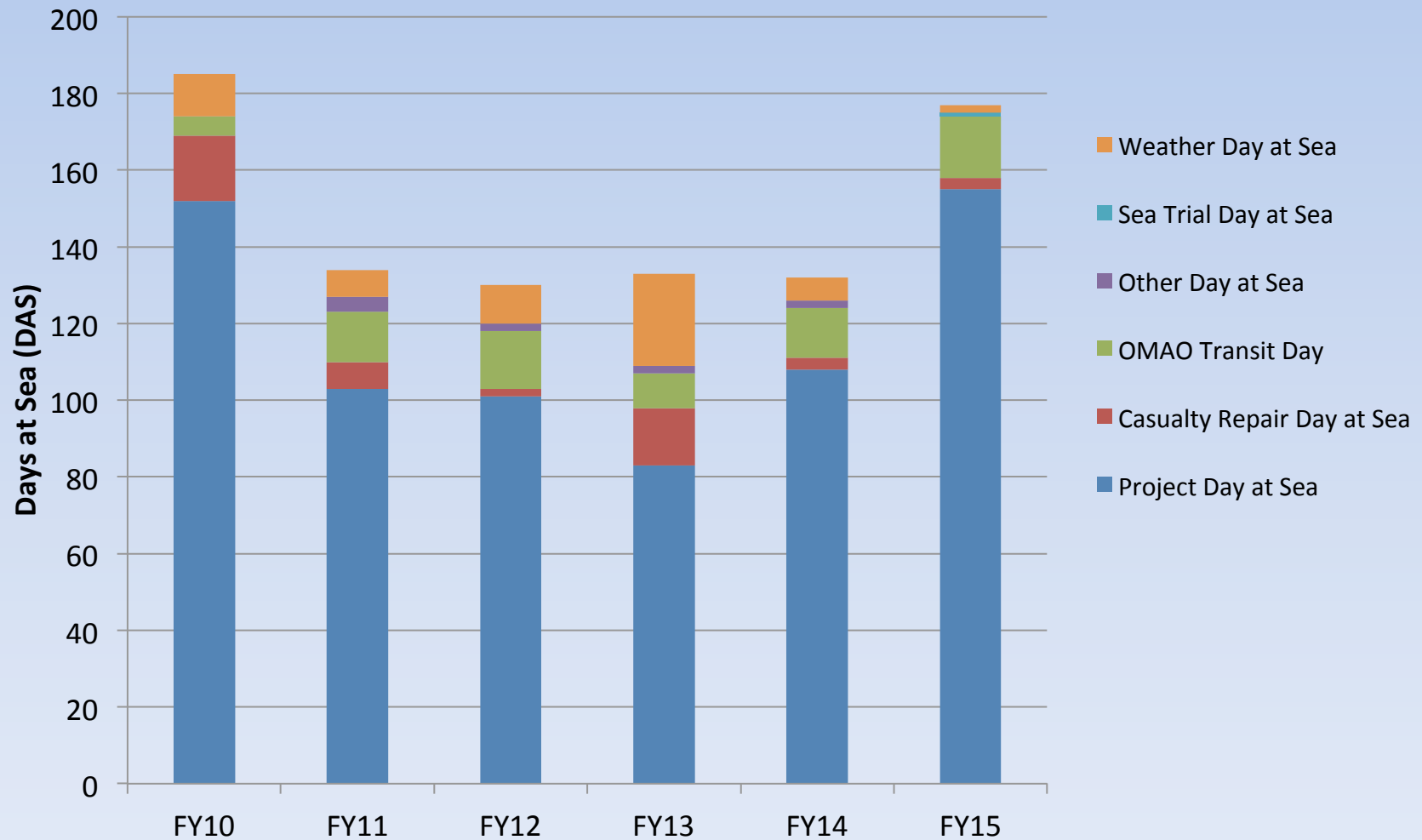
- **Operating Areas 2008 – 20016**
- **Utilization Trends**
- **Maintenance Activities and Plans**
- **Fleet Demand and Allocation Process**
- **NOAA Fleet Status and Projections**
- **Recapitalization Planning (Fleet IRT)**



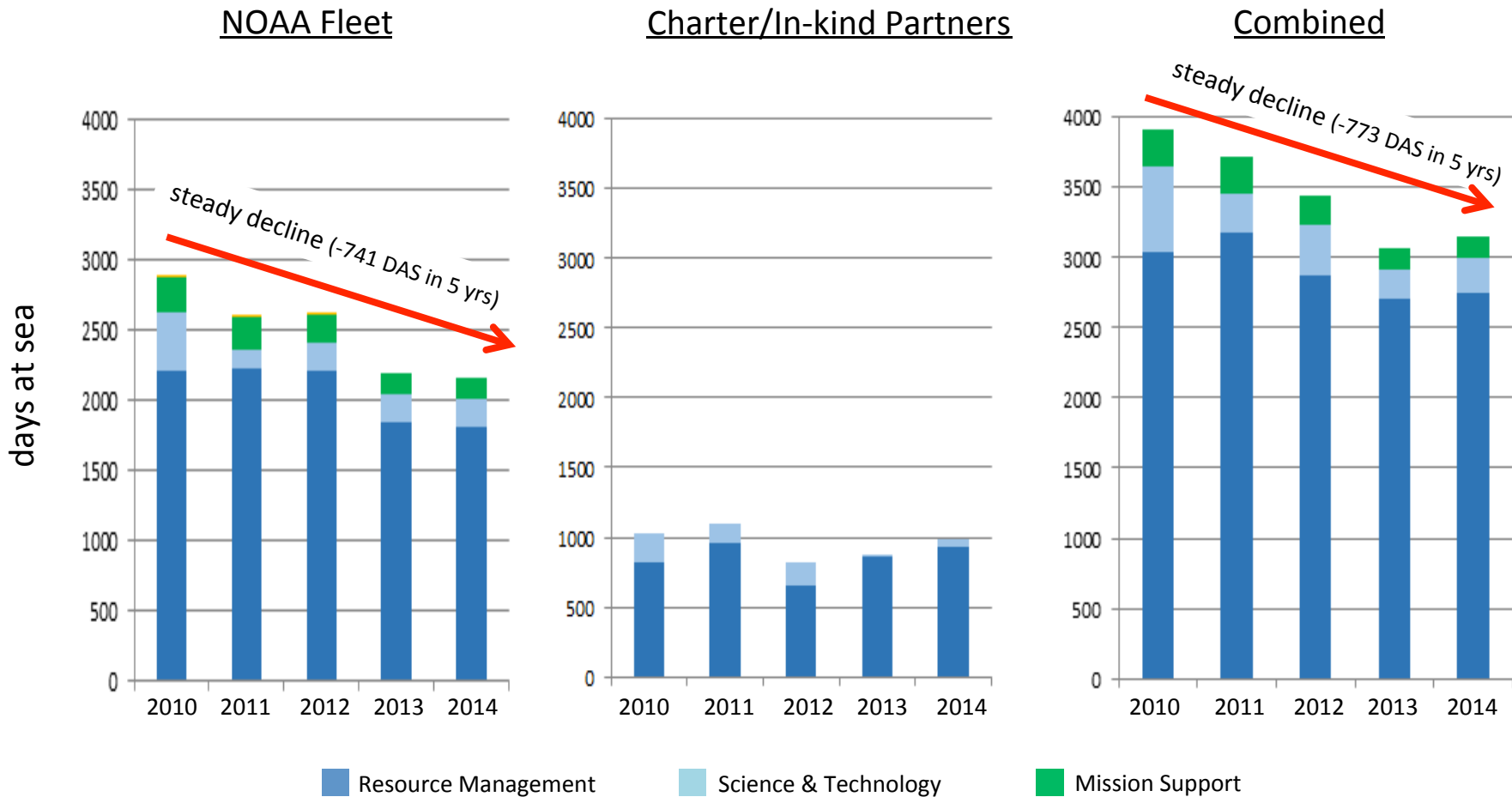
# Okeanos Explorer 2008-Present



# Okeanos Explorer Utilization Numbers FY10-FY15



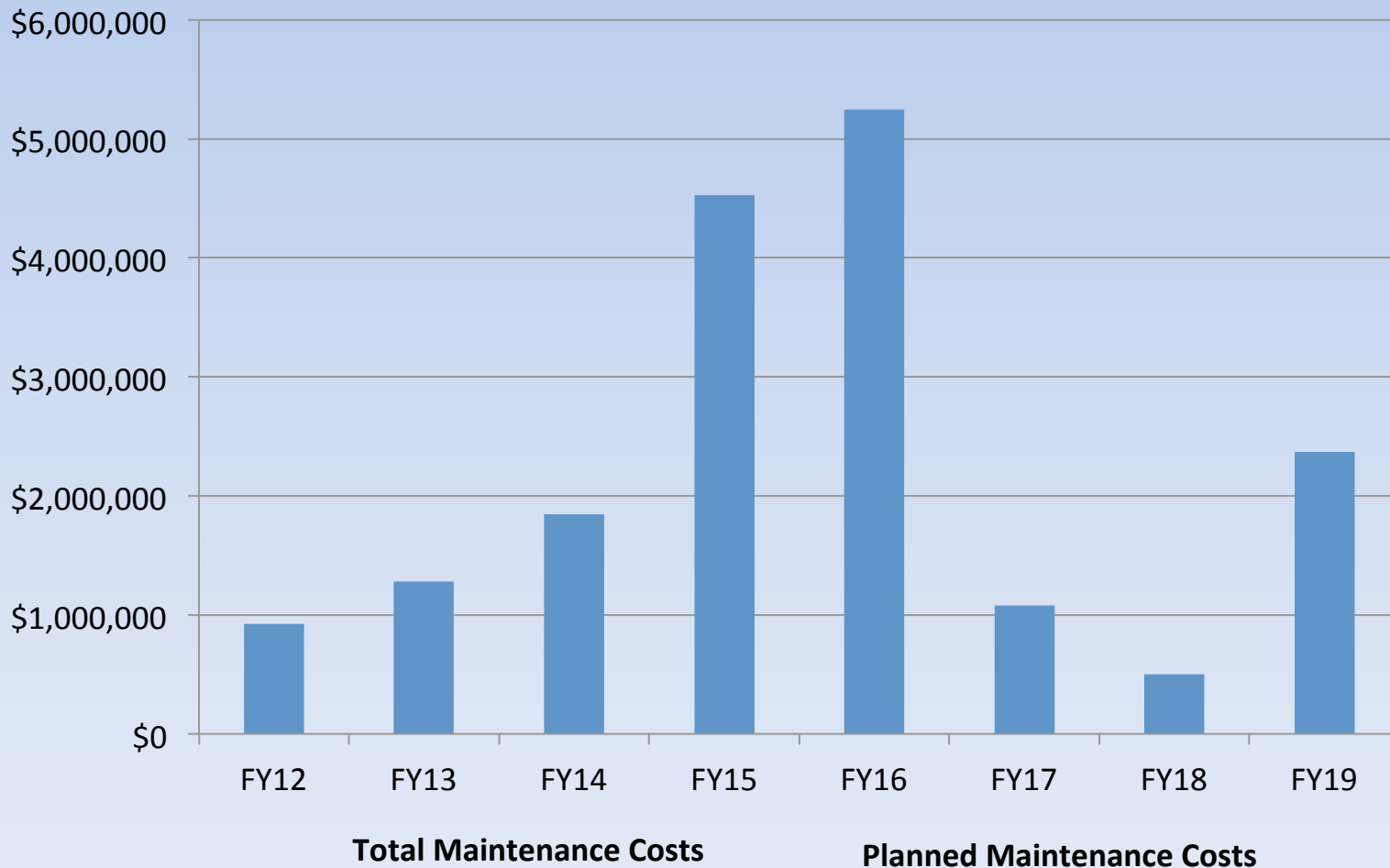
# Actual NOAA DAS\*: 2010-2014



\* Actual DAS data are less than planned DAS due to effects from ship breakdowns, weather, or other extenuating circumstances limiting operations.



# Total Maintenance Costs



# *Okeanos Explorer* FY12 – FY16 Maintenance Costs

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## **FY12:**

- Anti-Roll Tank Drain Piping Renewal
- Fuel Piping Renewal in Ballast Tank
- Ballast Tank 4-52-0-W Vent Piping Renewal
- Bow Thruster Motor Cleaning
- Marine Sanitation Device and Sewage Piping Renewal
- Stern Thruster Space Bilge Suction Piping Installation
- Bow Thruster Padeye Installation
- Heating Ventilation and Air Condition System Cleaning
- Gage and Instrumentation Calibration

## **FY13:**

- Regulatory Inspections and overhaul in Machine
- Main propulsion motor seawater cooling piping replacement
- Anchor Windlass Overhaul & Aft Capstan Inspection and Overhaul
- Flexible and Hydraulic Hose Assembly Renewals
- Mission Deck Watertight Hatch Removal & Manhole Installation
- Port Rescue Boat Davit Anti Two Block Installation
- Rack Room Ductless AC Unit Installation
- ROV Crane Sheave Head Replacement
- Mission UPS Replacement
- Replacement of room exhaust fans



# *Okeanos Explorer* FY12 – FY16 Maintenance Costs

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## **FY14:**

- Regulatory Inspections and overhaul in Machinery (Cranes, main propulsion), and Hull (UWILD)
- Potable Water Tank Repairs
- Preservation (01 & 02 Deck, Bilge, Ballast Tank)
- Laundry Room Deck Covering Replacement
- Fire Alarm System Expansion
- ROV Control Room Door and Door Frame Replacement

## **FY15:**

- Regulatory Inspections and overhaul in Machinery, Tanks
- Internal Communications (upgrade)
- Engine Mount Replacements
- AC compressor overhauls
- Bilge Preservation

## **FY16:**

- Regulatory Inspections and overhaul in Machinery, Sea valves, Tanks and Hull
- Motor Room Vent Repairs
- Bow Thruster Repair
- Exhaust Insulation renewals
- ADCP (38 kHz & 300 kHz) Transducer Installation (upgrade)
- EK-60 Transducer Suite Installation (upgrade)
- Doppler Speed Log Installation (upgrade)
- ROV Pit Hatch cover Installation





# Okeanos Explorer FY17 – FY19 Planned Maintenance

	<b>Total Project</b>
<b>Beginning in FY17</b>	
• Galley Equipment, replace (FY17 - FY20)	\$90,000
• Special Storage Capability	\$25,000
• Deck Covering, replace (FY17 - FY20)	\$165,000
• Renewal of Living Spaces (FY17 - FY20)	\$550,000
• CCTV System, upgrade (FY17 - FY18)	\$69,500
• Fire Detection System Upgrade (FY17 - FY18)	\$180,000
<b>TOTAL</b>	<b>\$1,079,500</b>
<b>Beginning in FY18</b>	
• Storerooms, rearrange	\$250,000
• Propulsion Control System, upgrade (FY18 - FY20)	\$250,000
<b>TOTAL</b>	<b>\$500,000</b>
<b>Beginning in FY19</b>	
• Propulsion Drive System, upgrade (FY19 - FY20)	\$250,000.00
• Radar Units, upgrade	\$120,000.00
• NetApp, upgrade	\$200,000.00
• Ballast Water Treatment System (FY19 - FY20)	\$350,000.00
• Crane, replace with man-rated (FY19 - FY20)	\$450,000.00
• Multibeam, upgrade (FY20 - FY21)	\$920,000.00
• ADCP, upgrade	\$80,000.00
<b>TOTAL</b>	<b>\$2,370,000</b>



# Fleet Demand and Allocation Process





# Prioritizing Mission Requirements

**15,245 DAS Priority 1 Requirements**  
(needed to meet mandates;  
fiscally unconstrained)

...But all 15,245 DAS are not possible. NOAA conducts detailed analysis to prioritize and match the science requirements to the annual DAS capacity.



**NOAA Funded Capacity**  
**FY15: 3,692 DAS**

**FY15: 990 Charter DAS**  
**FY15: 2,702 Fleet DAS**

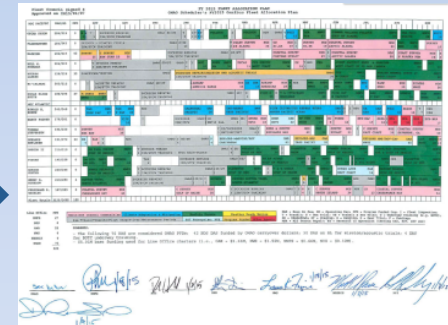
**Line Office Technical Capacity**

**NWS, NMFS,  
NESDIS, NOS, OAR**

**~8,700 DAS Requested/Yr.**



**NOAA FLEET COUNCIL**



**FLEET ALLOCATION PLAN**  
(process includes UNOLS vessels)

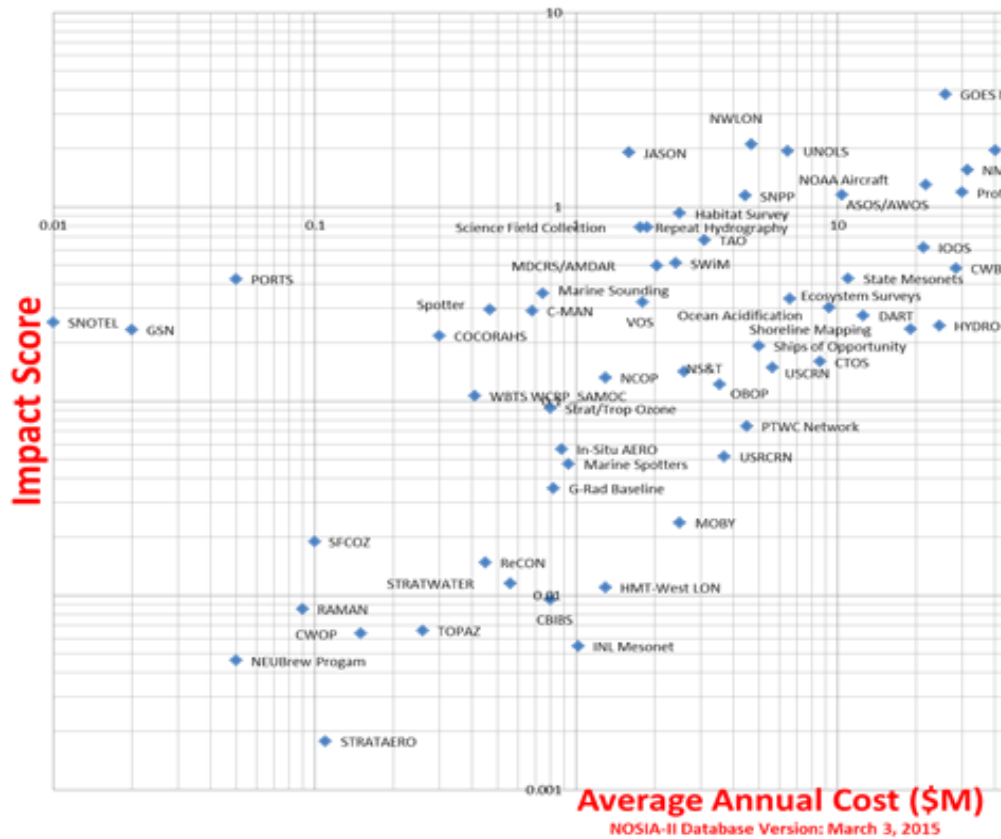
Prioritization, Allocation and Scheduling Process (PAS):

- Line Offices (LO) prioritize their requested DAS
- OMAO provides the total available budget from OMAO funds to support DAS
- LO Deputy Assistant Administrators and OMAO (Fleet Council) integrate priority of observational requirements across NOAA and determine allocation of DAS
- OMAO develops draft Fleet Allocation Plan (FAP) for a Fleet Council vote
- Fleet Council updates throughout the year as funding levels and operational conditions change and revise the FAP as necessary



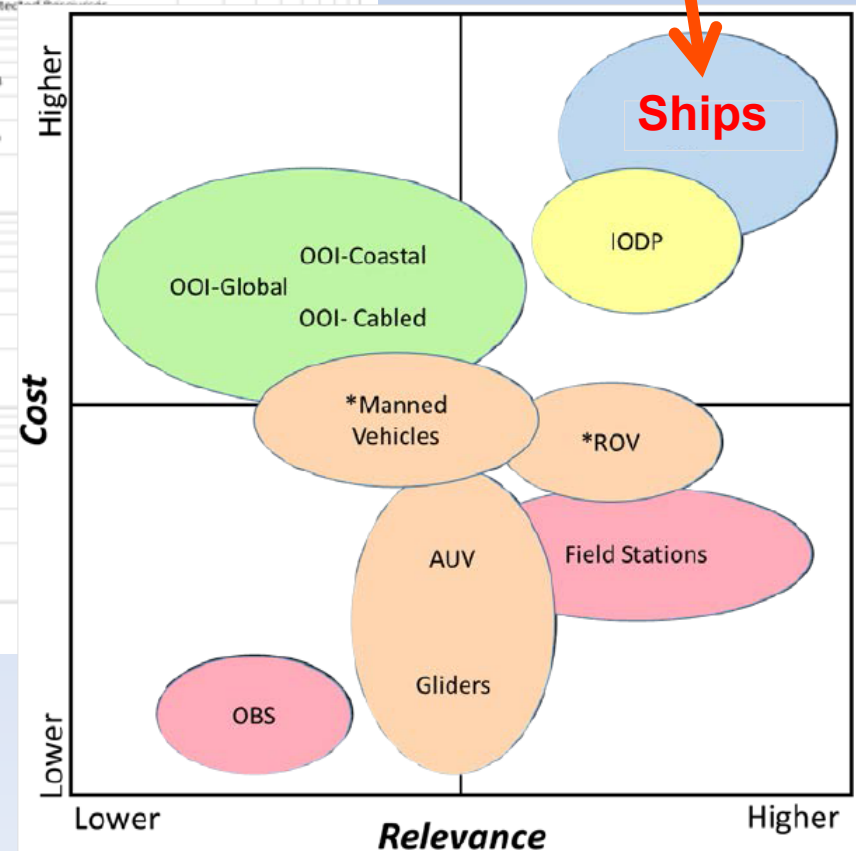
# Value/Relevance of Ships as Observing Platforms

Observing System Cost vs Impact (Log/Log Scale)



NOAA Ships

highest impact/relevance



# NOAA Fleet Projections

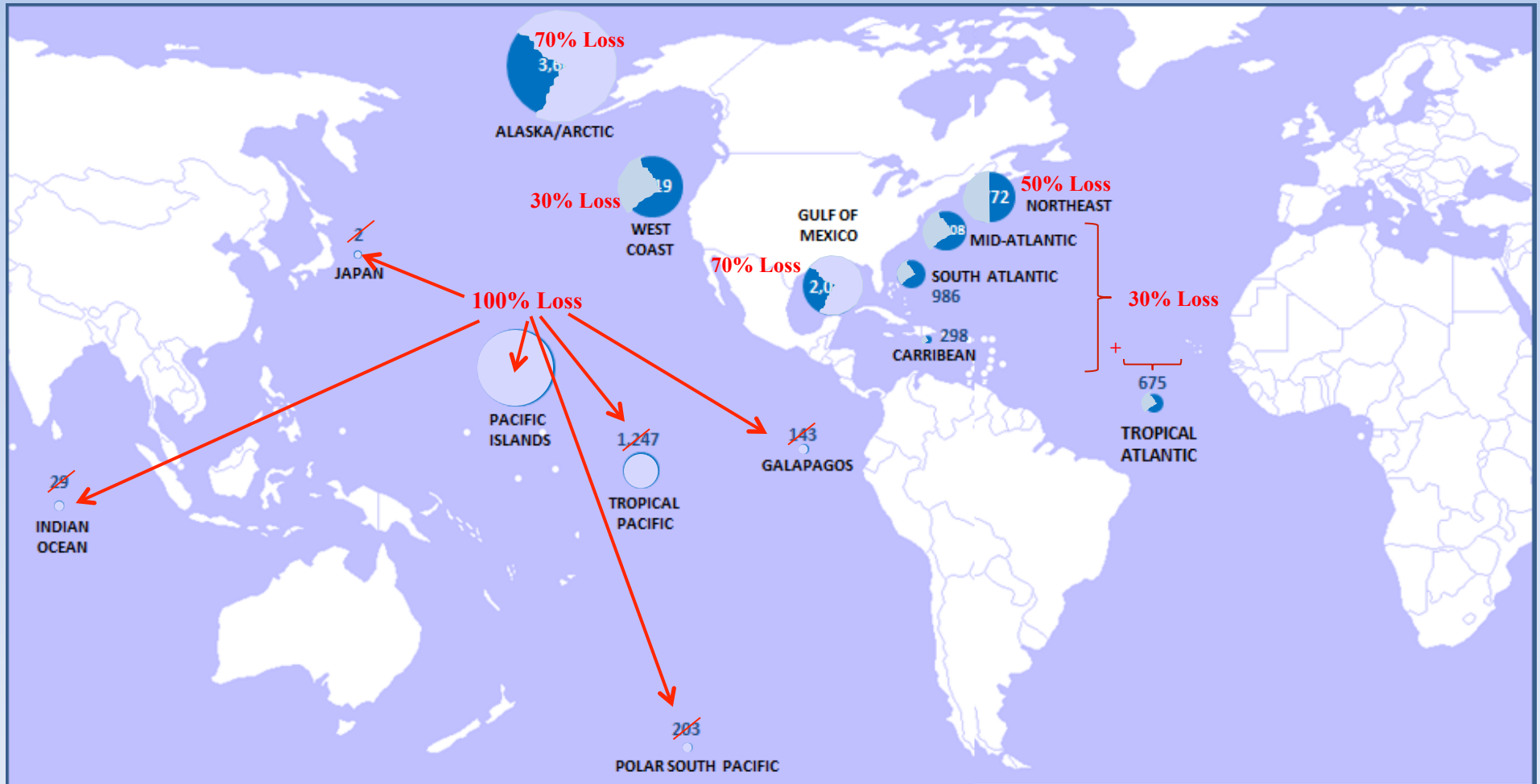
		Ship	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	
REGION SUPPORTED	Northeast	<i>Ferdinand R. Hassler</i>																		
		<i>Henry B. Bigelow</i>																		
		<i>Okeanos Explorer</i>															X			
		<i>Delaware II</i>		X																
	Southeast	<i>Ronald H. Brown</i>																		
		<i>Nancy Foster</i>																		
		<i>Thomas Jefferson</i>																		X
	Gulf of Mexico	<i>Pisces</i>																		
		<i>Gordon Gunter</i>															X			
		<i>Oregon II</i>													X					
	Alaska	<i>Oscar Dyson</i>																		
		<i>Fairweather</i>															X			
		<i>Miller Freeman</i>	X																	
	West Coast	<i>Reuben Lasker</i>																		
		<i>Bell M. Shimada</i>																		
		<i>Rainier</i>																		X
		<i>McArthur II</i>	X																	
	Pacific Islands	<i>Hi'ialakai</i>															X			
		<i>Oscar Elton Sette</i>													X					
		<i>Ka'imimoana</i>		X																
		<b>Total Ship Count</b>	17	16	16	16	16	16	16	16	16	16	16	14	14	10	10	10	8	

■ First Year of Operations    
 ■ Design Life    
 ■ Extended Life    
 ■ Gap in Capacity    
 X = Inactive



# DAS by Region: 2010-2014 ~~2028~~

No Action Alternative: NOAA Fleet Capacity Drops 50%



*It takes 8-10 Years to Build a Replacement Ship – Important to Start in 2016*



# Sustaining NOAA's Ship Capabilities

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- **2008 - Recapitalization Plan (not funded to date)**
- **2012 - Requirements Validation and Fleet Advisory Committee Recommendations**
- **2013-15 IAA w/NAVSEA on AGOR design**
- **January 2016–Independent Review Team (IRT)**





# NOAA IRT Intent

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- *Assess Fleet condition, composition, management, and planning.*
- *Assess NOAA at sea requirements and alternative capabilities to optimally meet them.*
- *Deliver recommendations on short and long term actions NOAA should consider to position the agency to effectively sustain persistent capabilities to meet at sea requirements.*



# NOAA IRT Composition

## Co-Chairs

**Dick West**

RADM, US Navy (ret)

**Robert Winokur**

Senior Advisor

Michigan Tech Research Institute / Michigan Tech Univ.

## Members

**Fred Byus**

RDML, US Navy (ret)

Vice President & General Manager

Battelle Mission and Defense Technologies

**Dr. John Hughes-Clark**

Professor

University of New Hampshire

**John Crowley**

RADM, US Coast Guard (ret)

Executive Director

National Association of Waterfront Employers

**Bauke (Bob) Houtman**

Head, Integrative Programs Section

National Science Foundation, Ocean Sciences Division

**Dr. Steve Murawski**

Professor

University of South Florida

**Blake Powell**

President

JMS Naval Architects

**Nancy Rabalais, Ph.D.**

Executive Director and Professor

Louisiana Universities Marine Consortium

National Defense University, Penn State University

**Dr. Steve Ramberg**

Distinguished Research Fellow

Center for Technology and National Security Policy

**Robert (Tim) Schnoor**

Ocean Research Facilities Manager

**Dick Vortman**

President and CEO (retired)

National Steel and Shipbuilding Company (NASSCO)

## NOAA Liaisons

**Nancy Hann, CDR/NOAA**

Chief of Staff

NOAA Office of Marine and Aviation Operations

**Richard J. Park, LT/NOAA**

Flag Aide to Director, NOAA Corps and OMAO

NOAA Office of Marine and Aviation Operations



# QUESTIONS?

