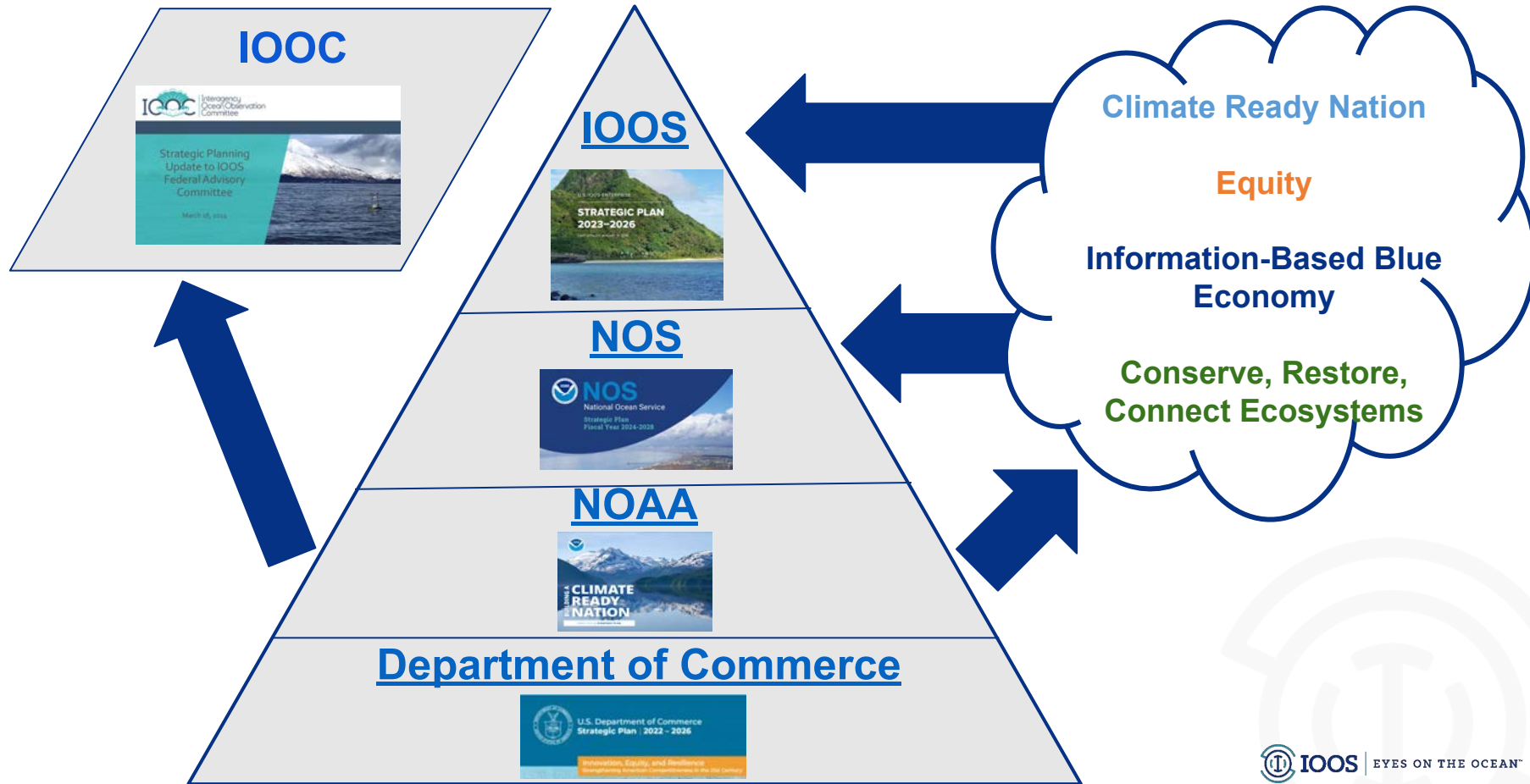


U.S. Integrated Ocean Observing System (IOOS)

Carl Gouldman, Director
July 25, 2024



Strategic Alignment



Program Highlights and Priorities

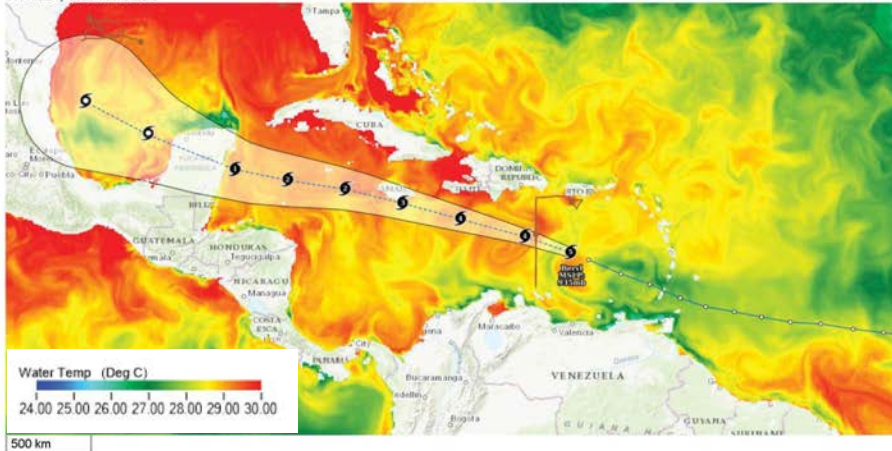
- Program Execution
- Requirements Gathering, Analysis, and Prioritization
- Enterprise Excellence



Major Hurricane Beryl



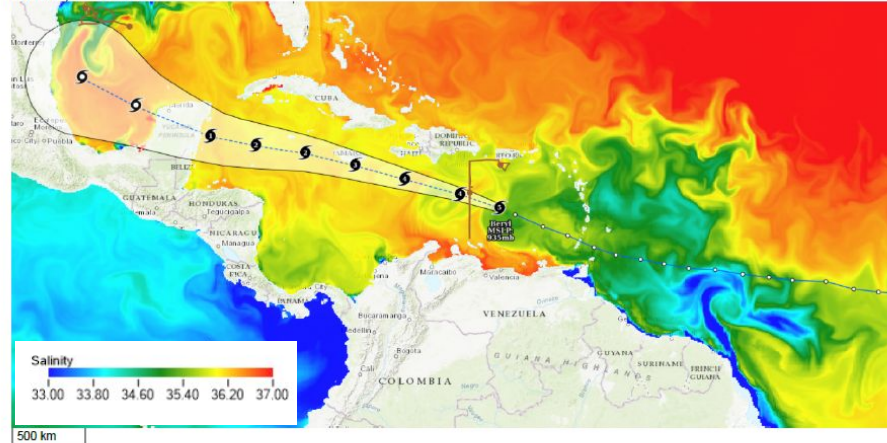
07/02/24, 05:00 AM EDT



Navy HYCOM **Sea Surface Temperature** captured a cold water wake as MH Beryl advanced westward towards RU29 (brown; north-south transect)



07/02/24, 05:00 AM EDT

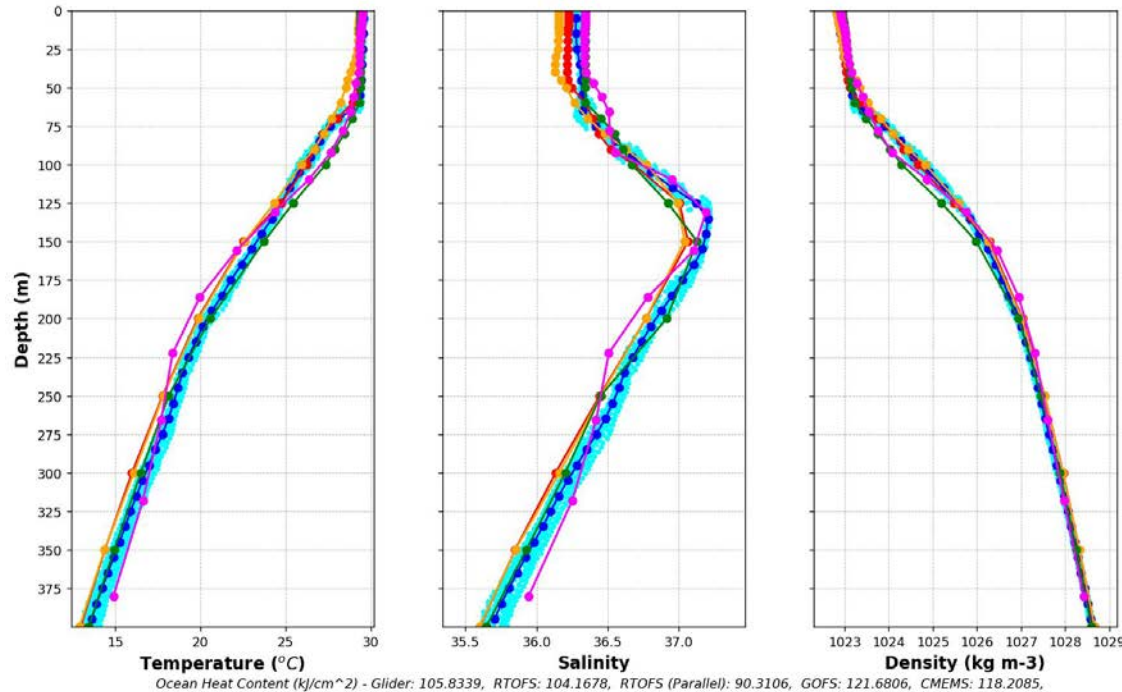


Navy HYCOM **Sea Surface Salinity** reveals the low salinity barrier layers of the Amazon river plume that MH Beryl crossed during its rapid intensification phase

The IOOS Glider Data Assembly Center connects glider observations to the models

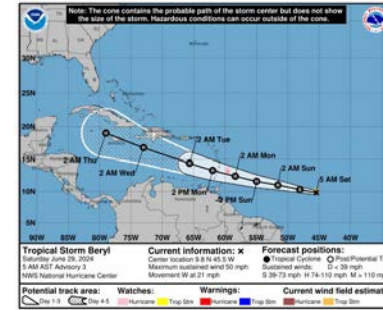
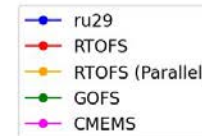
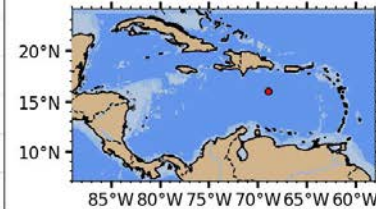
4 day earlier: RU29 keeping the ocean models on track

- Glider T/S data are assimilated by NOAA, Navy, European ocean models
- RTOFS is the ocean boundary condition for HAFS (Hurricane Analysis Forecast System)
- RTOFS (parallel) is the version under development

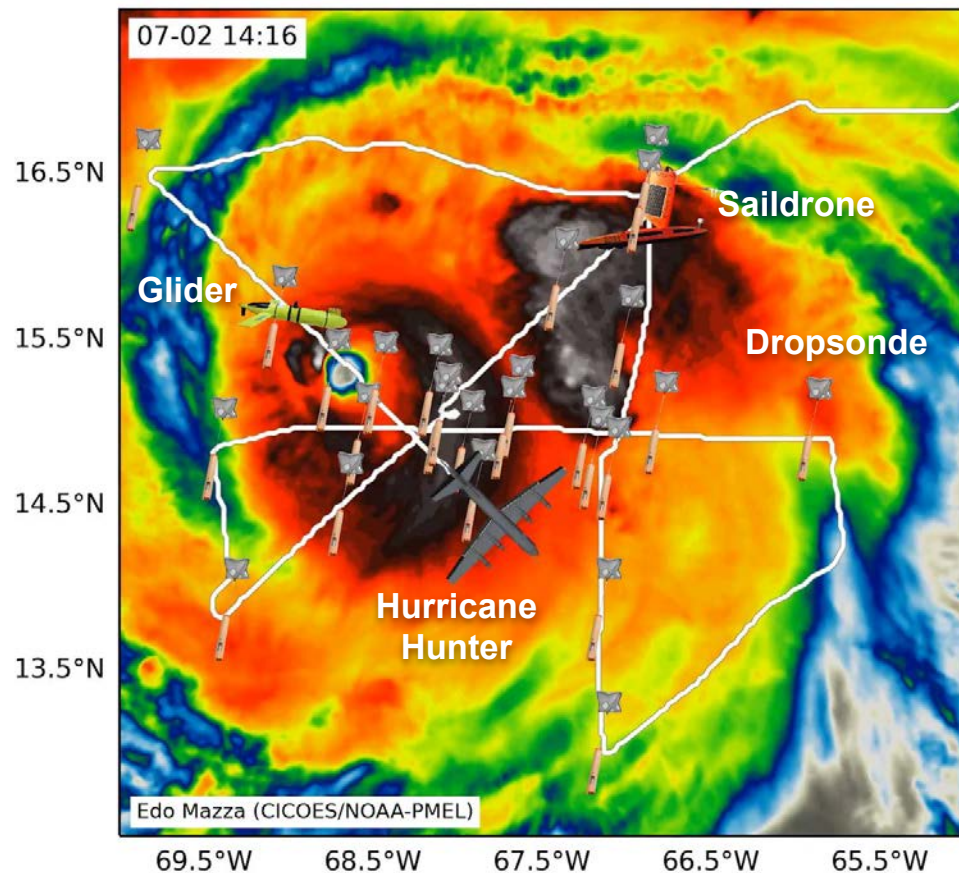


Comparison Date: 2024-06-28

Glider: ru29
Profiles: 10
First: 2024-06-28 01:34:49
Last: 2024-06-28 18:32:08
Method: Nearest-Neighbor



Coordinated observing within MH Beryl



- RU29 got within 20 nautical miles of the eye (CAT 5)
 - A record for strongest storm intercept by a glider!
- Hurricane Hunter (white track) deployed 24 dropsondes, 1 aimed at RU29
- Nearby saildrone navigated to RU29 for co-located observations
- RU29 data will be useful for future research on ocean dynamics, processes underneath the storm.

Program Highlights and Priorities

Continue 20+ years of progress to build and implement IOOS across the enterprise *(end to end value chain from observing, data, modeling, predictions, tools and decision support & equitable information service delivery)*

- **HFR:** HFRNet DAC; HFRs to telemeter surface wave measurements at test sites
- **Gliders:** MOA for Navy/IOOS hurricane glider collaboration; Sep. UG2 Workshop
- **COMT:** Awardees notified in June, awards will start in FY25
- **Modeling/Cloud Computing:** Coastal coupling applications in the NOAA Cloud community platform
- **NHABON FY24 \$3.5M:** Awardees selected and RAs notified

Biden-Harris Administration invests \$16.7 million for marine technology innovation through the Inflation Reduction Act

Funding will support NOAA's efforts to provide communities with decision-making tools and information necessary for coastal resilience

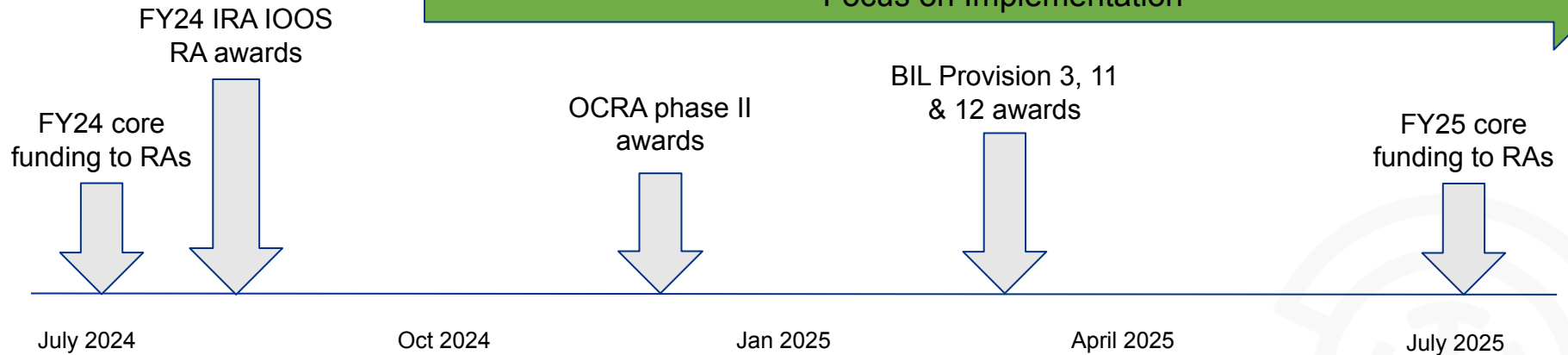


More Program Highlights and Priorities

Embrace AC recommendations and work with new committee

Revise/Renew Gap Analysis

Focus on Implementation

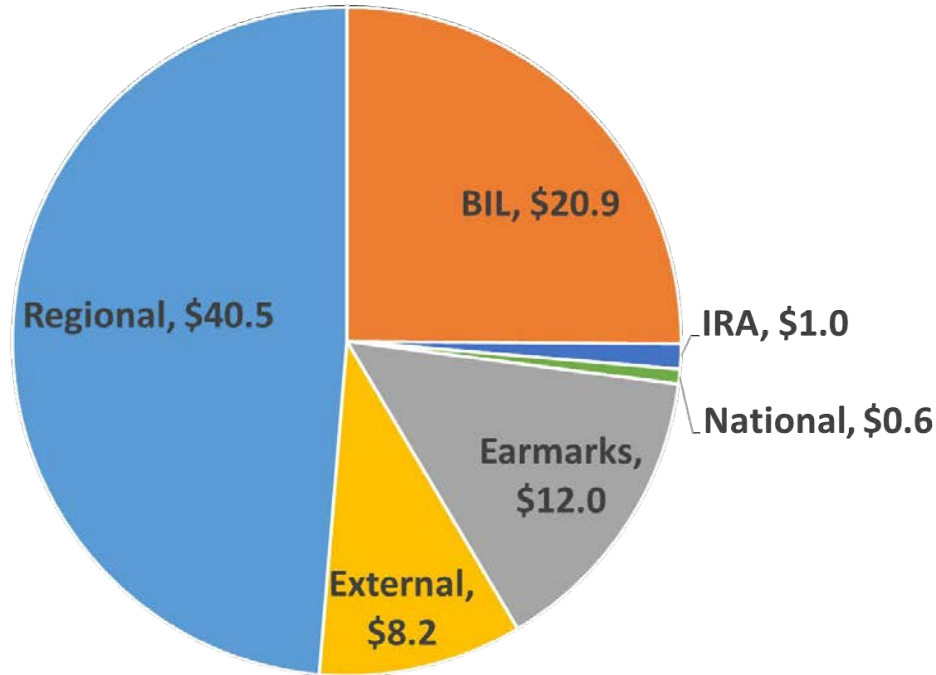


IOOS Grants Portfolio 2017-2024

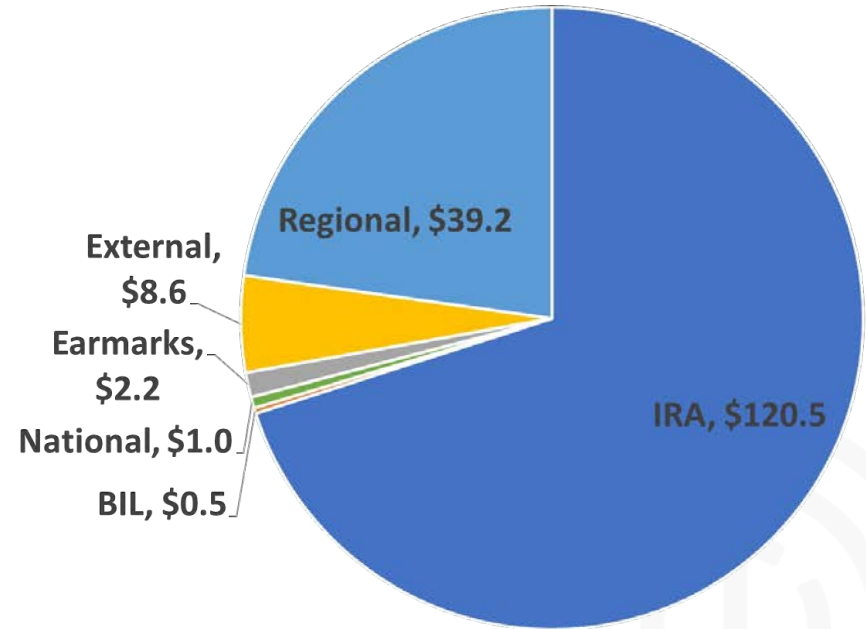
Year	IOOS Total Existing Awards	IOOS New Awards	IOOS Total Amount
2017	17	5	\$32,820,943
2018	15	9	\$38,845,305
2019	22	9	\$45,744,078
2020	23	13	\$50,200,908
2021	12	17	\$46,075,769
2022	23	10	\$52,707,763
2023	37	27	\$83,274,817
2024	21	44	\$171,977,786

IOOS Grant Portfolio Funding Breakdown FY 2023 vs. FY 2024

FY23 Total - \$83.2M

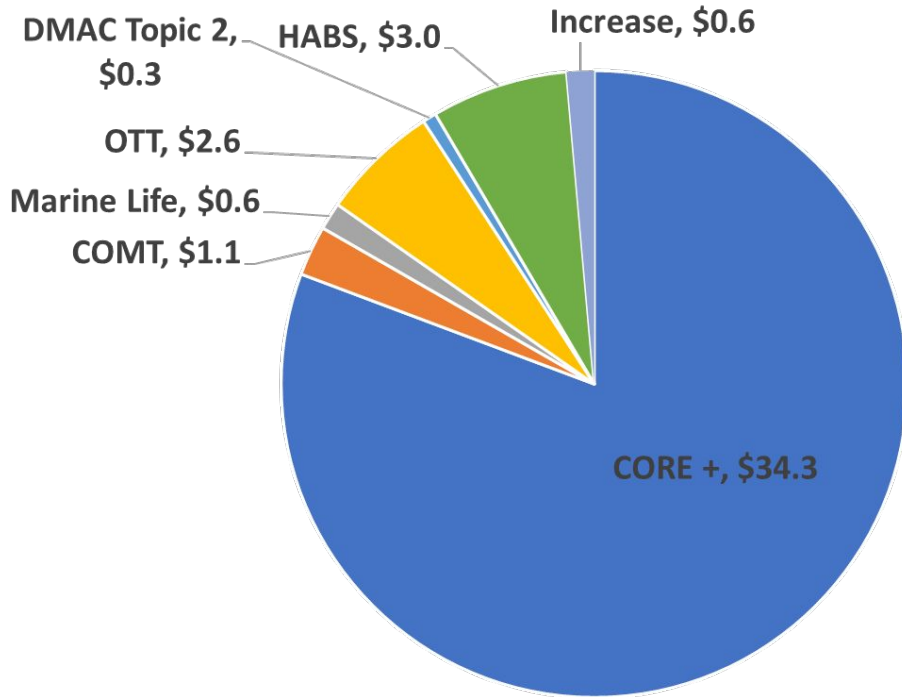


FY24 Total - \$172M

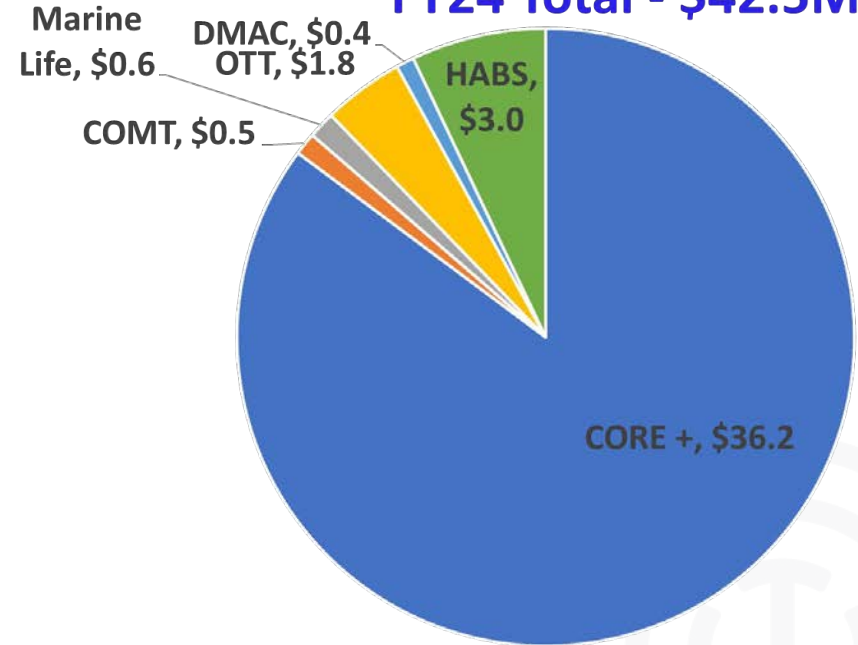


FY 2023 vs. FY 2024 - IOOS Regional

FY23 Total - \$42.5M

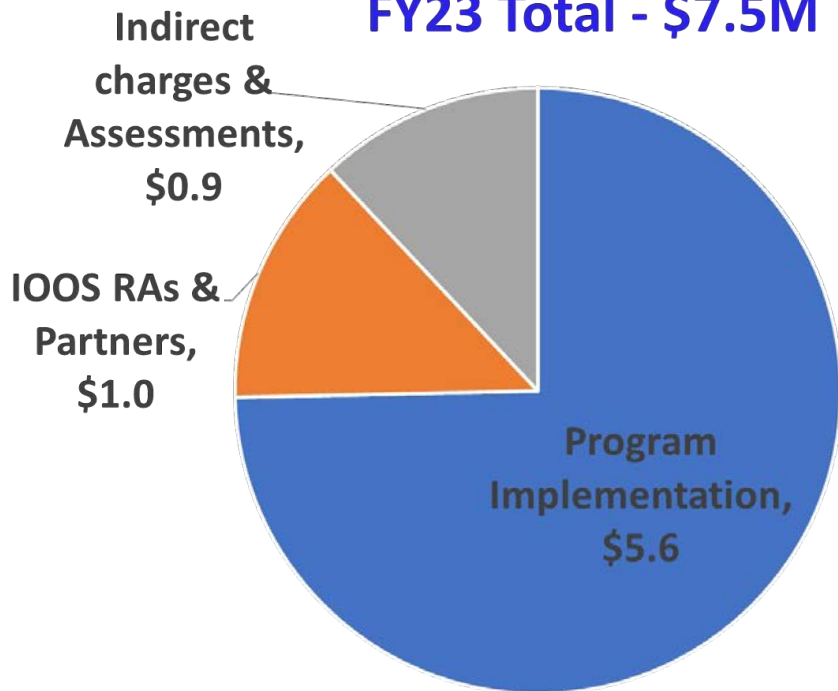


FY24 Total - \$42.5M

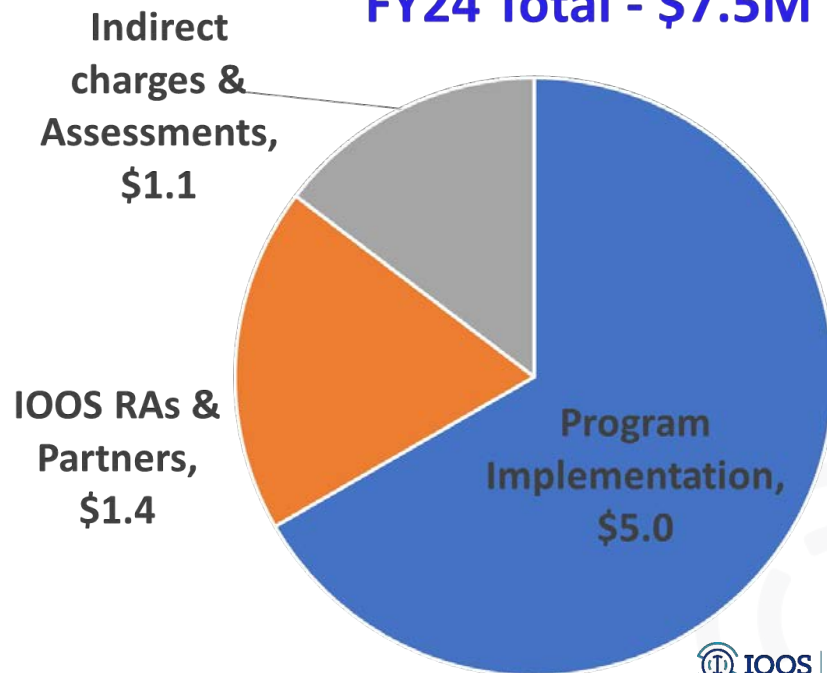


FY 2023 vs. FY 2024 - IOOS National

FY23 Total - \$7.5M

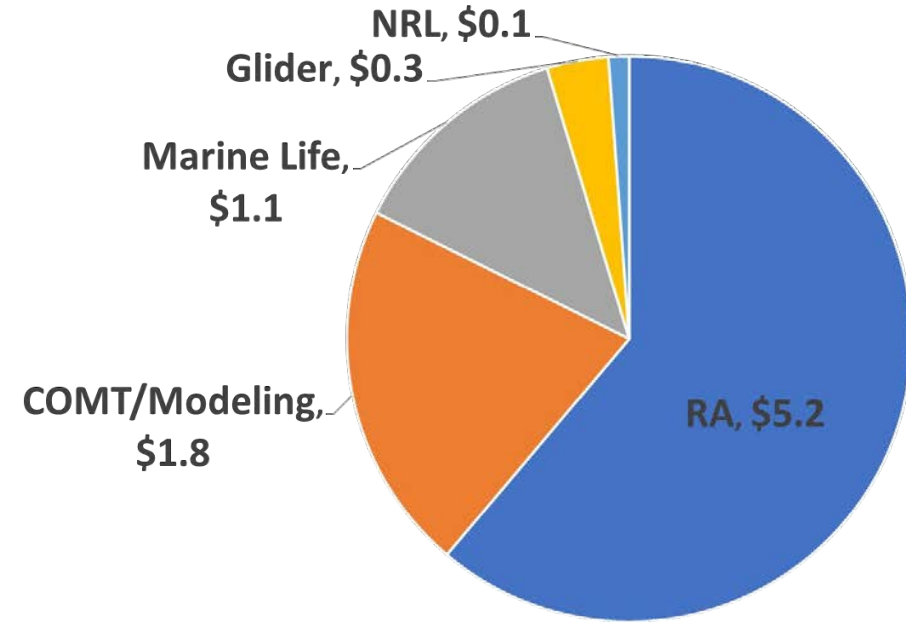


FY24 Total - \$7.5M

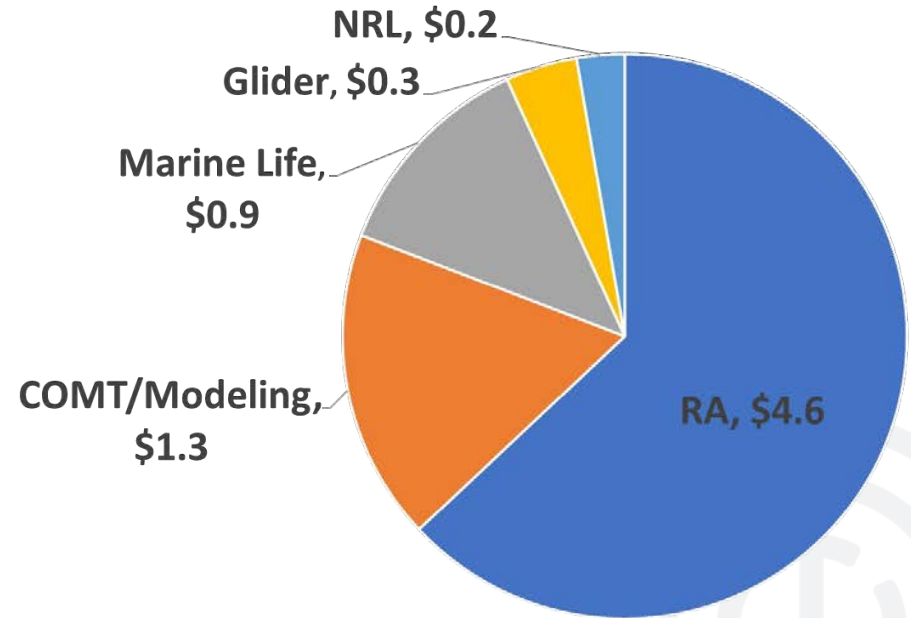


FY 2023 & FY 2024 External Funds Executed- By Program/ Portfolio

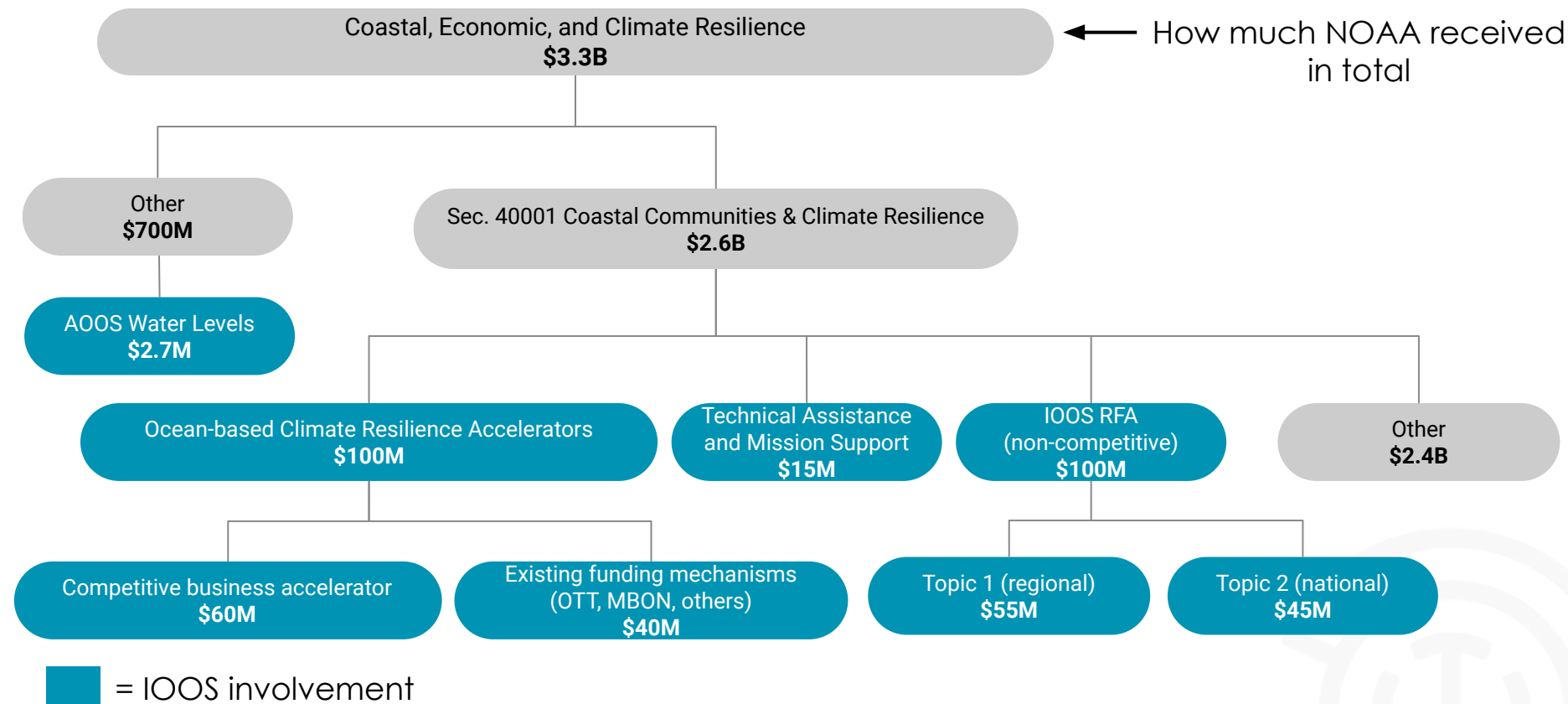
FY23 Total - \$8.5M



FY24 Total - \$7.3M



IRA Funding Breakdown



IRA Complements Core and BIL

	Core	↔	BIL	↔	IRA
Activity	Observations, tools, modeling, O&M, governance		Recapitalization of infrastructure, assets		Equitable service delivery
Geographic range	Within the region		Within the region		Within and across regions
Outcome	Sustained coastal ocean information		Fortified, enhanced core assets		Coastal community climate resilience
End beneficiary	Decision makers, managers, scientists		Regional system		Frontline, overburdened, coastal communities
Project length	Ongoing		One-time infusion		Finite project, lasting impact

Equitable Service Delivery (ESD)



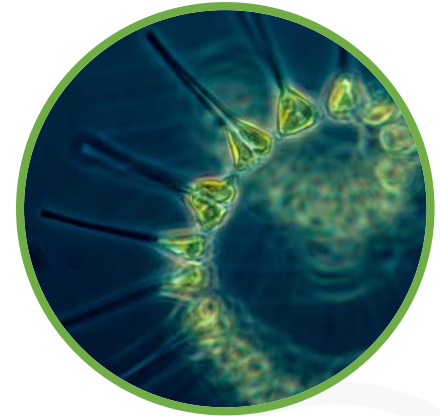
the *consistent and systematically fair, just, and impartial* process of engaging with users to provide relevant and timely information

-Adapted from EO 13895
Advancing Racial Equity and Support for Underserved Communities Through the Federal Government



National Oceanographic Partnership Program

Marine Life



Coming Soon ...

Enterprise Excellence



Looking Forward



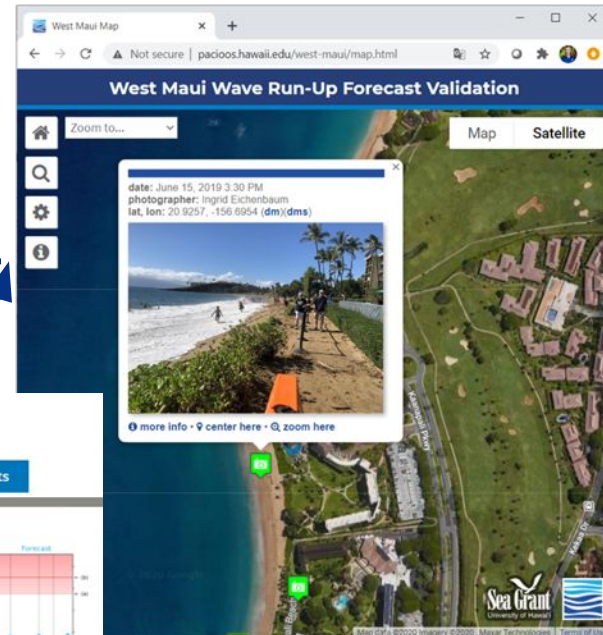
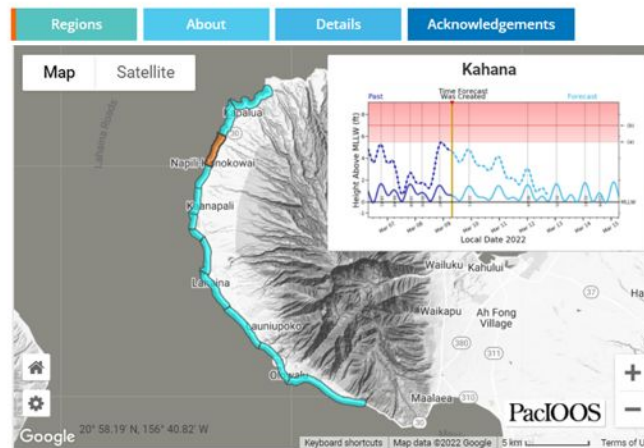
Sea Level Rise & Wave Inundation Tools

Key Takeaways:

- **Integrated Sea Level Rise + Wave run-up tools:**
Support short- & long-term planning for flooding impacts to communities, infrastructure, and economies.
- **Community-based validation:**
Image submission tools enable locals to engage and to help modelers validate forecasts.

Community Supported Calibration

Wave Run-Up Forecast : West Maui



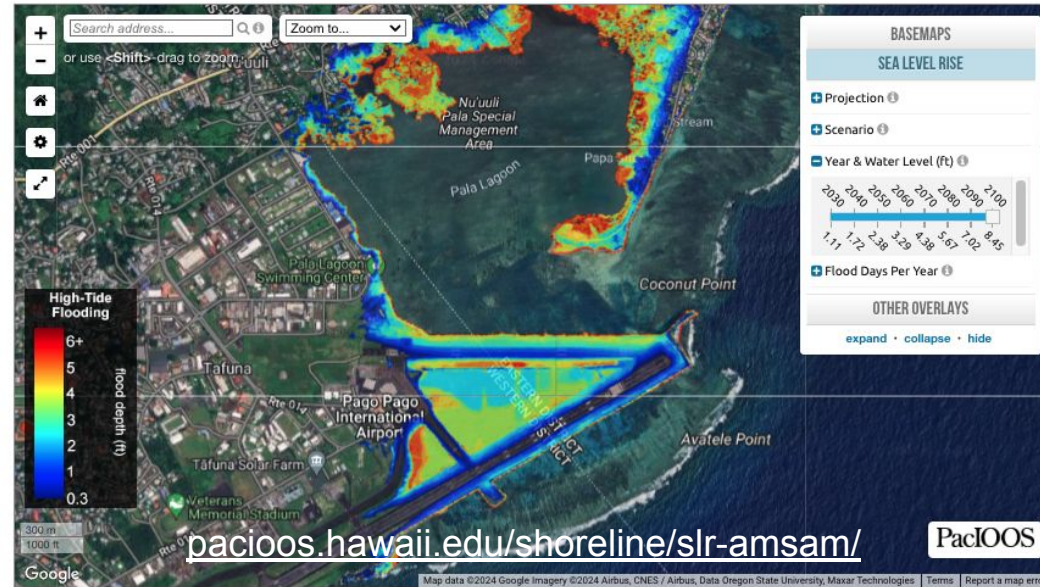
Sea Level Rise & Wave Inundation Tools

Building community resilience:

- Some of the most vulnerable communities are also some of the most underserved.
- PacIOOS and partners are developing custom SLR and wave run-up tools for American Samoa and Palau, modeled off of work from Maui.
- PacIOOS is serving high sea level and flooding forecasts across the U.S. Affiliated Pacific Islands

Sea Level Rise : American Samoa Sea Level Rise Viewer

An Interactive Mapping Tool to Assess Future Sea Level Rise Scenarios



PacIOOS
PACIFIC ISLANDS OCEAN OBSERVING SYSTEM

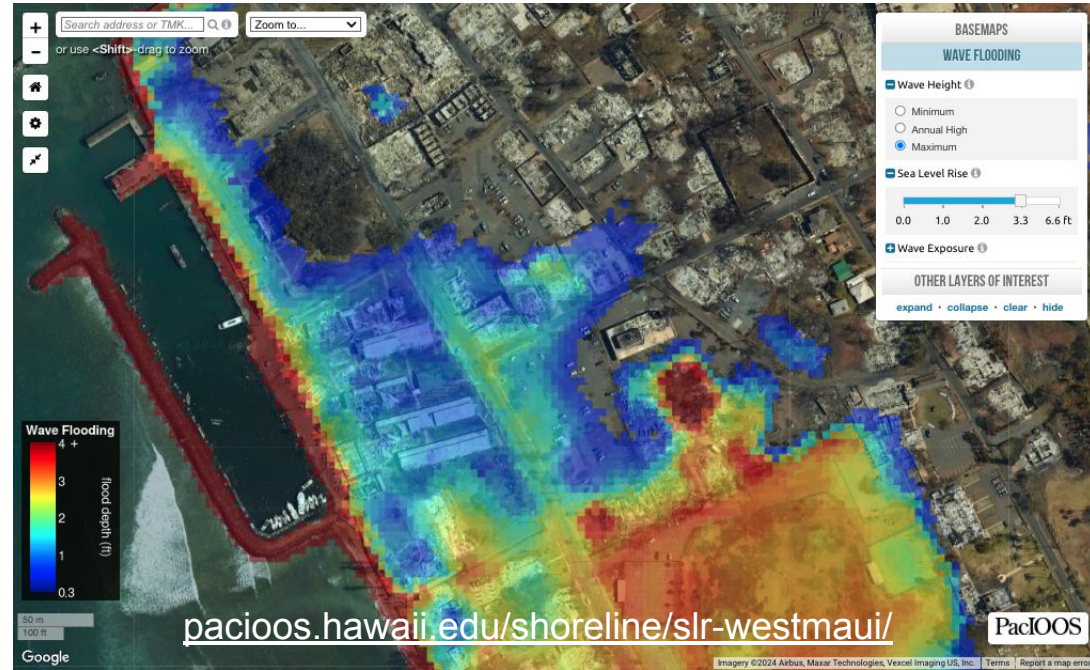


IOOS | EYES ON THE OCEAN™

Regional Ocean Data Sharing Initiative (RODSI) - Lahaina Fires

RODSI funds enabled agile support from PacIOOS staff in the wake of devastating Lahaina fires.

- Sea level & wave run-up scenarios are providing parcel-level guidance for rebuilding efforts.
- Data management & web applications were quickly developed for monitoring data from > 60 partners.
- Training workshops are building data management capacity for community partners.



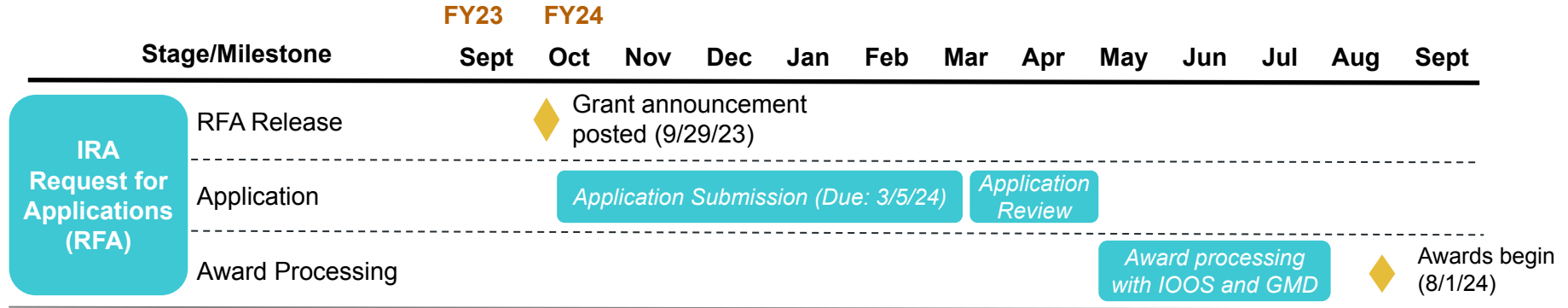
Questions?

Backup Slides

IOOS Grants Calendar

Grant Title	2023				2024				2025				2026				2027				2028			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
COMT					COMT																			
Disaster Supplemental					Disaster Supplemental																			
DMAC					DMAC																			
RA 5yr Awards																	RA 5yr Awards							
BIL Prov 11/ Prov 11&12 Years 1& 2																	BIL Prov 11/ Prov 11&12 Years 1& 2							
BIL Prov 3 Yr 1&2 Awards																	BIL Prov 3 Yr 1&2 Awards							
IRA Ocean-based Climate Resilience Accelerators (OCRA) Phase 1 Applications																	IRA Ocean-based Climate Resilience Accelerators (OCRA) Phase 1 Applications							
IRA RFA Open																	IRA RFA Open							
BIL Prov 3 Yr 3-5 Applications																	BIL Prov 3 Yr 3-5 Applications							
BIL Prov11/ Prov 11&12 Yr 3-5 Applications																	BIL Prov11/ Prov 11&12 Yr 3-5 Applications							
IRA OTT Awards																	IRA OTT Awards							
IRA OCRA Phase 1 Awards																	IRA OCRA Phase 1 Awards							
IRA MBON Awards																	IRA MBON Awards							
IRA OCRA Phase 2 Applications																	IRA OCRA Phase 2 Applications							
IRA RFA Awards																	IRA RFA Awards							
BIL Prov 3 Yr 3-5 Awards																	BIL Prov 3 Yr 3-5 Awards							
BIL Prov11/ Prov 11&12 Yr 3-5 Awards																	BIL Prov11/ Prov 11&12 Yr 3-5 Awards							
IRA OCRA Phase 2 Awards																	IRA OCRA Phase 2 Awards							

IOOS IRA RFA Timeline



IOOS & NOAA's Ocean Enterprise / New Blue Economy



Currents / Water levels



Gliders



Buoys & Moorings



Marine Life & HABs



OTT



Modeling and Analysis

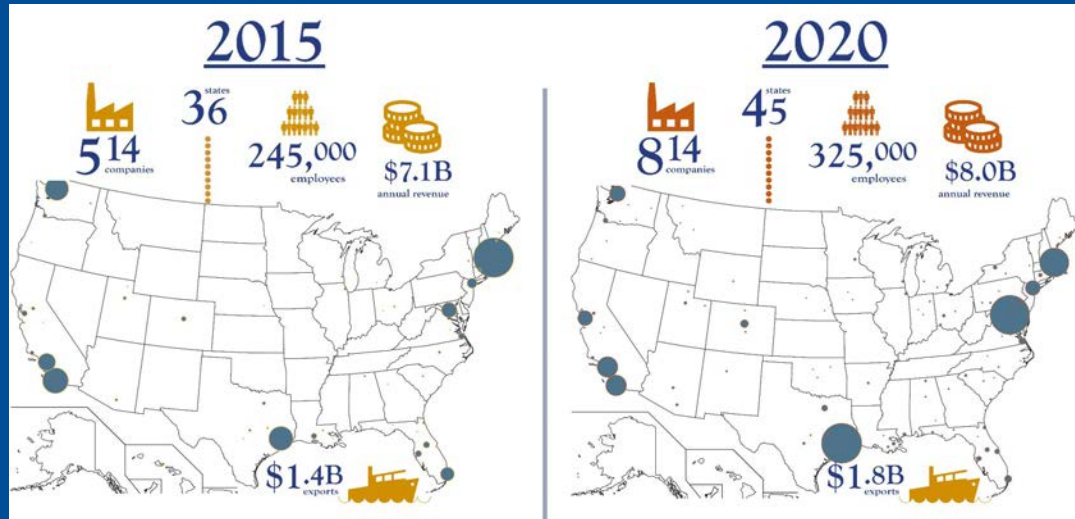


DMAC

The Ocean Enterprise Study 2015–2020



Objective: Understand the scale and scope of U.S. New Blue Economy business activity and how this has changed since 2015.



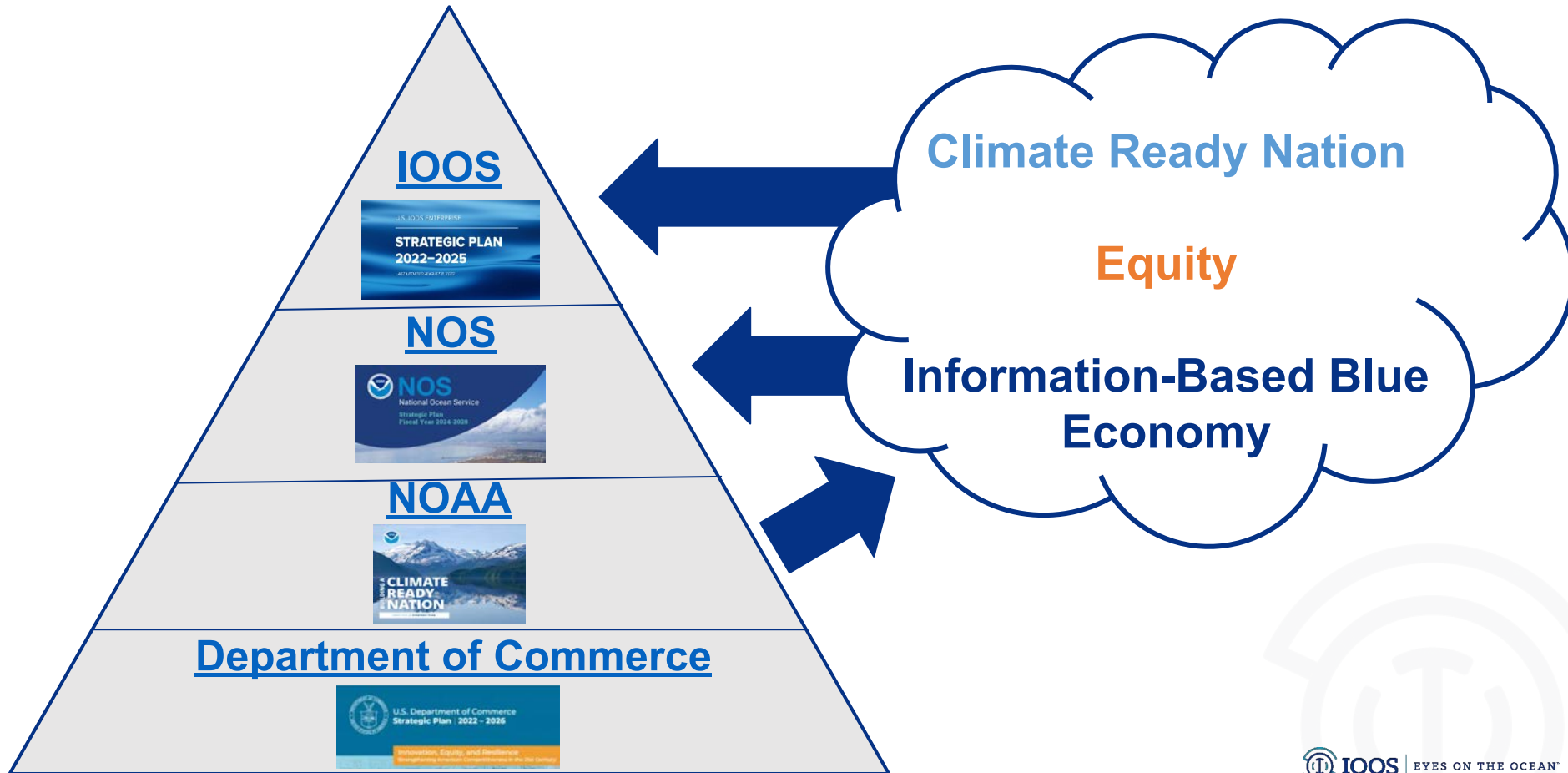
Industry Dialogues (2.0) with MTS



The New Blue Economy is a knowledge-based economy, looking to the sea not just for extraction of material goods, but for data and information to **address societal challenges** and to **inspire their solutions.**

Go to ioos.noaa.gov/nbe/activities to learn more

Strategic Plan Development (and Next Steps)



IOOS Recommendations to NOAA

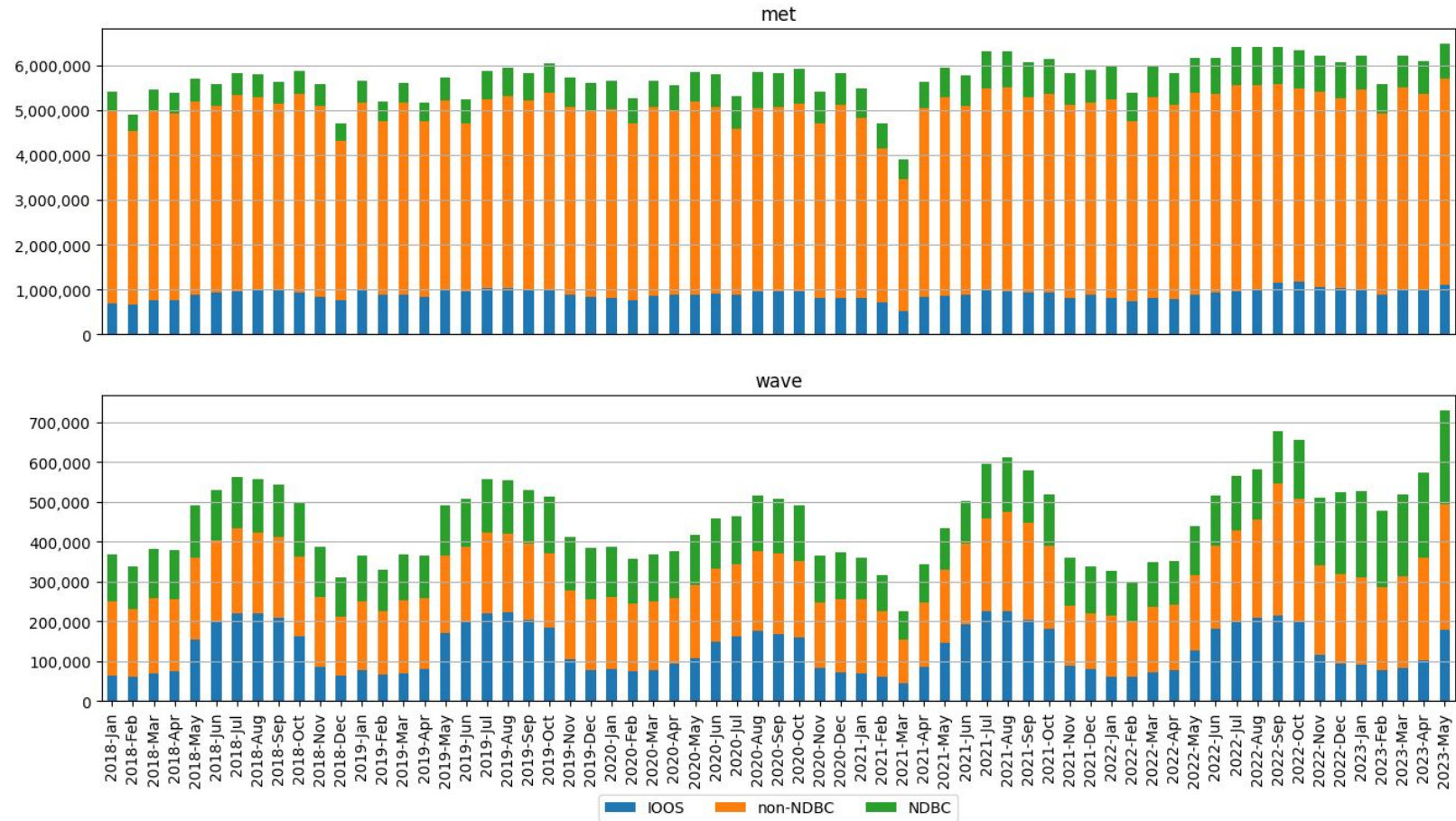
Of the 16 Recommendations:

- 3 recommendations fully implemented
- 12 recommendations partially implemented
- 1 recommendation not yet implemented

[Link to the NOAA and IOOC Responses to the FAC Recommendations](#)

Priority Area	Recommendation Number	Addressed using IRA Funding?
Fostering Growth of the New Blue Economy	1	Yes
	2	Yes
	3	Yes
	4	Yes
	5	Yes
Climate Impacts at the Oceans and Coasts	1	Partially
	2	Yes
	3	Yes
	4	Yes
	5	Partially
	6	Yes
DEIA	1	Yes
	2	Yes
	3	Yes
	4	Yes
	5	Yes

NOS real-time marine observations delivered to GTS via NDBC



Ocean Enterprise Study



ioos.noaa.gov/project/ocean-enterprise-study/

Workforce Development



ioos.noaa.gov/nbe/suggestion-box



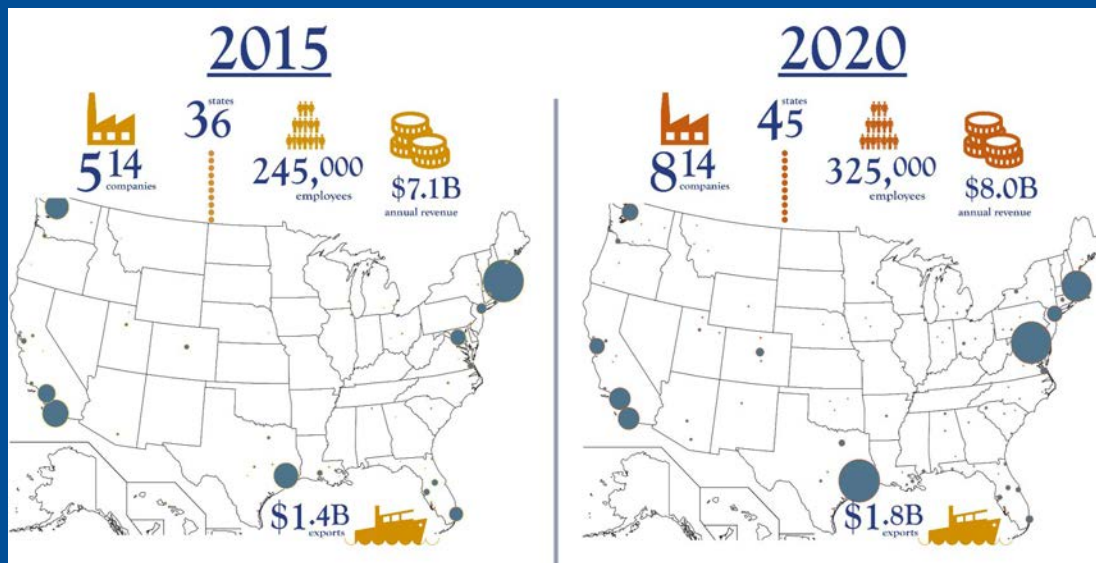
Dialogues with MTS



The Ocean Enterprise Study 2015–2020



Objective: Understand the scale and scope of U.S. New Blue Economy business activity and how this has changed since 2015.

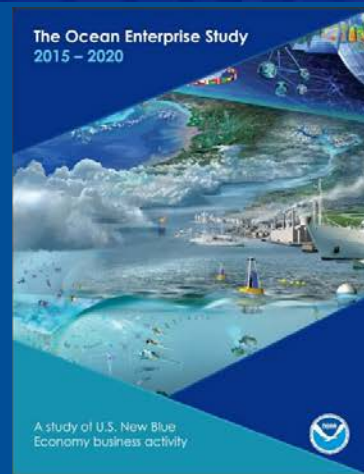
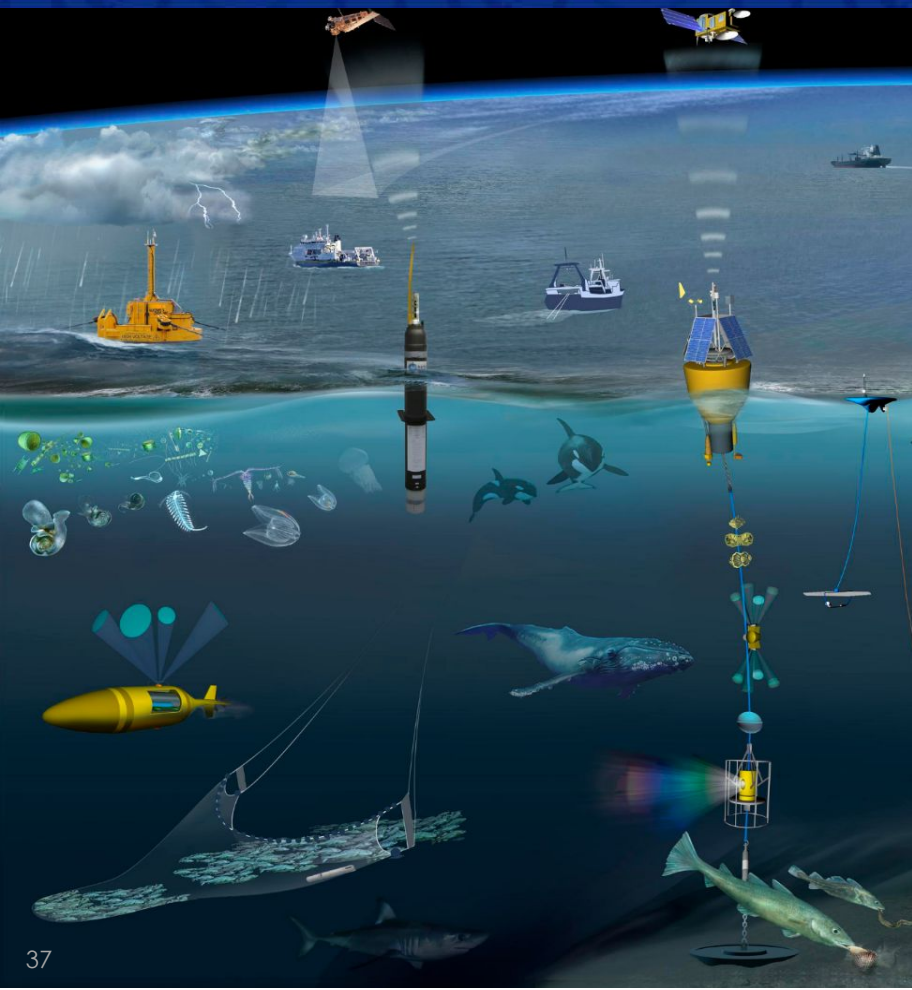


NOAA's New Blue Economy Vision

A sustainable and equitable ocean and coastal economy that optimizes advances in science and technology to create value-added, data-driven economic opportunities and solutions to pressing societal needs.



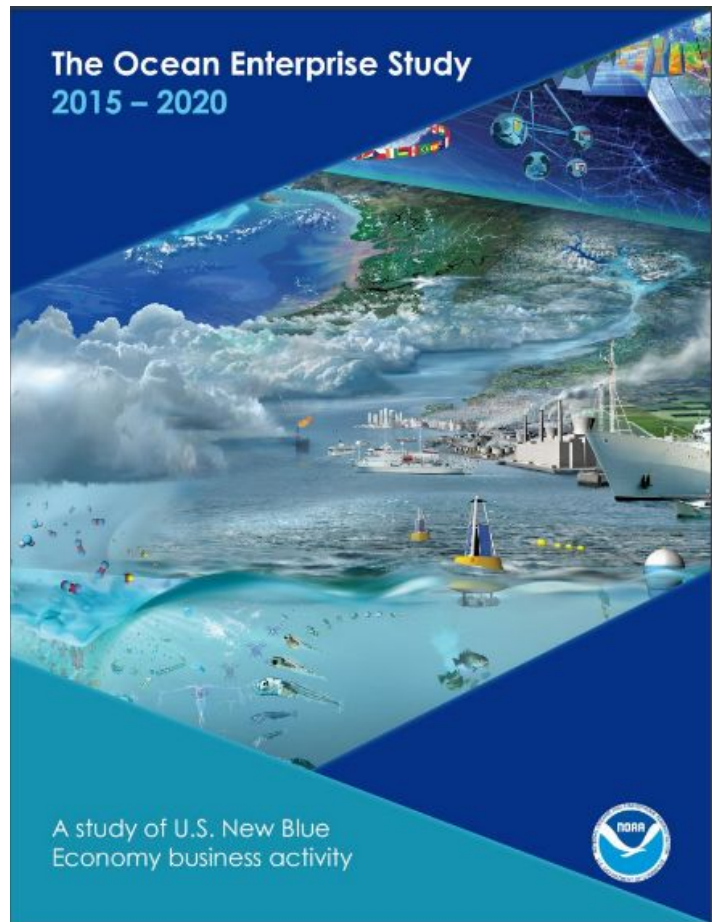
The New Blue Economy



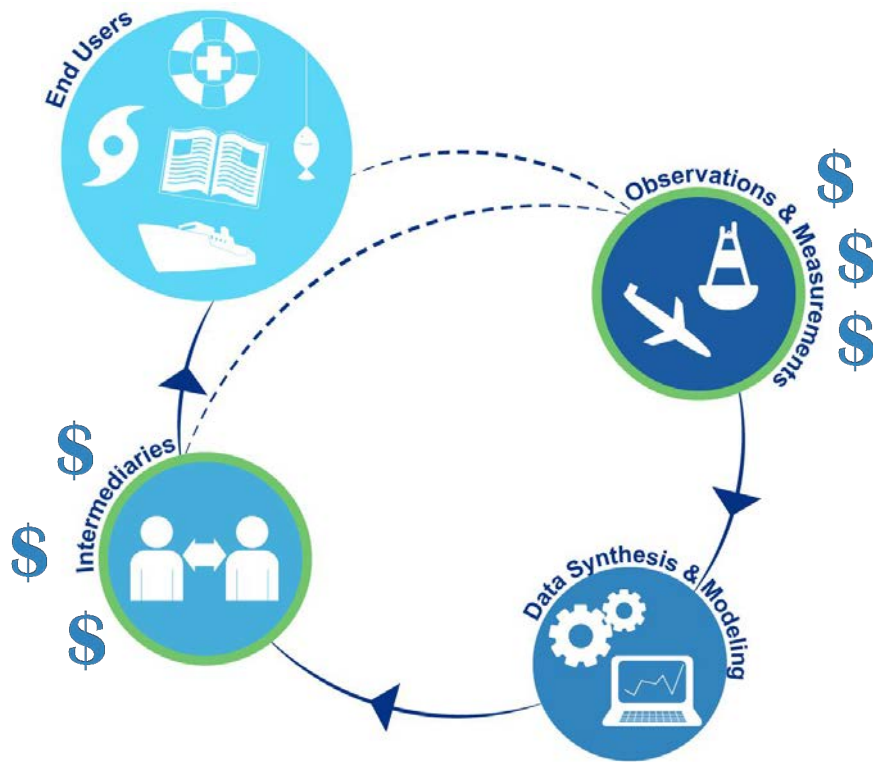
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The U.S. Ocean Enterprise Study 2015–2020

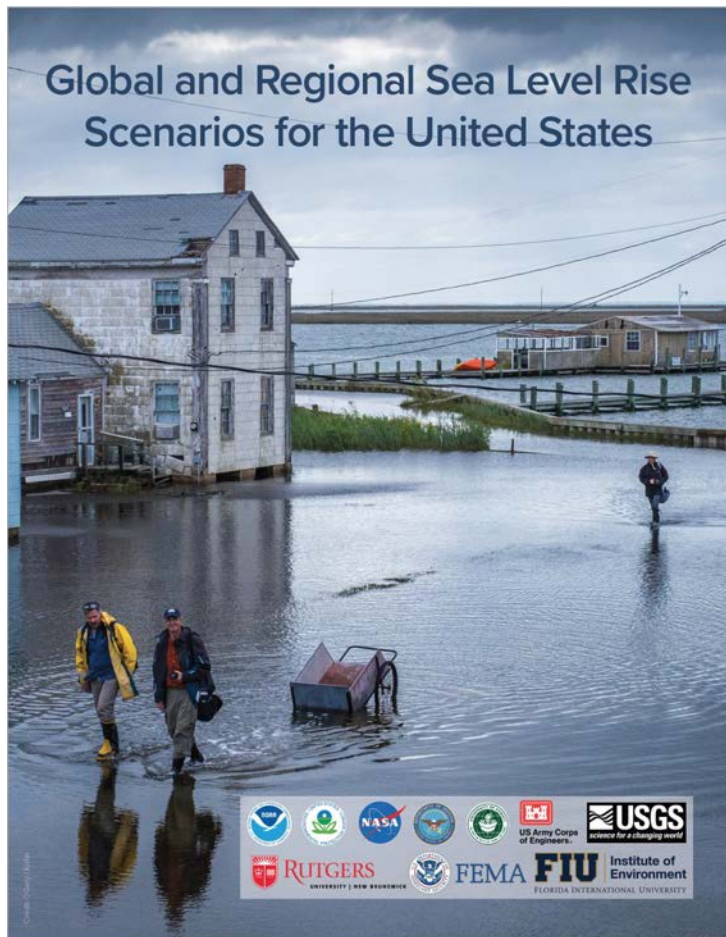


Objective – Understand the scale and scope of U.S. New Blue Economy business activity and how this has changed since 2015.



Sea Level Rise Technical Report

Global and Regional Sea Level Rise Scenarios for the United States



Four Key Takeaways:

- **The Next 30 Years of Sea Level Rise:** On average, the U.S. will see as much sea level rise by 2050 as seen in the last century
- **More Damaging Flooding Projected:** Sea level rise leads to increased coastal flooding even in the absence of rain or storms
- **Emissions Matter:** At least two feet of sea level rise is likely by 2100 and reducing emissions now can lower future risk.
- **Continual Tracking:** Earth-monitoring systems are vital for tracking future sea level rise

Ocean Technology Transition (OTT) Program



FY23 NOFO funded projects:

University of Washington, John Mickett Institutionalizing Long-term Offshore ESP Monitoring in the Pacific Northwest

SECOORA, Theo Jass A Proposal to Scale from a Regional to a National Webcam Coastal Observation System (WebCOOS)



CODAR Ocean Sensors, LTD, Dale Trockel Improving HF Radar Ocean Observation with AI

Oregon State University, Jessica Garwood Fishing for Hypoxia: An Academic-Industry-Tribal Partnership to Observe the Coastal Ocean

San José State University Research Foundation, Holly Bowers Validating the Aqusens imaging platform to expand networked cell detection capabilities

Seward Association for the Advancement of Marine Science, Carol Janzen Intuitive Model-Driven Marine Particle Tracking and Visualization Tools for Coastal Incident Response, Maritime Domain Awareness and Research Applications

Seven more IRA funded projects will be announced in early 2024

<https://ioos.noaa.gov/project/ocean-technology-transition/>

