

# NOAA Office of Ocean Exploration and Research Update

Alan Leonardi, Director  
Ocean Exploration Advisory Board  
17th Meeting  
October 1-2, 2020



**Ocean Exploration  
and Research**



# Presentation Overview

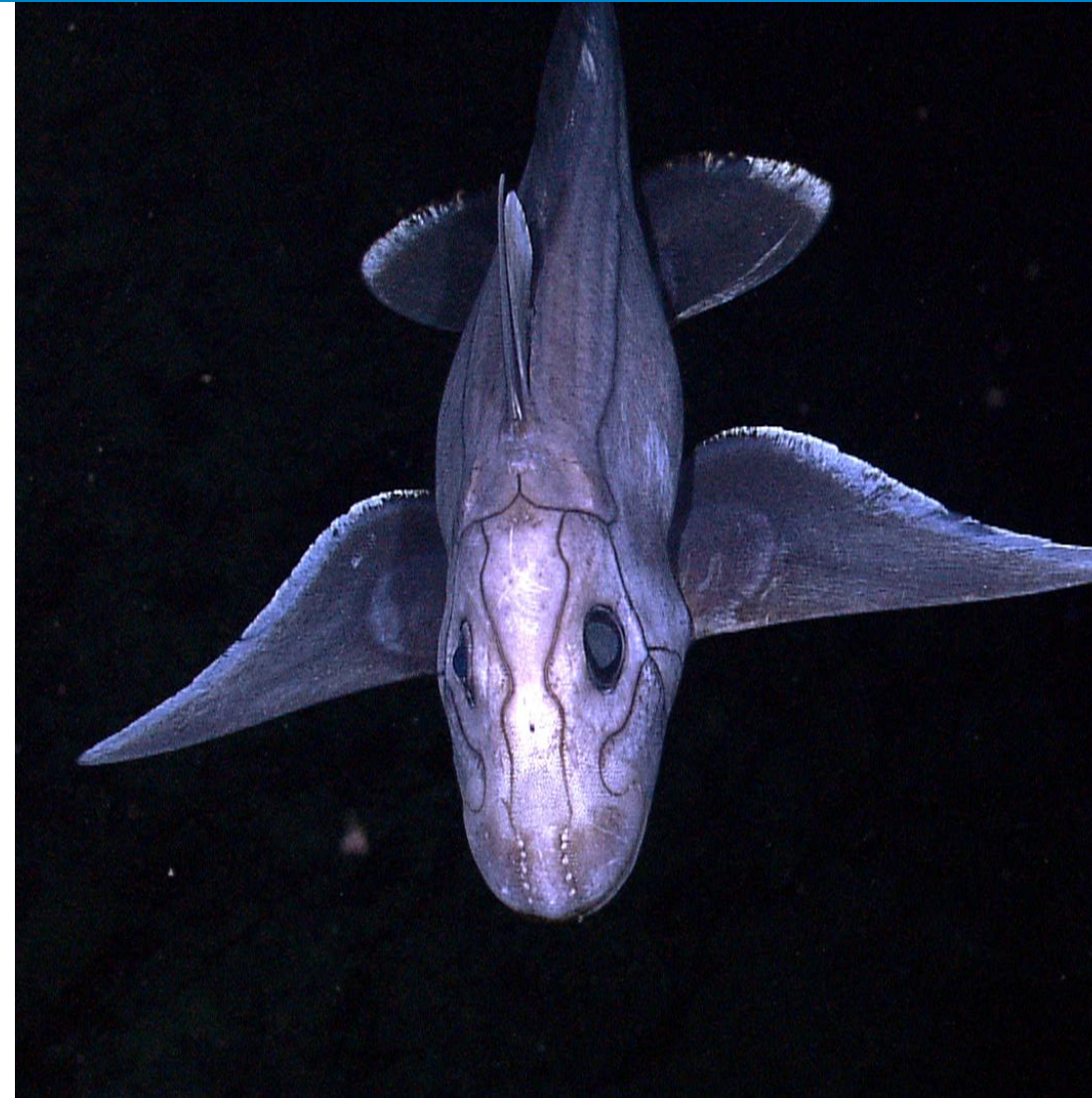
National Strategy

Expeditions

Grants and Partnerships

NOAA Strategies and Plans

OER Engagement



National  
Strategy

Expeditions

Grants and  
Partnerships

NOAA Strategies  
and Plans

OER  
Engagement



Ocean Exploration  
and Research

# National Strategies to Advance Ocean Exploration

National Strategy for Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone

Mapping the Coast of Alaska: A 10-year Strategy in Support of the United States Economy, Security, and Environment

Recommendations for Increasing the Efficiency of Permitting for Ocean Exploration, Mapping, and Research Activities

National  
Strategy

Expeditions

Grants and  
Partnerships

NOAA Strategies  
and Plans

OER  
Engagement



Ocean Exploration  
and Research

# National Strategy for Mapping, Exploring, and Characterizing the U.S. Exclusive Economic Zone (EEZ)

## GOALS

- 1 Coordinate Interagency Efforts and Resources to Map, Explore, and Characterize the United States EEZ
- 2 Map the United States EEZ
- 3 Explore and Characterize Priority Areas of the United States EEZ
- 4 Develop and Mature New and Emerging Science and Technologies to Map, Explore, and Characterize the United States EEZ
- 5 Build Public and Private Partnerships to Map, Explore, and Characterize the United States EEZ

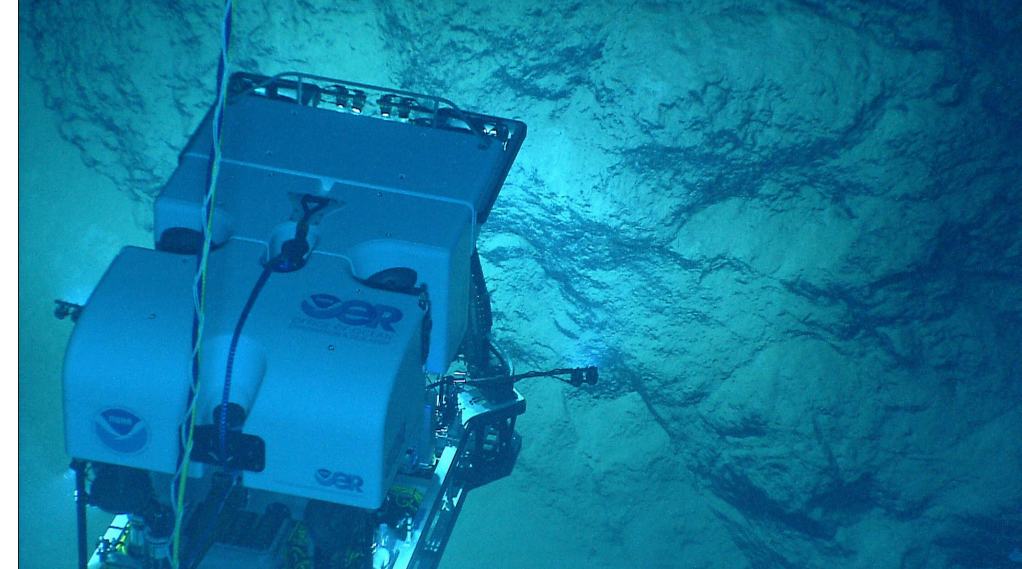
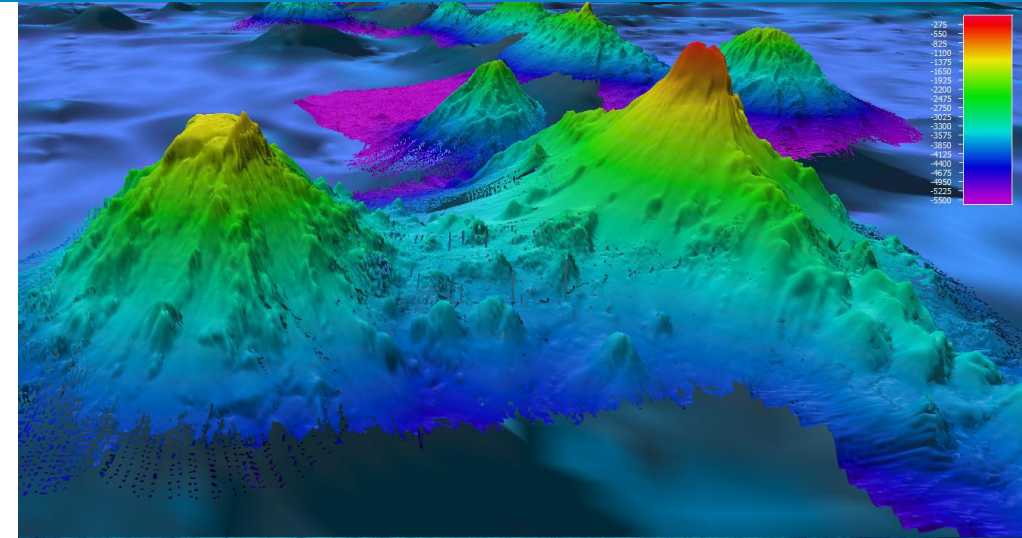


# Implementing the National Strategy

National Ocean Mapping, Exploration, and Characterization Council

Interagency Working Group on Ocean and Coastal Mapping (Goal 2)

Interagency Working Group on Ocean Exploration and Characterization (Goal 3)



# *Okeanos Explorer* 2020

- **All 2020 operations suspended**
- **Required dry dock**
  - November 1 to January 31 at Halter Marine in Pascagoula, Mississippi
- **Noteworthy repairs/upgrades**
  - New EM304 transducers
  - New expanded ethanol storage system
  - Material upgrades to the ship





# *Okeanos Explorer* 2021

## Required Activities

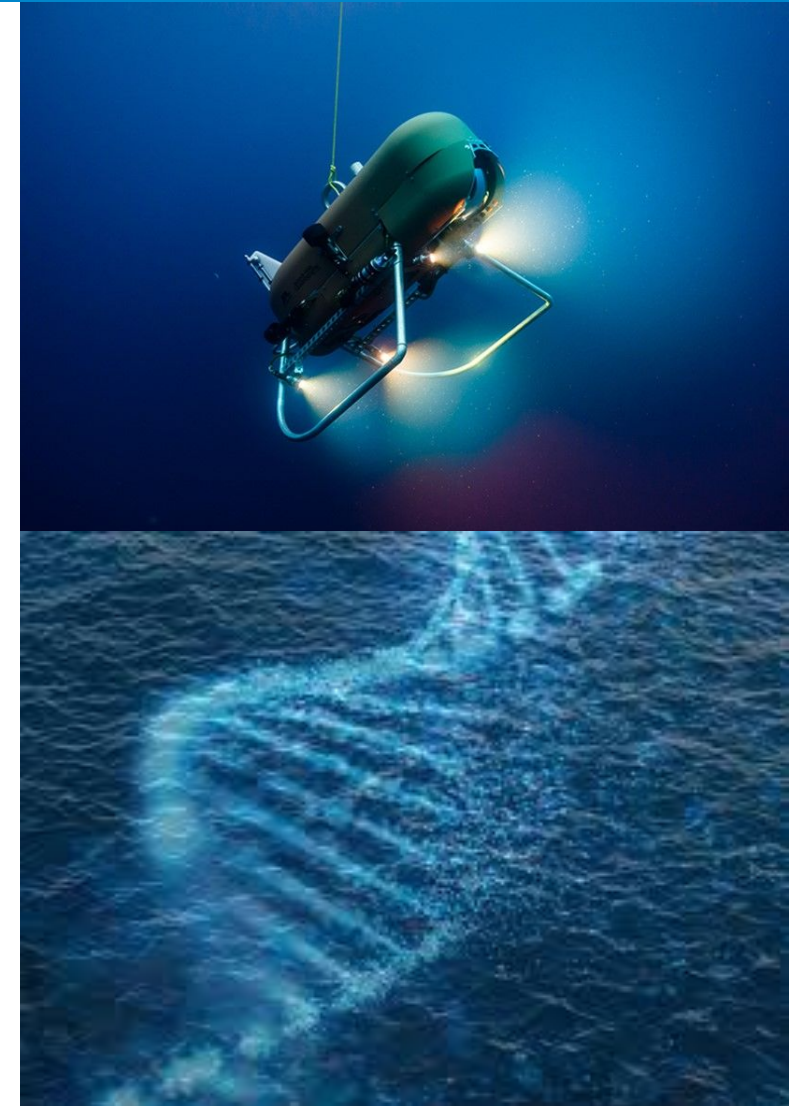
- Mission systems shakedown

## Potential Exploration Activities

- Mid-Atlantic Ridge
- U.S. Southeast and Caribbean
- Transit to West Coast

## Potential Technology Demonstrations

- Woods Hole Oceanographic Institute *Orpheus* autonomous underwater vehicle demonstration
- eDNA demonstration



# Ocean Exploration Trust 2020



National  
Strategy

Expeditions

Grants and  
Partnerships

NOAA Strategies  
and Plans

OER  
Engagement



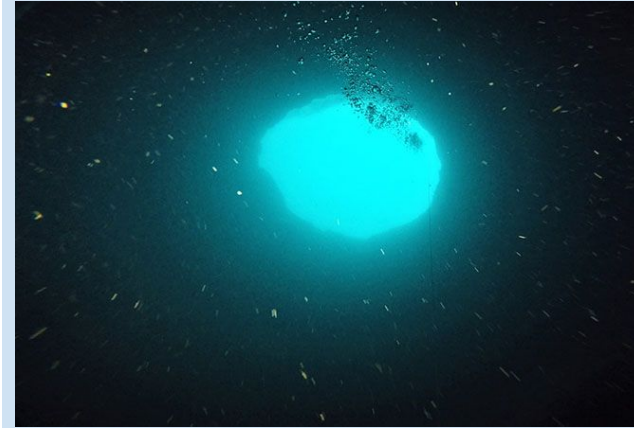
Ocean Exploration  
and Research



# Grant Supported Expeditions in 2020



Paleolandscapes and the ca. 8,000 BP Shoreline of the Gulf of Mexico Outer Continental Shelf 2020



Blue Holes: Development of Innovative Techniques for Exploring Novel Submarine Springs on the Gulf of Mexico Outer Continental Shelf

Gradients of Blue Economic Seep Resources



Wimble Shoals: An Exploration and Characterization of Submerged Cultural and Sediment Resources



# FY20 Grants Competition

Project Title	Principal Investigator
Coordinated Simultaneous Physical-Biological Sampling by ADCP-Equipped Ocean Gliders	Wu-Jung Lee, University of Washington
Deepwater AUV Surveys of WWII U.S. Cultural Assets in the Saipan Channel	Eric Terrill, Scripps Institution of Oceanography, University of California San Diego
Discovering the Submerged Prehistory of the Alpena-Amberley Ridge in Central Lake Huron	John O'Shea, University of Michigan
Paleolandscapes, Paleoecology, and Cultural Heritage on the Southern California Continental Shelf	Amy Gusick, Natural History Museum of Los Angeles County
Submarine Ring of Fire: Hydrothermal Hunt in the Northern Mariana Back-Arc*	Carol Stepien, NOAA Pacific Marine Environmental Laboratory/David A. Butterfield, Joint Institute for the Study of the Atmosphere and Ocean

\*Project also supported by cooperative institute

National  
Strategy

Expeditions

Grants and  
Partnerships

NOAA Strategies  
and Plans

OER  
Engagement

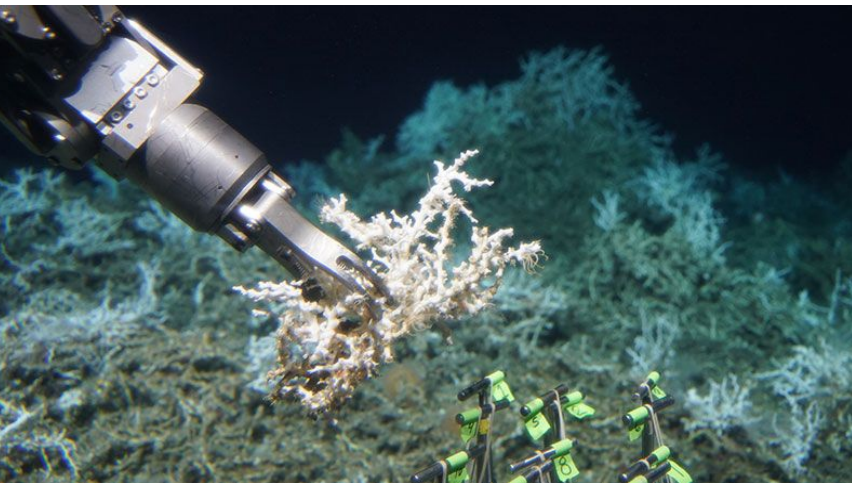


Ocean Exploration  
and Research

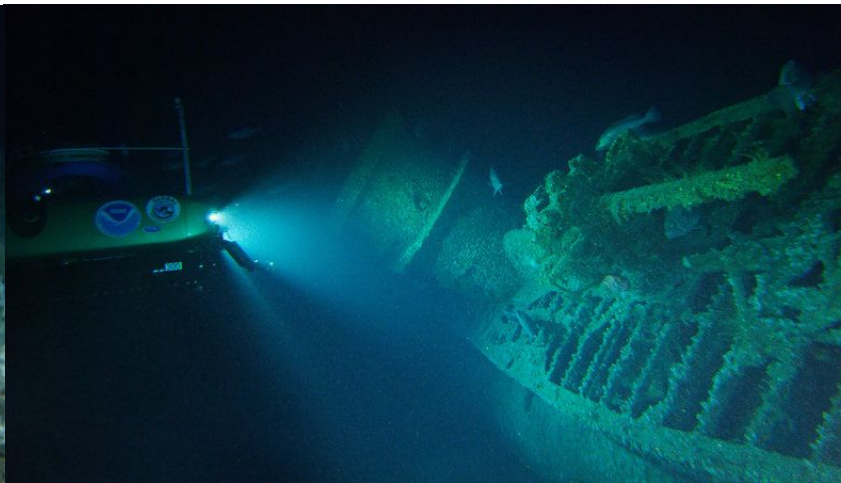


# FY21 Grants Competition

- 121 pre-proposals received
- 36 applicants encouraged to submit full proposals (due October 22)
- Award announcement expected February 2021
- \$3 million in anticipated funding



**Exploration**



**Marine Archaeology**



**Technology**

**National  
Strategy**

**Expeditions**

**Grants and  
Partnerships**

**NOAA Strategies  
and Plans**

**OER  
Engagement**



**Ocean Exploration  
and Research**

# Ocean Exploration Cooperative Institute: Year 2

## University of Rhode Island:

- Management of Cooperative Institute



## University of New Hampshire:

- Acquiring and Implementing DriX system for Autonomous Surface Vehicle, Autonomous Underwater Vehicle, and Remotely Operated Vehicle Launch and Recovery Operations

## University of Southern Mississippi:

- Conduct Demonstrations of Combined Imaging and Bathymetric Autonomous Underwater Operations for Mapping and Characterization in the Gulf of Mexico
- Continue Increasing Ocean Exploration Discovery and Data Utilization by Enabling Diversification

## Woods Hole Oceanographic Institute:

- Advancing Novel Autonomous Underwater Vehicle Robotics for Full-Ocean Depth Exploration and Research
- Submarine Ring of Fire: Hydrothermal Hunt in the Northern Mariana Backarc\*
- Exploring Mesopelagic Biodiversity: Environmental DNA and Light in the Ocean Twilight Zone
- Expand Seafloor Characterization Technologies — Shifting Operations Ashore

\*Project also supported through OER grant

National  
Strategy

Expeditions

Grants and  
Partnerships

NOAA Strategies  
and Plans

OER  
Engagement



Ocean Exploration  
and Research



# FY20 NOAA National Ocean Partnership Program

Project Title	NOAA Office
Seafloor Habitat Characterization in Cordell Bank, Greater Farallones and Monterey Bay National Marine Sanctuaries	Office of National Marine Sanctuaries
The Geologic Origin and Biology of Unexplored Seamounts in the Expansion Area of the Papahānaumokuākea Marine National Monument	Office of Ocean Exploration and Research
Escanaba Trough Hydrothermal Sulfide System — Exploring the Seafloor and Oceanic Footprints	Office of Ocean Exploration and Research
Expanding Exploration and Using Innovative Technologies to Assess the Rapidly Changing Bering and Chukchi Seas	Pacific Marine Environmental Laboratory
Enhancement of Private Sector Partnerships and NOAA Vessel Infrastructure for ‘Omics Tracking of Ecosystem Condition and Trends	Atlantic Oceanographic and Meteorological Laboratory

**National  
Strategy**

**Expeditions**

**Grants and  
Partnerships**

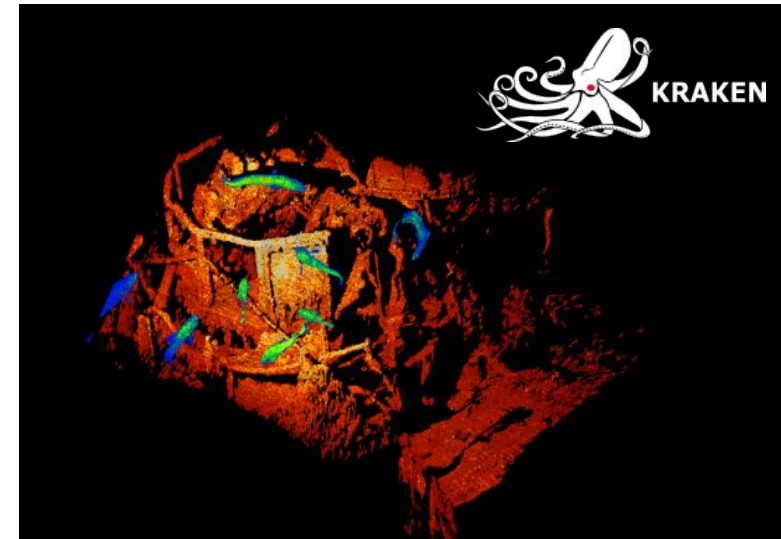
**NOAA Strategies  
and Plans**

**OER  
Engagement**



**Ocean Exploration  
and Research**

# Emerging Partners and Platforms



National  
Strategy

Expeditions

Grants and  
Partnerships

NOAA Strategies  
and Plans

OER  
Engagement



# NOAA Research and Development

## Three Vision Areas:

- Reducing societal impacts from hazardous weather and other environmental phenomena
- Sustainable use and stewardship of ocean and coastal resources
- A robust and effective research, development, and transition enterprise



National  
Strategy

Expeditions

Grants and  
Partnerships

NOAA Strategies  
and Plans

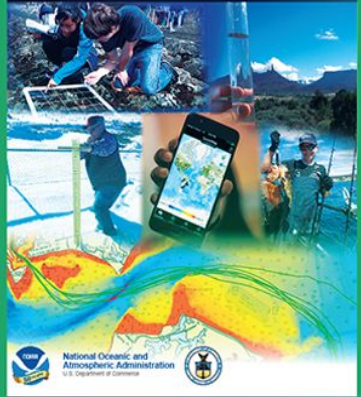
OER  
Engagement



Ocean Exploration  
and Research

# NOAA Science and Technology Strategies

## Draft NOAA Citizen Science Strategy Applying the Power of the Crowd

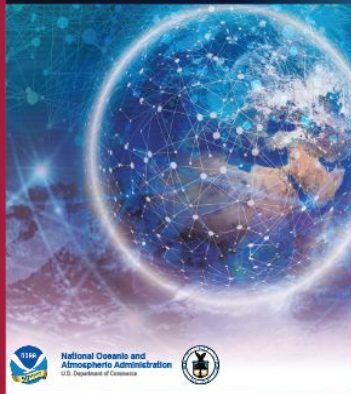


NOAA welcomes your input on this draft strategy. Please send your comments via email to [comment@noaa.gov](mailto:comment@noaa.gov) by September 15th. For complete instructions and information, please visit <https://www.noaa.gov/NOAA-Science-Technology-Focus-Areas>.

NOAA Science & Technology Focus Areas:  
Uncrewed Systems • Artificial Intelligence • Data • Cloud • Citizen Science • Data August 2020

**NEW!**  
Data

## NOAA Data Strategy Maximizing the Value of NOAA Data



NOAA Science & Technology Focus Areas:  
Uncrewed Systems • Artificial Intelligence • Data • Cloud • Citizen Science • Data July 2020

## NOAA Cloud Strategy Maximizing the Value of NOAA's Cloud Services



NOAA Science & Technology Focus Areas:  
Uncrewed Systems • Artificial Intelligence • Data • Cloud • Citizen Science • Data July 2020

Cloud  
**FINAL!**

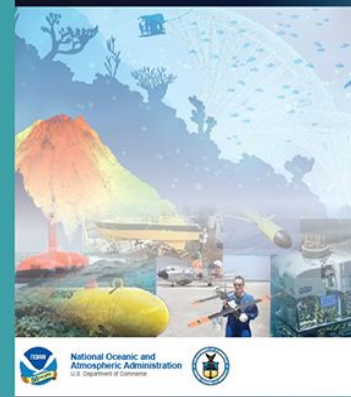
Artificial  
Intelligence

## NOAA Artificial Intelligence Strategy Analytics for Next-Generation Earth Science



NOAA Science & Technology Focus Areas:  
Uncrewed Systems • Artificial Intelligence • Data • Cloud February 2020

## NOAA Uncrewed Systems Strategy Maximizing Value for Science-based Mission Support



NOAA Science & Technology Focus Areas:  
Uncrewed Systems • Artificial Intelligence • Data • Cloud • Citizen Science • Data Revised September 2020

Uncrewed  
Systems  
**NAME  
CHANGE!**

'Omics

## NOAA 'Omics Strategy Strategic Application of Transformational Tools



NOAA Science & Technology Focus Areas:  
Uncrewed Systems • Artificial Intelligence • Data • Cloud February 2020

National  
Strategy

Expeditions

Grants and  
Partnerships

NOAA Strategies  
and Plans

OER  
Engagement

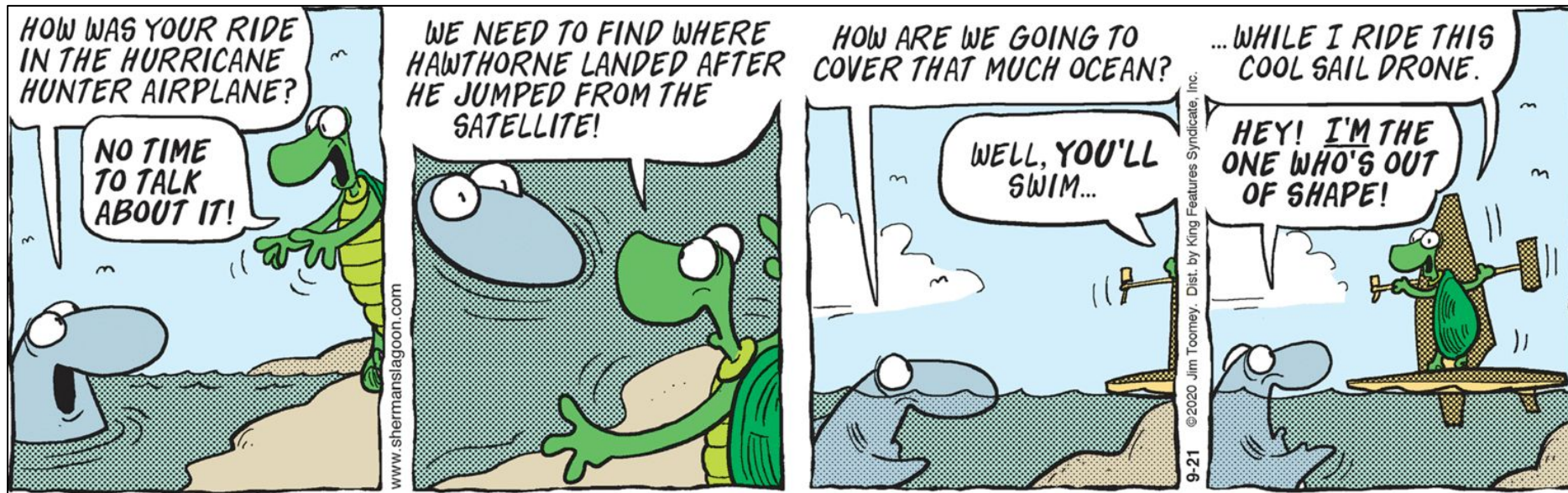


Ocean Exploration  
and Research



# NOAA Uncrewed Systems Update

- Draft implementation plan is in development, due end of October
- Captain Philip Hall has assumed command of the Office of Marine and Aviation Operations' Uncrewed Systems Operations Center
- Operations Center will be staffed up over next year

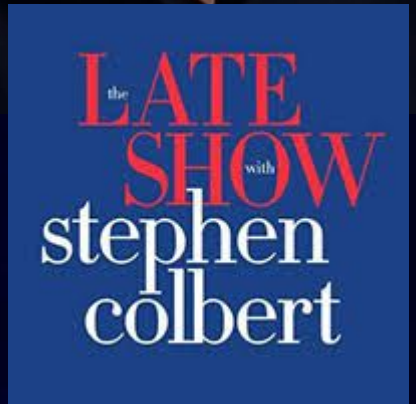
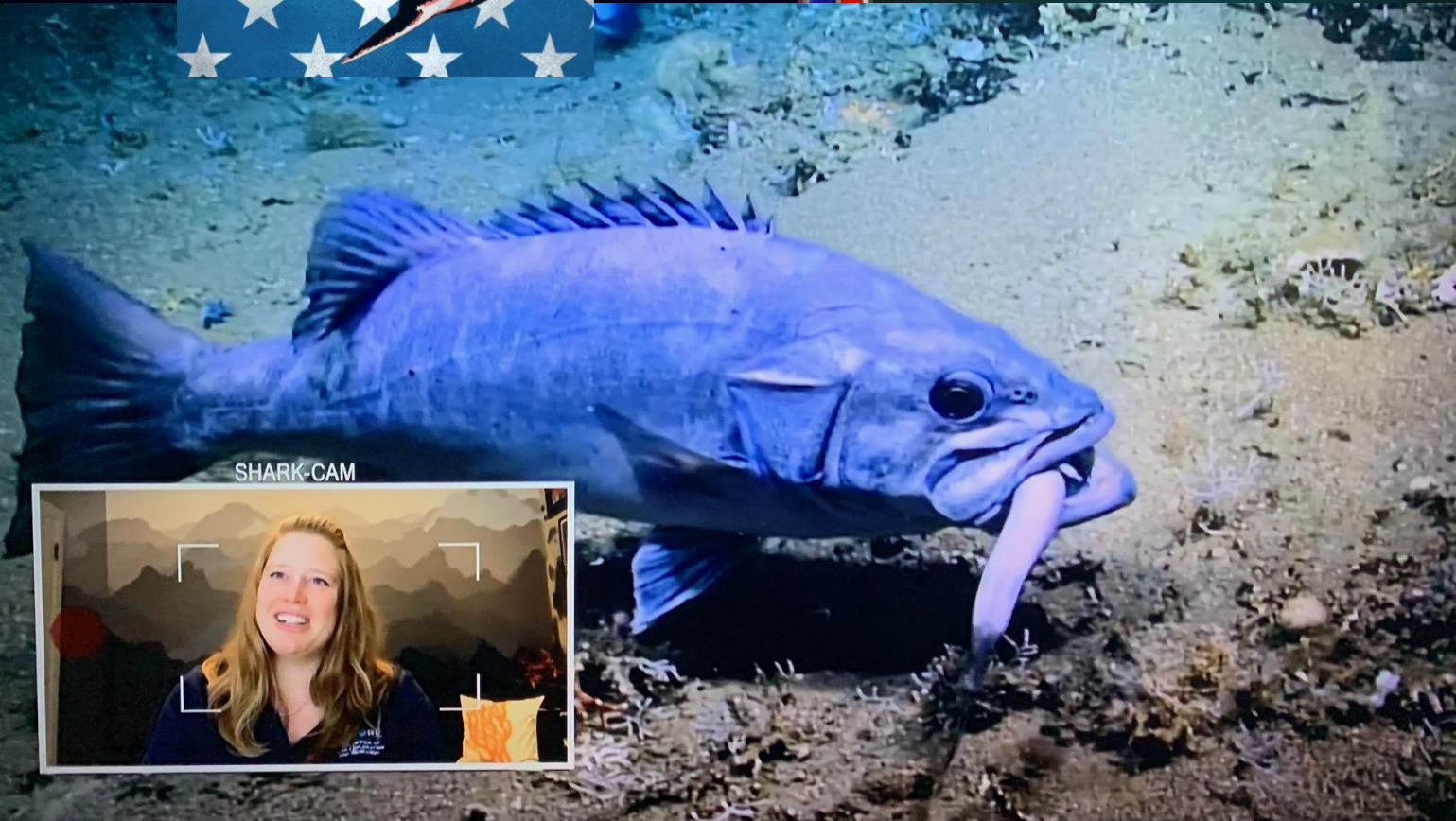


# OER Engagement Updates

- Cross-institution education website
- Educator professional development workshops
- Web/social media metrics
- Image of the day

August 2020						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5







# Questions?

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



Ocean Exploration  
and Research