

A deep-sea hydrothermal vent scene, likely a black smoker, with a large, dark, mineral-rich structure rising from the seafloor. A bright blue light source, possibly a submersible or ROV, is visible in the upper right, illuminating the scene. A yellow cable or rope hangs vertically from the right side of the frame.

Ocean Exploration

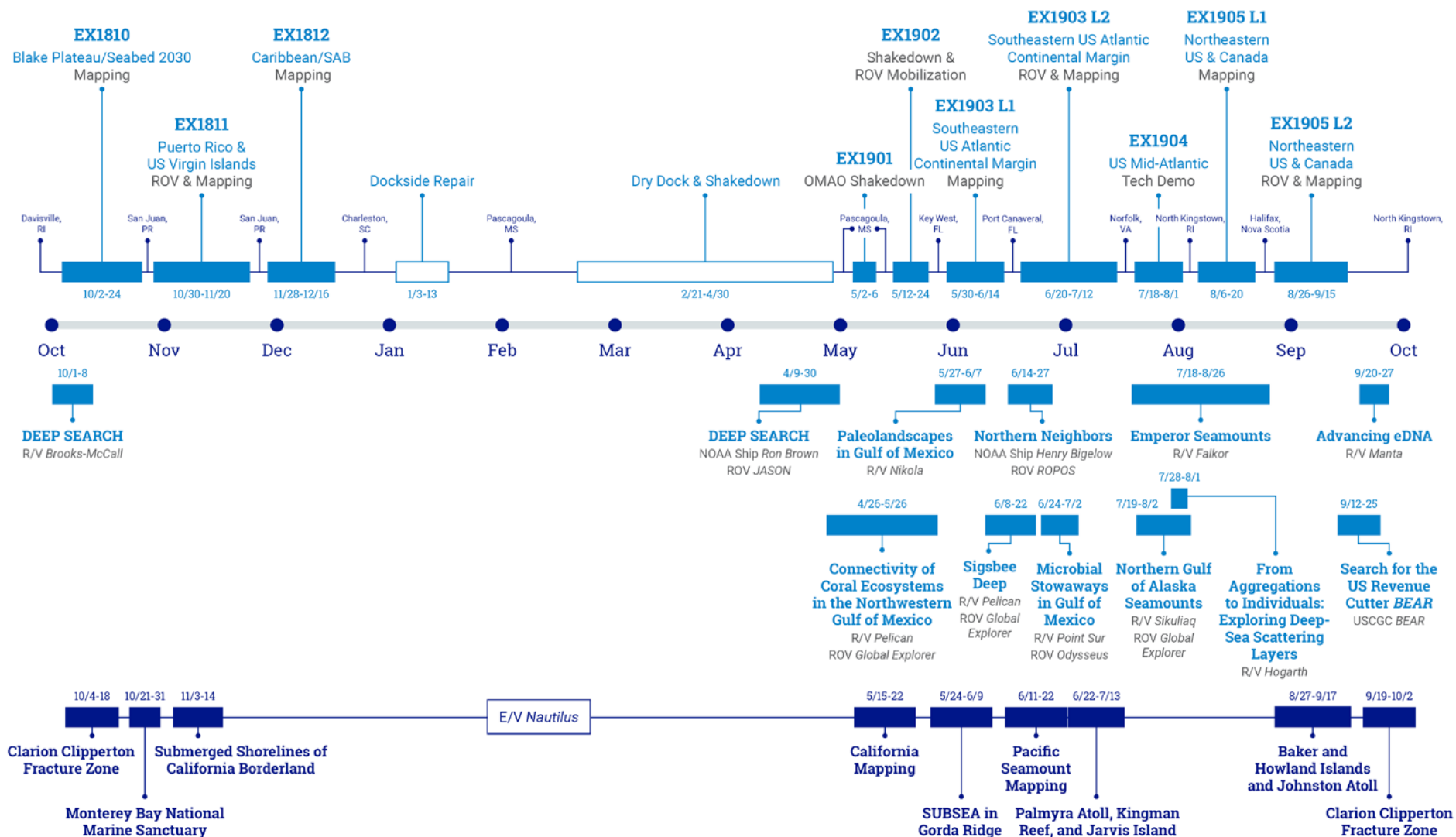
A U.S. Priority



“Toll on Science and
Research Mounts as
Government Shutdown
Continues”

— New York Times, 1/5/2019

2019 Expedition Activities



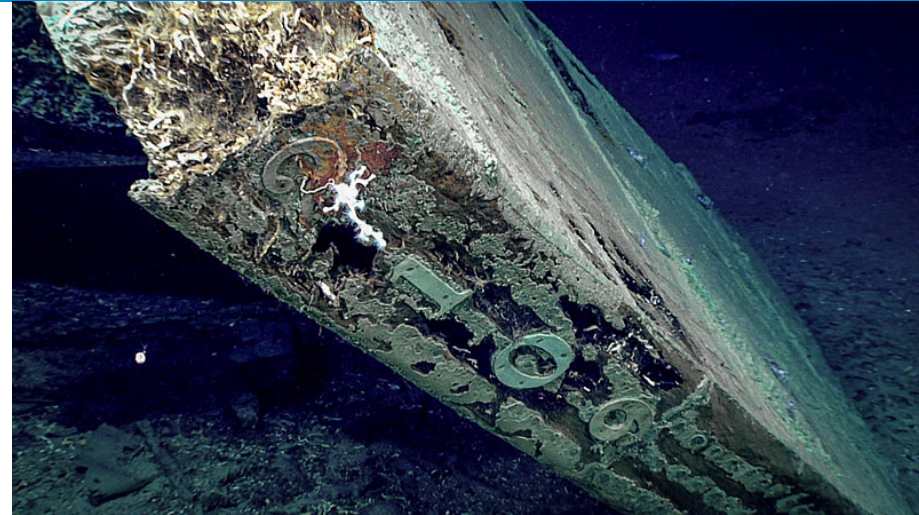
10 Years of Ocean Exploration



Ocean Exploration in 2019

Shakedown and Sea Trials 2019

(EX1902): unexpectedly discovered wreck of wooden sailing vessel (likely mid-19th century)



Windows to the Deep 2019

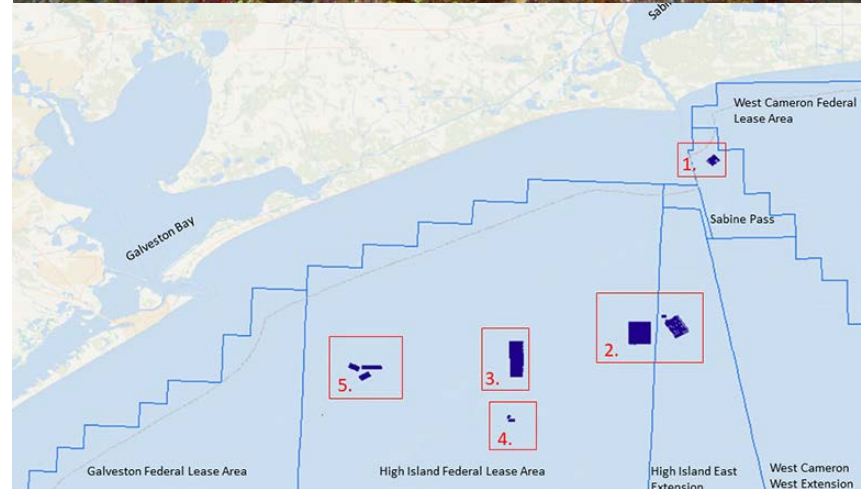
(EX1903): Encountered shark frenzy on swordfish fall and methane seep field



Ocean Exploration in 2019

CYCLE (FFO): Kicked off five-year study to investigate population connectivity for key species of the Flower Garden Banks National Marine Sanctuary

Paleolandscapes (FFO): Collected data to further study possibility of past human habitation along now submerged northwestern GOM



Ocean Exploration in 2019

Journey into Midnight (FFO):

Using the Medusa, a stealth camera system, recorded first sighting of giant squid in U.S. waters



Microbial Stowaways (FFO):

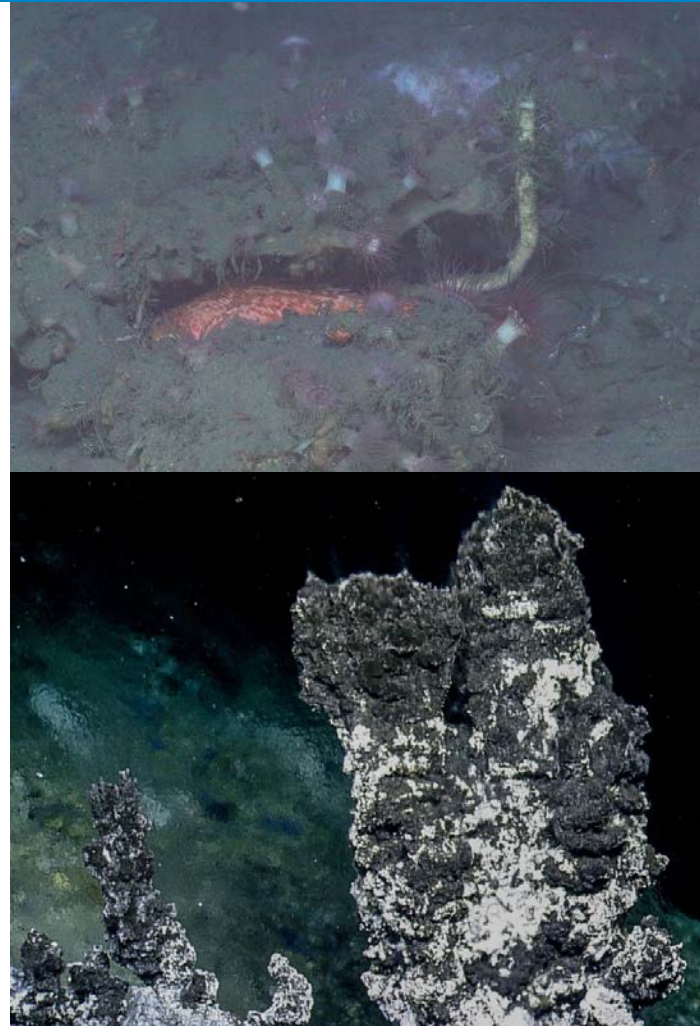
Discovered two 19th century shipwrecks that will shed light on history and how they influence microbial biodiversity



Ocean Exploration in 2019

DEEP SEARCH 2019: Discovered chemosynthetic vestimentiferan tubeworms at methane cold seeps off North Carolina; first tubeworm observations in this part of U.S. Atlantic

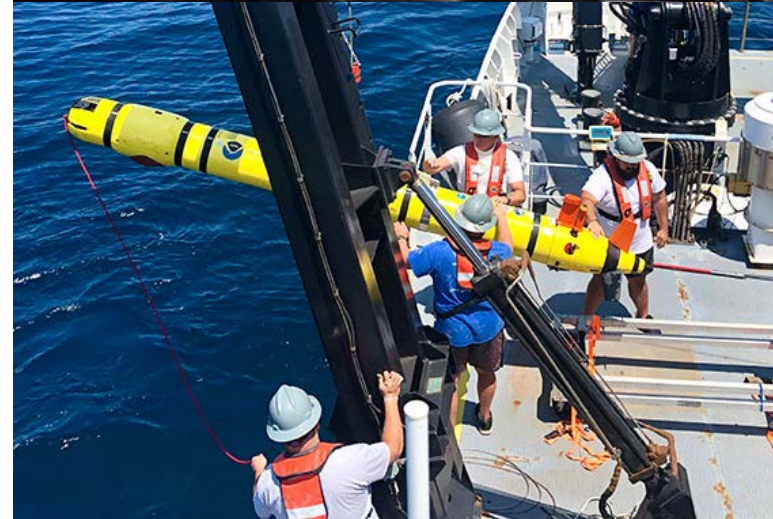
SUBSEA 2019: Discovered Apollo Vent Field at northern Gorda Ridge; named in recognition of lunar landing anniversary and project's blending of ocean and space exploration



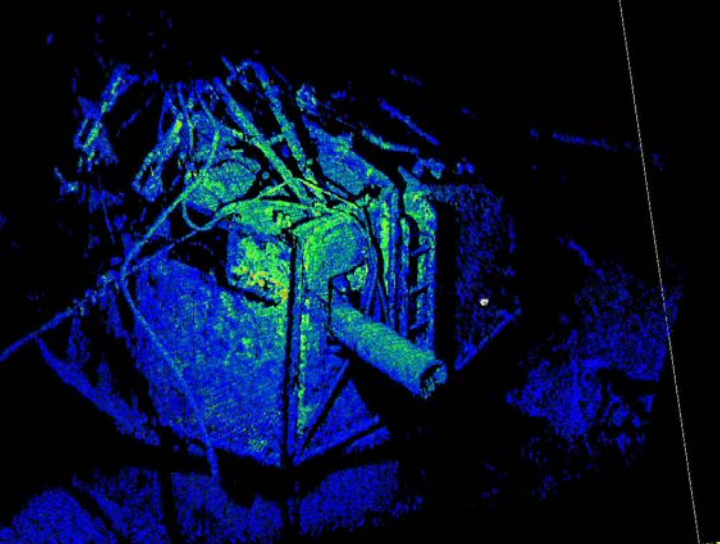
Technology Demonstrations

Shakedown and Sea Trials 2019 (EX1902): Successfully tested new suction sampler, now a standard collection tool on *Okeanos Explorer* ROV expeditions

U.S. Mid-Atlantic Tech Demo (EX1904): Demonstrating, testing, integrating, and evaluating emerging and existing technologies to improve ocean exploration and characterization



Technology Demonstrations





EOS



USA TODAY



Pittsburgh Post-Gazette

SFGATE

Smithsonian.com

SCIENTIFIC AMERICAN

science FRIDAY

Reader's Digest



PROVIDENCE Journal

The New York Times

POPULAR MECHANICS



The Philadelphia Tribune



POPULAR SCIENCE




HUFFPOST



GIZMODO



An underwater photograph of a shipwreck structure, likely a rusted metal hull, heavily encrusted with green and purple coral and other marine life. The scene is dimly lit, with a blue-green tint. The text is overlaid on the right side of the image.

“A long-lost shipwreck was found by accident as NOAA tested equipment”

— CNN, 5/30/2019

- Media/web stories: 36+
- Web log: 10,800 views
- Twitter:
 - ~82,600 impressions
 - ~129 retweets
- Facebook:
 - ~36,200 users reached
 - ~130 shares
 - ~7,300 video views
- Instagram:
 - ~21,800 users reached
 - ~1,650 likes

“Giant Squid, Phantom of the Deep, Reappears on Video”

— New York Times, 6/21/2019

- Media/web stories: 164+
- Web log: ~79,550 views
- Twitter:
 - ~210,800 impressions
 - ~680 retweets
 - ~47,000 video views
- Facebook:
 - ~200,000 users reached
 - ~1,190 shares
 - ~70,700 video views
- Instagram:
 - ~40,250 users reached
 - ~17,850 video views

6/20–7/19



“No Way!’ Stunned Scientists Watch As Wreckfish Eats A Whole Shark”

— HuffPost 7/12/2019

- Media/web stories: 55+
- Web log: 84,370 views
- Twitter:
 - ~190,000 impressions
 - ~680 retweets
 - ~88,300 video views
- Facebook:
 - ~255,200 users reached
 - ~1,260 shares
 - ~805,100 video views
- Instagram:
 - ~27,600 users reached
 - ~18,200 video views

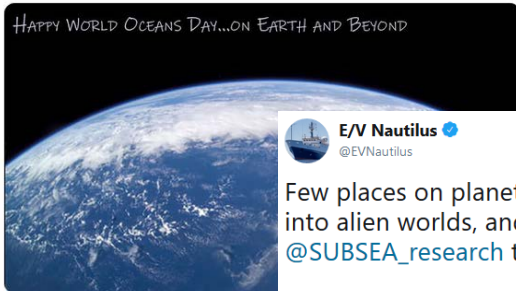
7/5–7/19



World Oceans Day—Which World's Oceans?



Happy #WorldOceansDay! This year, we're joining partners at @NASAJPL, @NASAEarth, @EVNautilus, & @SchmidtOcean as we explore our ocean here on Earth as well as oceans far beyond...in space: [oceanexplorer.noaa.gov/news/oer-updat ...](https://oceanexplorer.noaa.gov/news/oer-updat...)



Few places on planet earth offer glimpses into alien worlds, and Nautilus and the @SUBSEA_research team just discovered one!

For #WorldOceansDay, dive on the otherworldly Apollo Vent Field, part of Gorda Ridge off the California-Oregon border. @NASA @NASA Ames @oceanexplorer



Happy #WorldOceansDay! 🚀 While space may be the final frontier, understanding our own 🌍 helps scientists as they explore space & study how our universe came to be. Celebrate today by exploring how our ocean informs research throughout the solar system: go.nasa.gov/2KB590h

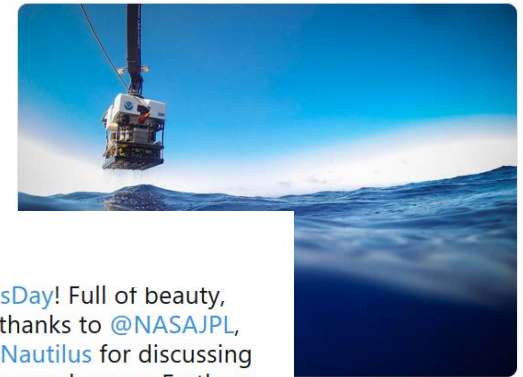


Happy #WorldOceansDay! Full of beauty, wonder and life! Big thanks to @NASAJPL, @NASAEarth & @EVNautilus for discussing how we explore our ocean here on Earth, as well as oceans far beyond...in space!



On #WorldOceansDay, let's explore the visual and scientific parallels between Earth's ocean and space: go.nasa.gov/2KB590h

📷: @NOAA @oceanexplorer





AND

NOAA SHIP OKEANOS EXPLORER



Ocean Exploration
and Research



NOAA

and the

OCTONAUTS



Leveraging Opportunities



Leveraging Opportunity

- Well-understood strong and consistent support from NOAA leadership
- OEAB reauthorization recommendations
- April Exploration Command Center visits
 - Commerce CFO
 - OSTP Director Kelvin Droegemeier
- Follow-up briefings for OSTP and CEQ leadership and staff
- Numerous Capitol Hill visits and briefings

Administration Policies and Priorities

- Executive Order 13817: A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals
- Executive Order 13840: Ocean Policy to Advance the Economic, Security, and Environmental Interests of the United States
- *Science and Technology for America's Oceans: A Decadal Vision*
- *Charting a Course for Success: America's Strategy for STEM Education*

OCEAN EXPLORATION



Seafloor
Mapping



Visual
Surveys



Sampling



Inform traditional and renewable energy siting



Evaluate availability of critical minerals resources



Discover new species with biopharmaceutical/
biotechnology potential



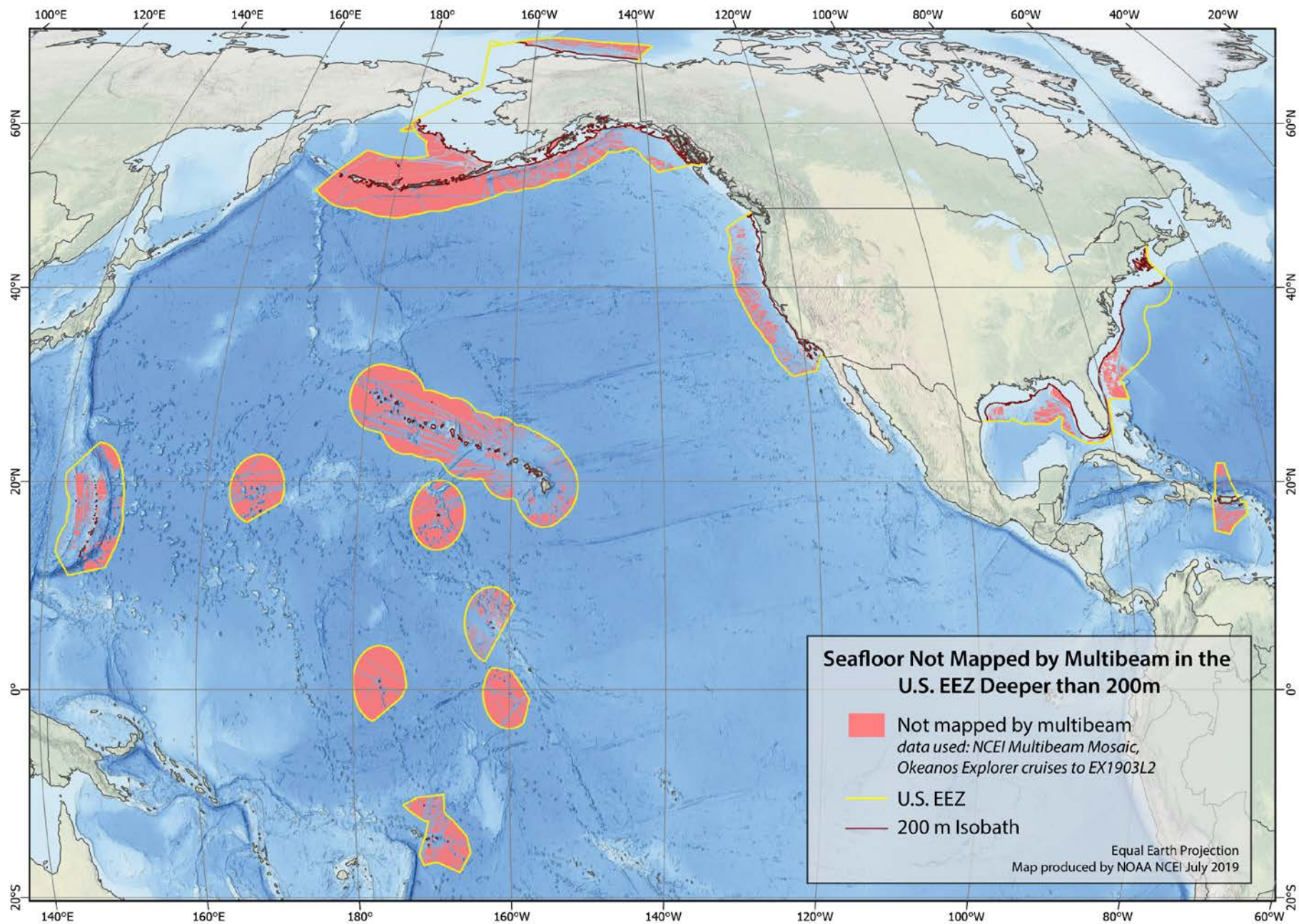
Assess populations and habitats of managed
marine species



Drive innovation of novel technologies



Inspire and educate the next generation of STEM
professionals

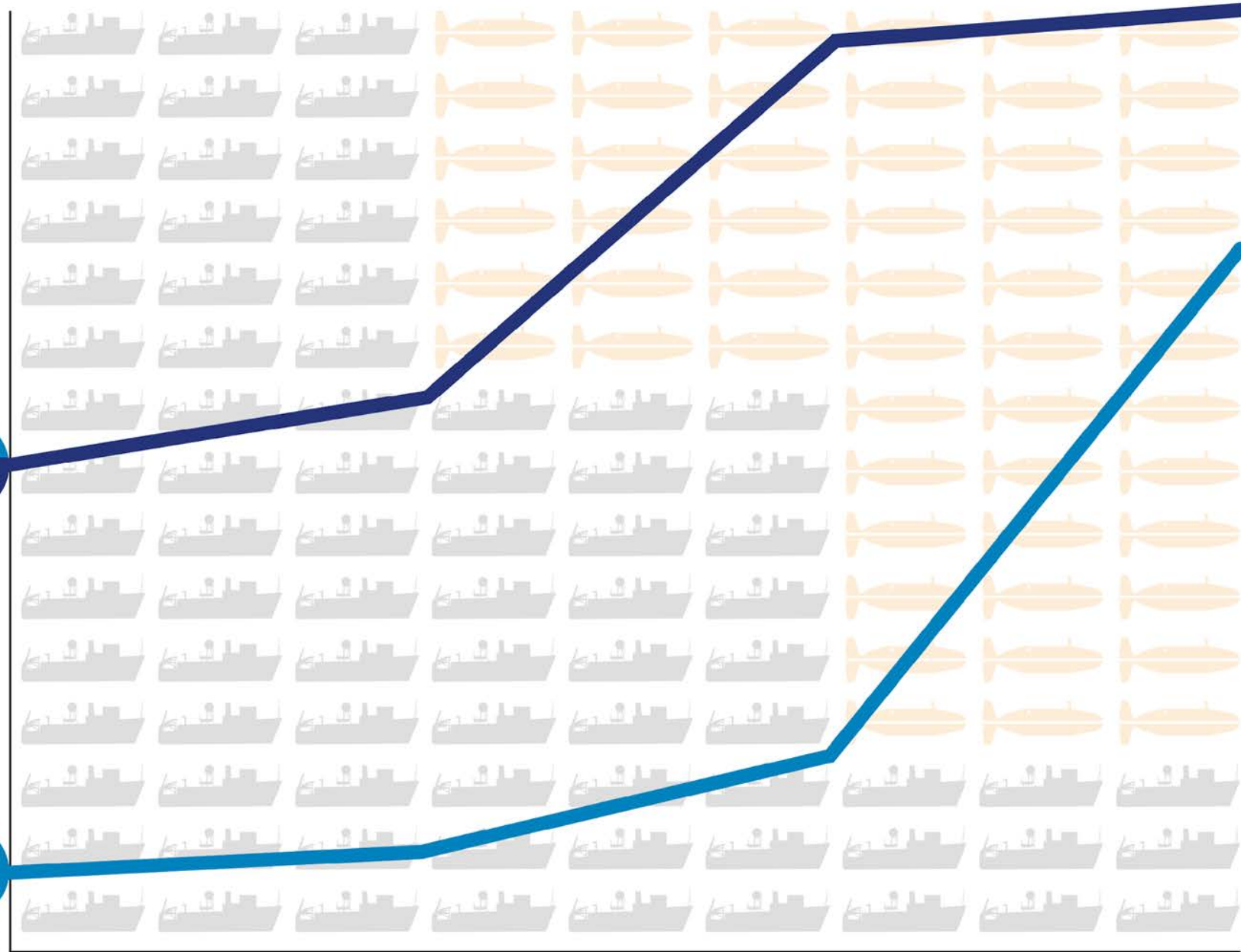


% COMPLETE/LEVEL OF EFFORT



100%

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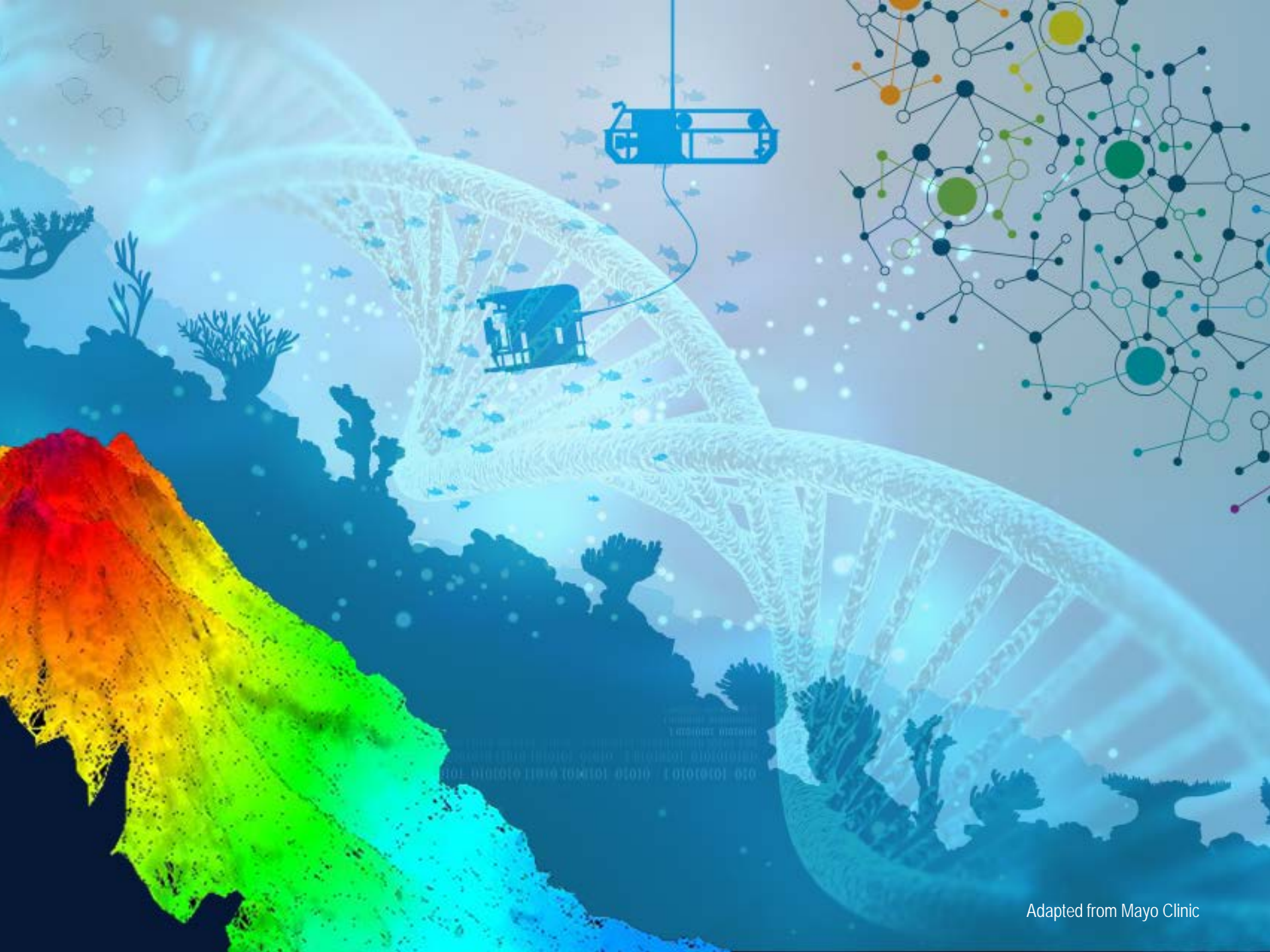


2020

2025

2030

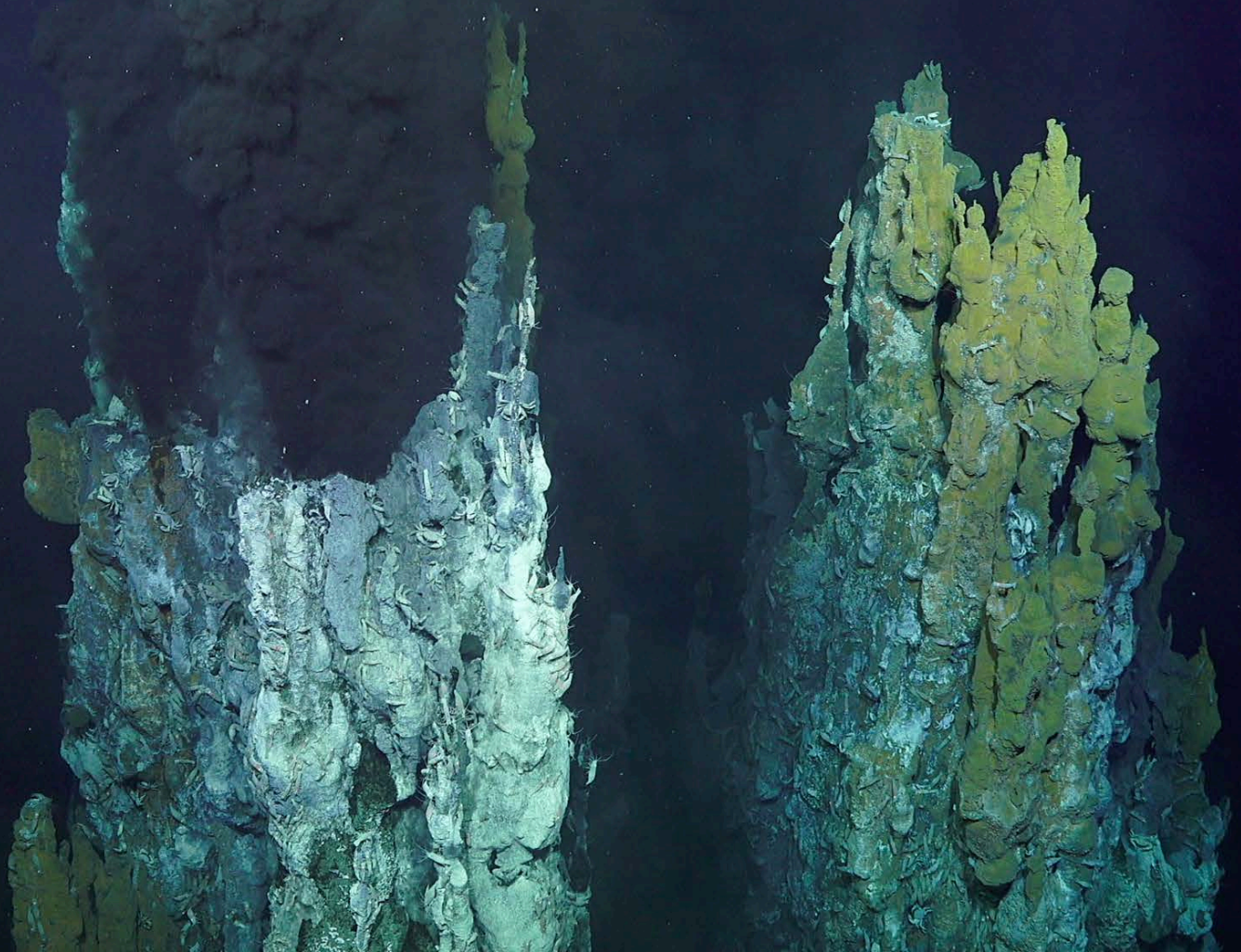
YEARS



Current Status

- “...[ocean science and technology] summit will showcase American leadership and engage the research community and the private sector to explore the unknown ocean, advance marine science, and promote new technologies”—a stated administration priority
- Planning for summit now underway
- Ocean Policy Committee requested a draft National Ocean Exploration Strategy

New Opportunities

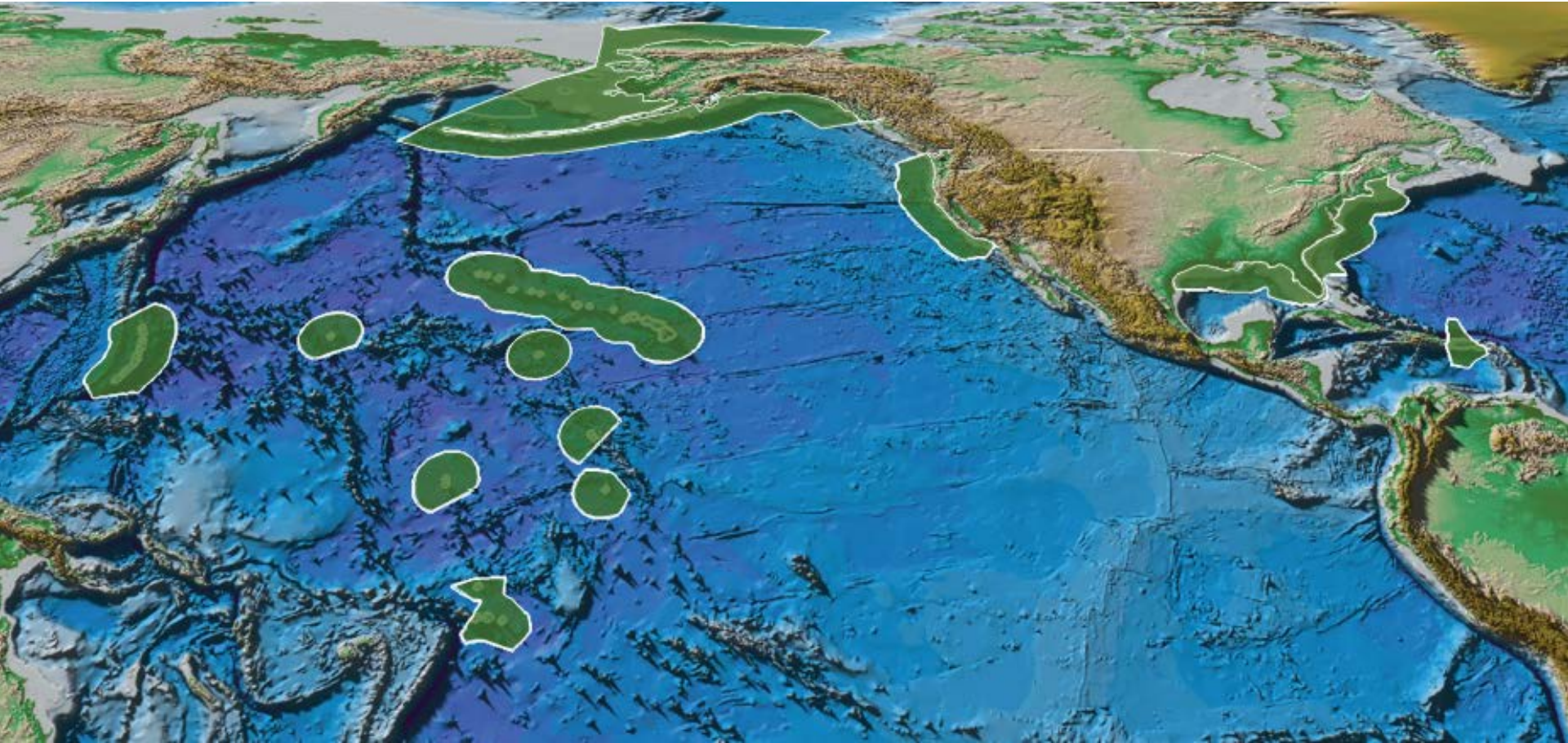


Ocean Exploration Cooperative Institute

THE
UNIVERSITY
OF RHODE ISLAND



Woods Hole
Oceanographic
INSTITUTE



OceanExplorer.NOAA.gov



Ocean Exploration
and Research

Ocean Exploration Cooperative Institute

Fiscal Year 2019

- Initial funding for CI administrative start-up
- Initial projects
 - Continued mapping and characterization of Pacific EEZ
 - Demonstration of new mobile/fly-away system in Gulf of Mexico
 - Demonstration of OSV use for ocean exploration in Gulf of Mexico
 - Operational hardening/testing of WHOI and USM ROV and AUV assets
 - Development of ship of opportunity multibeam system (+ future AUV)

Ocean Exploration Cooperative Institute

Work Program Development

- Negotiation among partners to meet OER and NOAA requirements
- Opportunity to advance
 - Industry partnerships
 - New modes of operation using a variety of platforms and systems
 - Autonomy (vehicles, platforms, processing)
 - Many other areas

National Oceanographic Partnership Program

- New autonomous seafloor mapping technology: \$1.5M from OER leveraged \$1.5M in NOAA NOPP funding—announcement soon
- Campaign mapping of U.S. EEZ: \$1M from OER leveraged \$1M in NOPP funding—announcement soon
- EXPRESS: \$1.3M from OER leveraged \$237K+ in NOPP funding; additional BOEM, USGS support
- Methane sensor testing: \$350K from OER leveraged NOAA SBIR Phase I and Phase II grants and NOPP funds
- NOPP mechanism likely to become more important in future

OER 2019-2022



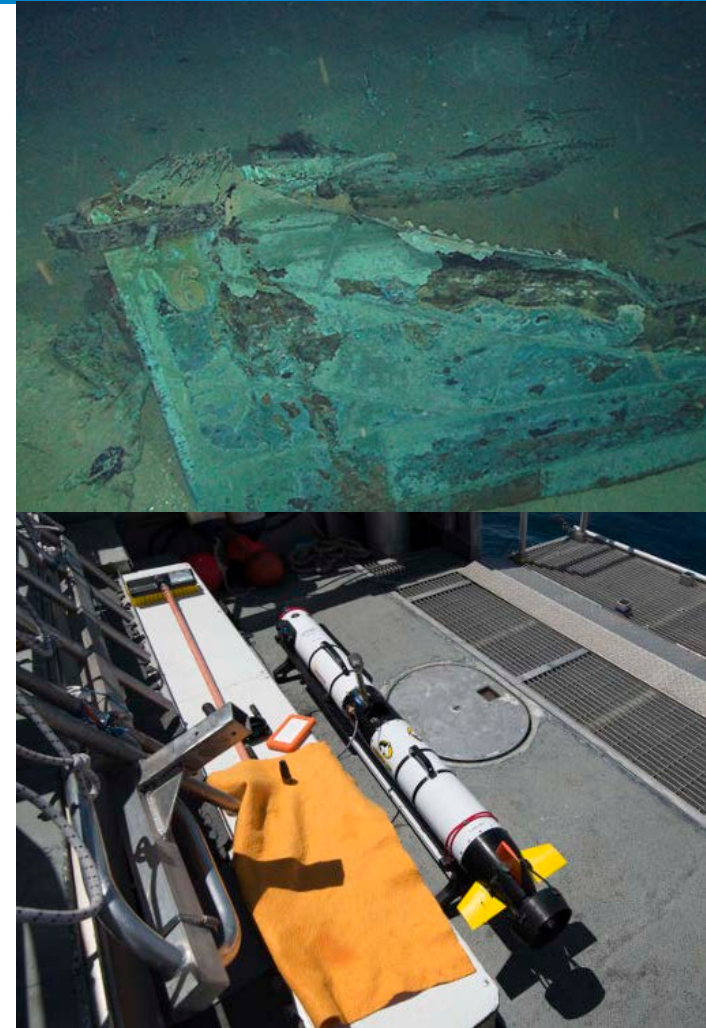
Federal Funding Opportunity Updates

- Fiscal Year 2019: Blue Economy
 - Organisms with biopharmaceutical or biotechnical potential
 - Areas of potential ocean energy development or critical mineral extraction
 - Shipwrecks and submerged cultural resources
- Award announcement expected **Aug/Sept 2019**
- \$3.3 million in anticipated funding



Federal Funding Opportunity Updates

- Fiscal Year 2020: Blue Economy/Seabed 2030
 - Ocean exploration
 - Marine archaeology
 - Technology
- 36 applicants encouraged to submit full proposals due Sept 6 (all letters sent)
- \$3 million in anticipated funding



Okeanos Explorer 2019–2022

- **2019**
 - U.S. and Canadian Continental Atlantic Margin
 - Southeast U.S. and Bahamas (mapping and ROV)
- **2020**
 - Blake Plateau (mapping)
 - U.S. Caribbean (mapping and technology demonstration)
 - Mid-Atlantic Ridge (mapping and ROV)
 - Canada (mapping)
 - Community workshops to identify priorities in central and western Pacific, Alaska
- **2021**
 - Finish work in the Atlantic; in initial planning
- **2022**
 - *Okeanos Explorer* returns to the Pacific

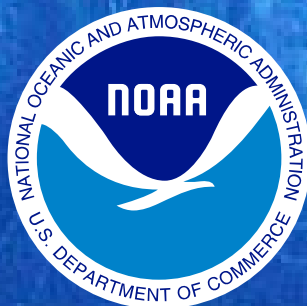


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**Ocean Exploration
and Research**