OCEAN EXPLORATION COOPERATIVE INSTITUTE | EXPLORING THE NATION'S BLUE FRONTIER
OCEAN EXPLORATION TRUST | UNIVERSITY OF NEW HAMPSHIRE | UNIVERSITY OF RHODE ISLAND
UNIVERSITY OF SOUTHERN MISSISSIPPI | WOODS HOLE OCEANOGRAPHIC INSTITUTION

## Dear Fellow Explorers,

I hope you had a happy Halloween! As the calendar turns to Fall, I'm excited for the events ahead for OECI. The E/V *Nautilus* is nearing the end of the season with an expedition to one of the least explored portions of the US EEZ at Jarvis Island from November through December 2023. Many OECI members will be following along as we share our latest results and findings at upcoming meetings including Map the Gaps in Monaco, and AGU in San Francisco. OECI will also be helping to host a meeting in Rhode Island for the Mesophotic Deep Benthic Communities (MDBC) restoration project in early December. All of these meetings will be excellent opportunities for OECI members to connect with each other and ensure that our exciting developments in technology, education/engagement, data, and science can be shared across the broader ocean science community. Likewise, these events also offer opportunities to learn about new developments that may help us advance and accelerate ocean exploration.

Adam

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### AGU-OECI connections

An anticipated 25,000+ attendees will convene in San Francisco, CA, to participate in AGU23. Will you be one of them? **If you/your students are presenting (on OECI-connected/ocean exploration and science topics), hosting a workshop or panel, chairing a session, staffing an exhibit, etc. during the December 2023 meeting, please complete this quick form.** The OECI would like to share these details with the broader ocean exploration community in the November 2023 newsletter and/or post to the OECI website! Questions? Please contact Holly Morin (holly_morin@uri.edu).


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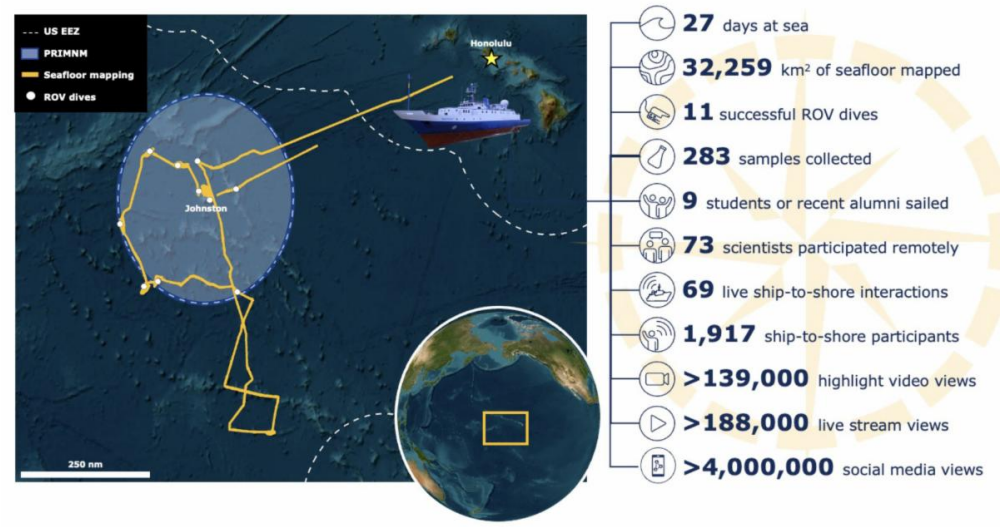
### E/V *Nautilus* Expedition Summary: Deep Sea Biodiversity & Ancient Seamount Exploration near Johnston Atoll (NA153)

From August 2-29, 2023, E/V *Nautilus* conducted a telepresence-enabled expedition to explore the deep-sea biology and geology surrounding Johnston Atoll. Funded by NOAA Ocean Exploration via the Ocean Exploration Cooperative Institute, the expedition used E/V Nautilus' remotely operated vehicles (ROVs) and acoustic sonars to survey unexplored areas located mostly in the Johnston Unit of the Pacific Remote Islands Marine National Monument (PRIMNM), in addition to some mapping south of the Monument where the ship had to move to avoid Hurricane Dora. During 27 days at sea, the expedition mapped 32,259 square kilometers of seafloor and conducted 11 successful ROV dives for a total dive time of over 170 hours, during which 283 samples were collected to support studies on the deep-sea biodiversity, geological age, and volcanic history of the region. Noteworthy observations included dozens of new species, nine high-density coral gardens, evidence of extensive past lava flows at the summits of seamounts, and deep-sea observations of in-place coral reef outcrops.




Please visit the Nautilus Live website for more information about this expedition (NA153) and more recent ocean exploration activities!

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## Remote Operations during the 2023 OECI Multi-Vehicle Exploration Expedition

The OECI Remote Operations project recently wrapped up testing onboard E/V *Nautilus* for the 2023 OECI Multi-Vehicle Exploration Cruise. During this time, focus was placed on specifying the requirements for adequate situational awareness on shore and improving overall protocols towards establishing shore involvement as common practice. Tools under development were tested such as "NavG," a navigational situational awareness tool, which added a bridge to consume data from different vehicle types, manufacturers, and software architectures. Additionally, a network monitor interface was deployed that alerted operators to poor or dropped network connections. Throughout the cruise, network monitoring and testing was also performed through different VPN tunnels and network providers (Marlink VSAT & Starlink). The cruise culminated with a live demonstration of remote capabilities featuring Greensea, the University of New Hampshire (UNH), and Woods Hole Oceanographic Institution (WHOI) all providing support from shore. Greensea gave a demonstration of their remote operation tools; UNH took control of the autonomous surface vehicle, Drix, from shore and gave insight into their shoreside capabilities; and WHOI directed and commanded sampling for the autonomous underwater vehicle, *Mesobot,* from their shoreside operator station.

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## Register for a Deep Dive into Ocean Exploration Technologies: November 7 and 9, 2023

Join NOAA Ocean Exploration **next week** for a **Deep Dive into Ocean Exploration Technologies**, to explore the challenges of deep-sea exploration, introduce several forms of ocean exploration tools, and hear from experts in the field about the latest, cutting-edge technologies making exploring and studying the ocean more accessible than ever before.

**Deep Dives with Ocean Exploration Experts** are 90-minute, online professional learning events that are open to educators, students, and the general public to learn more about ocean exploration topics and careers throughout the year. These interactive events include an introduction to a featured topic, a live question and answer session with an expert in the field, and guided tour of free, online education materials.


With OECI support, the University of Rhode Island's Inner Space Center is pleased to continue its support of these online programs and their associated resources. Since programming began in October 2020, nearly 1800 educators have been engaged in virtual programming, Another ~5000 educators have been engaged through archived PD events available via private YouTube links. **Learn more and register today!**

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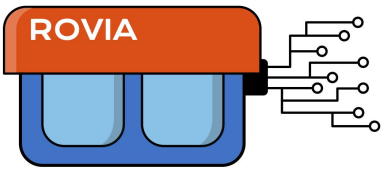
## Machine Learning (Video) Project Update




Deep-sea video is one of the most important data sources in deep-sea science, but also an extreme challenge for data usage and archiving due to the very large data volumes produced. For general use, underwater dive videos can be sparse, with only a few high-value clips interspersed with hours of video relevant only to specific domains. The process of condensing such high-volume data can be time-consuming as human annotators must manually clip videos to identify highlights. To help, OECI-supported researchers and graduate students developed ROVIA, a portable and field-deployable CNN (Convolutional Neural Network) model to identify potential biological, geological, and operational highlights from long-dive videos. This automated video highlight generator provides increased efficiency in condensing deep-sea video to aid in archiving and enhance the utilization of clips for scientific and educational purposes. ROVIA is available to the public through a GitHub repository: https://github.com/oeci/ROVIA.

## Announcements, Events, and Opportunities

### The Knauss Fellowship Application Period is Open

Interested in becoming a 2025 Knauss Marine Policy Fellow? This **one-year, paid** fellowship opportunity for qualified **graduate students** offers direct experience working on the latest issues in ocean, coastal, and Great Lakes management and research. **Applications**

**are due February 15, 2024.** To learn more, please visit: https://seagrant.noaa.gov/knauss-fellowship-program/


## TEDx Event Archive (March 2023): Planetary Stewardship - Ocean Exploration

From the TEDx Boston event in March 2023, learn about the changing nature of oceans, what mysteries remain, and why the health of the oceans is vital. Speakers from this event shared actionable ideas being developed from some of the leading innovation centers and experts.

## Podcast, NOAA's Oceanexplorer: A Deep Dive into Marine Biology and Exploration with Dr. Adrienne Copeland

Embark on a journey with the SHIPSHAPE podcast and immerse yourself in the world of ocean exploration. Adrienne Copeland, PhD, a marine biologist and NOAA expert in ocean exploration, sheds light on the mysteries of the deep and the importance of continued exploration.