

Hello Ocean Explorers!

For this *Ocean Exploration Cooperative Institute (OEI)* Newsletter, I wanted to reflect a bit on partnerships. One of the aspects of the OEI that is most exciting is the collaboration between the partner institutions and between the CI and NOAA. Each partner institution and NOAA Ocean Exploration bring a tremendous amount of expertise and experience to the CI that complements and supports nearly all of our activities.

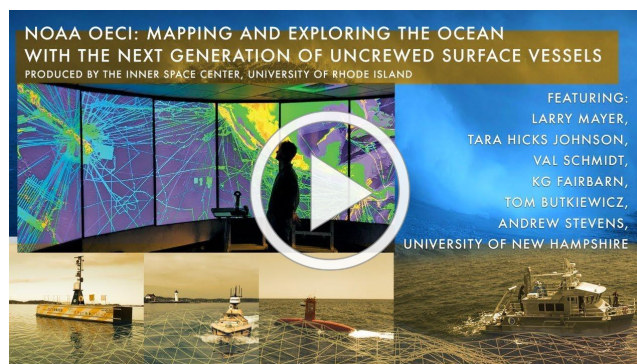
Evidence for this partnering is found throughout the CI. It was on display during the recent Tech Demo, where integration and testing of new vehicles from WHOI was shared with the public through OETs powerful engagement enterprise. Similarly, it could be seen when the ISC brought their production expertise to bear on USM and Tuskegee's compelling NOAA Science Seminar that has been viewed by thousands. Lastly, it is evident as NOAA Ocean Exploration's Exploration and Expedition Division worked with UNH CCOM to plan the upcoming trial of Saildrone in the Aleutian Arc.

The OEI hopes to continue enabling these and many other partnerships through efforts such as this newsletter, the OEI colloquium, and OEI working groups, all of which allow OEI partner institutions and NOAA to freely exchange thoughts and ideas. In order to ensure this spirit of partnership carries on into the next year of the OEI, we just completed an ideation session where scientists, engineers, educators, and operators from the partner institutions collectively discussed new project ideas with the staff of NOAA Ocean Exploration for potential inclusion in the OEI Year 4 proposal. Partnerships, although not always easy to develop or maintain, create an OEI that is greater than the sum of its parts.

Best regards,
Adam Soule

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OEI-focused NOAA Science Seminars



The fourth of six, OECI-focused NOAA Science Seminars took place on , **October 20, 2021**. Seminar presenters from the University of New Hampshire (UNH) provided an overview of UNH's Center for Coastal and Ocean Mapping's role in supporting the collective OECI goal of establishing a new paradigm for ocean exploration that will allow a suite of autonomous systems to extend the exploration footprint and capability of a manned vessel by conducting multiple, simultaneous, coordinated, mapping, exploration and characterization programs. This will greatly increase the efficiency and effectiveness of exploration efforts. UNH's activities focus on the use of autonomous or "uncrewed" surface vessels that can become "force multipliers" for the deployment of mapping and other sensors, or can serve as both a mapping platform and communications hub, tracking and relaying information to and from submerged platforms (the AUVs and ROVs of OECI partners WHOI, USM and OET) the "mother ship" (e.g. OET's Nautilus) and to shore and beyond (using URI's Inner Space Center). To watch the YouTube recording of this seminar event, and other seminars in the series, please visit the [Inner Space Center's YouTube Channel](#).

We hope you will join us for the **next OECI NOAA Science seminar**, which will take place on **November 17, 2021, at 3pm ET**. This seminar, *NOAA OECI: AUV Orpheus- Enabling New Exploration and New Questions in the Deep Ocean and Beyond*, will provide an overview of the new Orpheus class of autonomous underwater vehicles developed at the Woods Hole Oceanographic Institution (WHOI). These vehicles offer to greatly reduce the complexity and risk of accessing hadal depths by combining time-tested deep-sea technology with advanced location-tracking software created by NASA to enable sophisticated exploration and study of the deep ocean. WHOI deep-sea biologist, Tim Shank, and mechanical engineer, Casey Machado, will review the objectives and results of a spring 2021 tech demo expedition funded by the NOAA Ocean Exploration Cooperative Institute aboard the NOAA ship Okeanos Explorer to test two Orpheus vehicles, including one on its first open-ocean dives.



Full OECI Seminar connection details are available on the [OECI NOAA Seminar webpage](#).

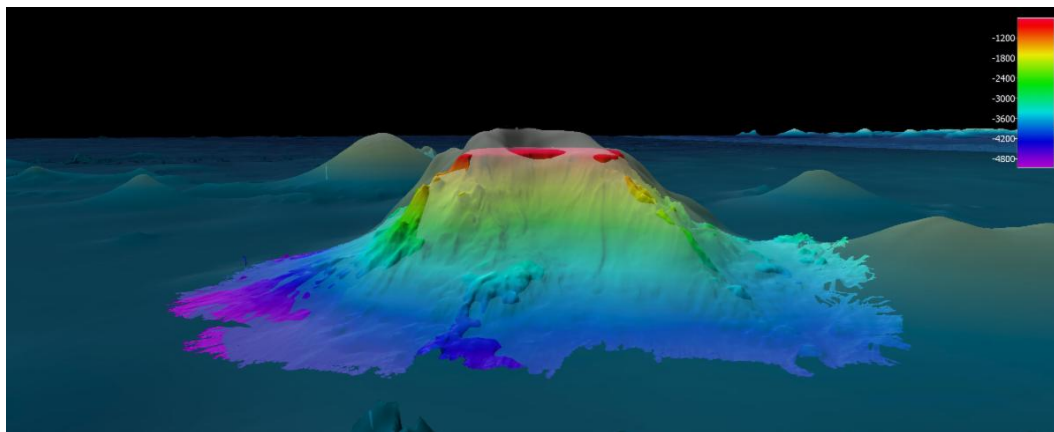
[OECI Seminar Schedule](#)

[E/V Nautilus Update: Transitioning operations to within the central Pacific](#)

Starting in mid-October, 2021, the E/V *Nautilus* transitioned its ocean exploration efforts to

focus within the central Pacific Ocean Basin. After successful multi-vehicle operations off the coast of southern California, on October 12, 2021, the team set sail on a 10-day mapping expedition funded by the OEI. During its transit from California to Hawaii, the ship collected key mapping data to fill gaps in the U.S. EEZ coverage southeast of Hawai'i as well as data gaps in international waters.

The EV *Nautilus* team recently wrapped up a 20-day mapping expedition along the previously unexplored Lili'uokalani seamount chain, located northwest of the main Hawaiian Island Chain, in an expansion area of the Papahānaumokuākea Marine National Monument (PMNM). Over 32,900 square kilometers of multibeam coverage was provided during this cruise. This was the first-ever mapping survey of the Lili'uokalani seamounts; mapping is critical for collecting detailed seamount imagery that will help scientists understand how these seafloor features formed. Mapping data will also help researchers determine target depths for future ROV dive sites. The *Nautilus* team will return to the area for additional ROV exploration in 2022.



Starting today, November 15, the team begins its next ROV expedition, Lu'uaehikiikapapakū, exploring macro-biology and deep-sea rocks in the Wentworth Seamounts. This region of the PMNM that has never been explored via ROV holds promise to determine the previously unrecognized southernmost extent of the Wentworth Seamounts, a small chain of Cretaceous "hotspot" or "mid-plate" volcanoes created between 66 and 145 million years ago. Be sure to follow along with the ship's activities, interact with scientists, and watch live-streamed ROV footage from the expedition on [NautilusLive.org](https://www.nautiluslive.org).

As the E/V *Nautilus* moves west from North America, the Ocean Exploration Trust (OET), as well as the OEI, gratefully acknowledges generations of indigenous and local communities of the Pacific Rim and Oceania. OET is working closely with PMNM collaborators to inform research priorities, ensure culturally-grounded collection protocols, and connect with local communities. All of these efforts support opportunities to work with Native Hawaiians and preserve the cultural values, knowledge, and practices of their cultural heritage while advancing modern science and ocean exploration together.

OEI Tech Demo Activities and Updates

The final activity of the 2021 OEI technology

demonstration recently wrapped up. Two teams, one from the University of New Hampshire (UNH) and the other from Woods Hole Oceanographic Institution (WHOI), conducted cooperative operations at the UNH marine facility to



demonstrate collaboration between the surface vessel *DriX* and the autonomous underwater vehicle *Mesobot*. The goal of these efforts was to refine communication protocols between these two systems that will enable their collaborative exploration away from a host vessel. The long term vision is to have the sensors on *DriX* inform *Mesobot's* exploration. Ultimately these mission adjustments will become autonomous.

Events and Opportunities

NOAA Ocean Exploration Education/DE&I Mini-Grants

NOAA Ocean Exploration's Outreach and Education Division, in cooperation with the National Marine Sanctuary Foundation, is thrilled to announce the launch of the Ocean Exploration Education Mini-Grants program. These small grants (\$10-25,000) are intended to support Diversity, Equity, Inclusion and Accessibility (DEI&A) efforts that advance ocean literacy, stewardship, and workforce development related to ocean exploration. The RFP can be accessed [here](#) and the **deadline to submit proposals is today, November 15, 2021**.

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