Ocean Exploration and Research

Ocean Exploration Education Highlights

January 2017

Welcome to the NOAA Ocean Explorer Education Highlights Newsletter. This monthly newsletter provides you with quick access to ocean exploration-focused, standards-based tips and tools to bring the excitement and science of ocean exploration into your classroom!

Explore the Central and Western Pacific Ocean with NOAA in 2017!

Illustrated beautifully in this short video, exploration consistently finds that the deep sea is,in fact, full of life! *Video courtesy NOAA OER 2016 Hohonu Moana Expedition.*

Beginning in January, the NOAA Ship *Okeanos Explorer* will be investigating the exceptional biological diversity and dynamic geology found in deepwater environments of the U.S. central and western Pacific Ocean.

Bring your students along via the internet as our team of scientists, technicians, and engineers - at sea and on shore - conduct undersea mapping and remotely operated vehicle (ROV) explorations of these vast and unexplored regions of our planet!

This year's explorations will include southern portions of the Pacific Remote Islands Marine National Monument (PRIMNM), Phoenix Islands Protected Area (PIPA), Tokelau, and Cook Islands, American Samoa and Samoa, the Johnston Atoll Unit of the PRIMNM, and Musician Seamounts north of the Hawaiian archipelago.

Expedition locations, activities and expected dates include:
January 18 - February 10: Bathymetric mapping using multibeam sonar starting in Honolulu and concluding in Pago Pago, American Samoa, passing through the Kingman/Palmyra and Jarvis Units of the Pacific Remote Island Marine National Monument and Tokelau.

February 16 - March 1: ROV and mapping operations starting in Pago Pago, American Samoa, and ending in Apia, Samoa, with the majority of time spent within the waters of American Samoa.

March 7 - March 29: ROV and mapping operations starting and ending in Apia, Samoa, passing

close by Swains Atoll in American Samoa before following the Tokelau seamount trail north through Tokelau and PIPA into the Howland/Baker Islands unit of the PRIMNM.

April 4 - April 21: Mapping operations starting in Apia, Samoa, and ending in Pago Pago, American Samoa, with the majority of time spent within the waters of American Samoa.

April 27 - May 19: ROV and mapping operations starting in Pago Pago, American Samoa, and ending in Honolulu. This leg will include near-daily ROV dives as it transits across the northern portion of the Cook Islands, focusing around both the Jarvis Island and Kingman/Palymra Units of the PRIMNM.

June 20 - July 08: Mapping operations starting and ending in Honolulu, with the majority of time spent within the waters of the Johnson Atoll unit of the PRIMNM.

July 13 - August 3: ROV and mapping operations starting and ending in Honolulu, with the majority of time spent within the waters of the Johnson Atoll unit of the PRIMNM.

August 9 - September 1: Mapping operations starting and ending in Honolulu in the vicinity of the Musician Seamounts north of the Hawaiian archipelago.

September 7 - September 29: ROV and mapping operations starting and ending in Honolulu, with operations in the vicinity of the Musician Seamounts north of the Hawaiian archipelago and in close proximity to the recently expanded Papahānaumokuākea Marine National Monument.

This expedition field season is the third year of the 'Campaign to Address Pacific monument Science, Technology, and Ocean NEeds (CAPSTONE)'. CAPSTONE is a major multi-year exploration effort focused on deepwater areas of U.S. marine protected areas in the central and western Pacific Ocean. Findings from this effort provide critical information to support science-based decision making.

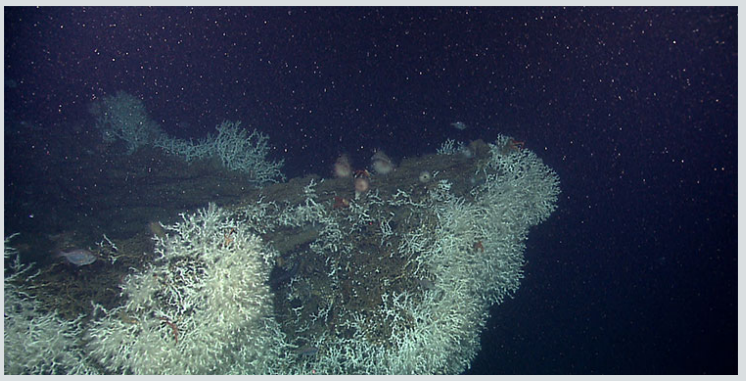
Throughout the year, telepresence technology will allow you to follow discoveries via the NOAA Ocean Explorer website, putting the unexplored ocean directly into your hands.

For more expedition details visit the 2017 field season overview webpage and look for more education resources including essays, lessons, videos and images in the coming months!

In the Spirit of the Season...

What is Marine Snow?

Much of the deep sea appears to be fed by the "compost" from the upper sunlit portions of the sea. As plants and animals at the surface die and decay, they fall toward the sea floor, just like leaves and decaying material fall onto a forest floor. We call this decaying material "marine snow," because it looks a little bit like white snowflakes.



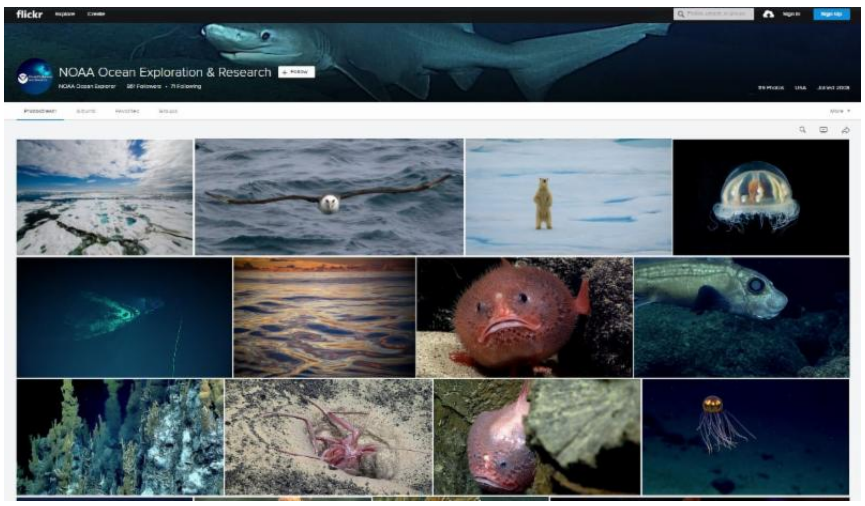
"Marine snow" falls gently on to a coral-covered shipwreck explored in the Gulf of Mexico in 2012. *Image courtesy NOAA.*

During the Exploring Atlantic Canyons and Seamounts 2014 expedition, we came upon this mysterious organism at 2,035 meters depth on Retriever Seamount, floating 50 meters above bottom. We could offer no other label than "strange gelatinous spiked plankton." Steven Haddock, a deep-sea biologist at the Monterey Bay Aquarium Research Institute, identified it as a phaeodarian radiolarian, a single-celled organism that feeds on marine snow.

Radiolarian feeding on marine snow. *Image courtesy NOAA OER, Our Deepwater Backyard: Exploring Atlantic Canyons and Seamounts 2014.*

Read this Ocean Exploration Fact about marine snow.

Ocean Exploration Images



Visit Us on Flickr

From deep-sea jellies to octopuses to never before seen hydrothermal vent communities, explore the NOAA Ocean Exploration Flickr page for hundreds of amazing photos to use in your classroom!

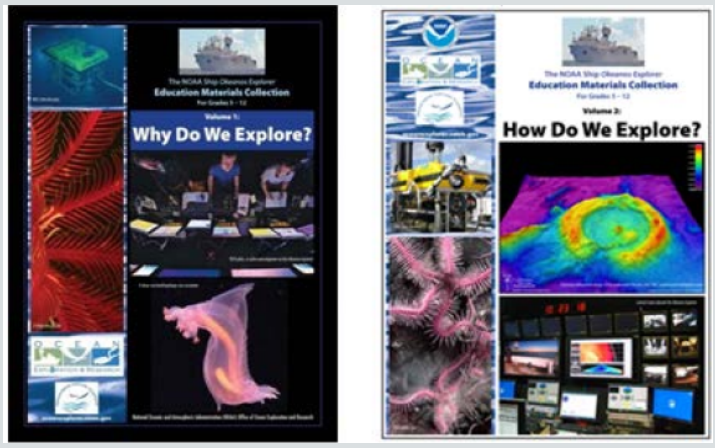
Dr. Peter Etnoyer explores a coral community.
Image courtesy NOAA.

Meet Marine Ecologist, Dr. Peter Etnoyer

"Every time I go underwater, I feel like I am visiting an alien world."

When asked about his work, Dr. Etnoyer tells us, "I look for 'sweet spots' in the ocean, places where life is rich and abundant, and then I work with governments and nonprofit organizations to secure protection of those resources for future generations."

Peter spends much of his time exploring and studying coral reefs, seamounts, and open-ocean, or pelagic, habitats, sometimes finding himself having very close encounters with big fishes, marine mammals and sea turtles. Read more about his experiences in the depths of our vastly unknown ocean he refers to as an "alien world."



The *Exploring the Deep Ocean with NOAA* educator professional development workshop combines background and activities from the NOAA Ship *Okeanos Explorer* Education Materials Collection, Why Do We Explore? and How Do We Explore?

Upcoming Education Professional Development

Our Spring 2017 professional development schedule for *Exploring the Deep Ocean with NOAA* is now posted on our website. Sign up for a full-day onsite professional development at an aquarium or science center near you!

We hope that these Exploration Education Highlights will help you focus more of your classroom teaching and learning on the amazing discoveries taking place right here, right now, on our own Planet Ocean! Onward and downward!

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