Ocean Exploration and Research

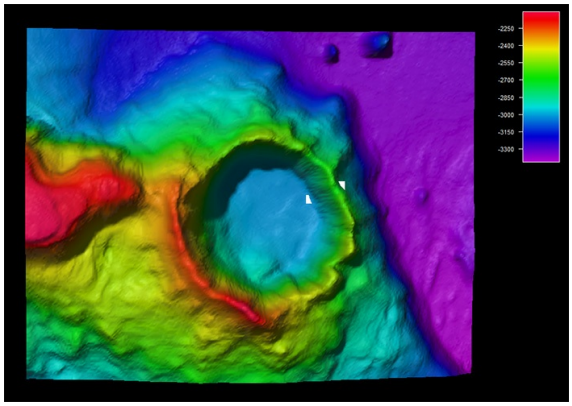
Dive In!

Ocean Exploration Education Highlights March 2016

Welcome to the NOAA Ocean Explorer education updates email newsletter. These monthly emails will provide 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!

What's the Latest from NOAA Ocean Exploration for Your Classroom?

2016 Hohonu Moana: Exploring Deep Waters off Hawai‘i Expedition



Bathymetric image of a crater located on the eastern ridge off Maro Reef. The crater is six kilometers (3.1 nautical miles) across and over three kilometers deep, with walls up to 800 meters high. Image courtesy of the NOAA Office of Ocean Exploration and Research, 2015 Hohonu Moana.

Beginning February 25, the NOAA Ship *Okeanos Explorer* embarked on the second of a three year effort to explore within and just outside of the Papahanaumokuakea Marine National Monument (PMNM) and then move to the western Pacific to explore deep waters surrounding the Commonwealth of the Northern Marianas Islands and the Marianas Trench Marine National Monument. It is sure to be an exciting year of discoveries!

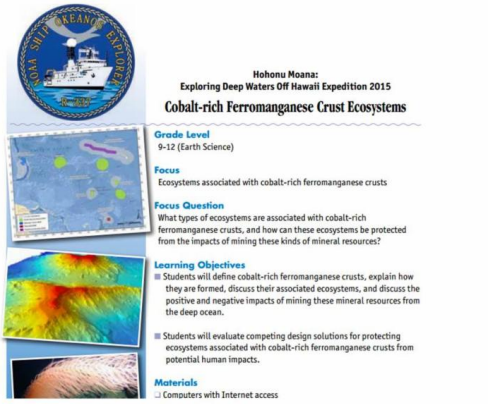
Read this background essay on the extensive natural and cultural history of the PMNM and view the full Expedition Education Module, complete with standards-

based lessons, videos and theme pages on Seamounts, Vents and Volcanoes, and Deep-sea Corals.

Standards-based Lesson

Cobalt-rich Ferromanganese Crust Ecosystems (Grades 9-12)

NGSS: HS-ESS3-2



In this lesson students discuss deep-sea mineral deposits, particularly cobalt-rich ferromanganese crust on the sea floor, and their associated ecosystems.
Students consider these rare earth minerals and the variety of new technologies we as humans use them for. They explore how the ferromanganese crusts are formed, discuss their associated ecosystems, and investigate the positive and negative impacts of mining these resources. Students also explore possible solutions for protecting the ecosystems associated with these crusts from potential human impact.

Note: All lessons are written to support the NGSS and the Ocean Literacy Essential Principles and Fundamental Concepts.

Upcoming Expeditions!

Glacier Bay National Park. Image courtesy of Glacier

Glacier Bay National Park Expedition 2016

March 17-30, 2016, explorers aboard the R/V *Norseman II* will focus on the central, east and west arms of Glacier Bay National Park and its many unexplored remote fjords. Using SCUBA and the Remotely Operated Vehicle *Kraken II*, scientists will

Bay National Park and Reserve.

survey and map a variety of habitats with a particular focus on deep-water corals.

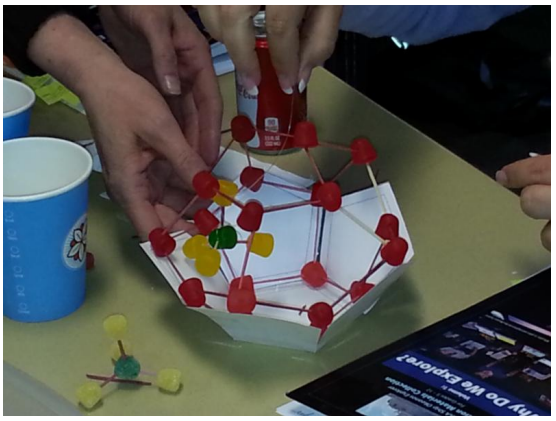
An Educator Webinar is scheduled for March 15. Look for more information coming soon!

Image of the Month

Image courtesy of the NOAA Office of Ocean Exploration and Research, 2015 Hohonu Moana.

One organism's trash is another's treasure. These crinoids have taken up residence on a tall dead sponge stalk to give them better access to food in the water column.

Meet students who have participated in education opportunities on NOAA Office of Exploration and Research expeditions.



Educators build a methane clathrate during a professional development workshop in Seattle Washington.

Featured Education Resources

Explorers-in Training and **Ocean** Careers to Inspire **A**nother **G**eneration of **E**xplorers (OceanAGE)

The OceanAGE web pages invite students to learn about the talented people who explore our ocean planet. From underwater pilots to research scientists, these marine explorers provide students with first-hand knowledge of exciting careers through live interviews, profiles and mission logs. The Explorers-in-Training section shares the recent experience s of young scientist on Ocean Exploration expeditions.

Upcoming Education Professional Development

All spring 2016 professional development opportunities are now listed on our website. Join us for 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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