Ocean Exploration and Research

Ocean Exploration Education Newsletter

January 2018

This newsletter is designed to help you incorporate the excitement and science of ocean exploration and amazing new discoveries into your classroom instruction.

NOAA's Office of Ocean Exploration and Research is now accepting applications for 2018 opportunities in our Explorer-in-Training program

The application period for 2018 is now open and applications are currently being accepted for opportunities from March through September of 2018. **Applications are due January 19, 2018.**

The University Corporation for Atmospheric Research (UCAR) places mapping trainees into the NOAA Ship *Okeanos Explorer*-in-Training program. This program is open to enrolled undergraduate and graduate students as well as individuals who have recently graduated from a higher education program. The Explorer-in-Training program will provide the opportunity to gain experience using an advanced multibeam bathymetric sonar mapping system, while contributing in a significant way to the *Okeanos Explorer* ocean exploration mission.

Chloe Basking, an Explorer-in Training on the NOAA Ship *Okeanos Explorer*. *Image courtesy of NOAA-OER.*

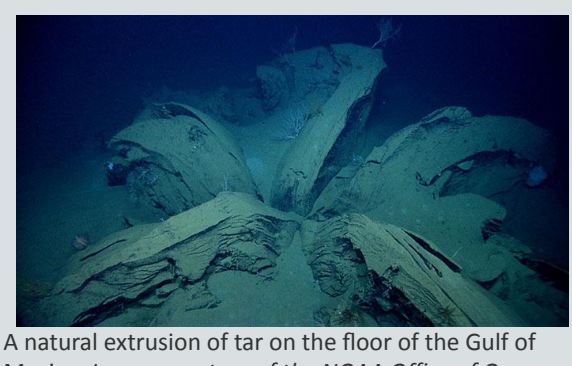
For more information please visit our website here.

Active Asphalt Seep Discovered in the Northern Gulf of Mexico

During the *Okeanos Explorer* Gulf of Mexico 2017 expedition, explorers found an asphalt seep at ~1,150 meters (~3,775 feet) water depth in an area known as Henderson Ridge. This is not the first time that NOAA's Office of Ocean Exploration and Research has discovered asphalt in locations where it was previously unknown in the northern Gulf of Mexico: In 2014, we found evidence of asphalt extrusions that were dubbed "tar lilies" on the seafloor in the same region as the recently found asphalt seep.

Read this mission log to learn more about the significance of these incredible seeps!

High-viscosity oil (black tubules) seeping from the seafloor among white bacterial mats forms asphalt when the extrusions solidify. The long tubules are bent to the left due to the current. *Image courtesy of the NOAA Office of Ocean Exploration and Research, Gulf of Mexico 2017.*



A natural extrusion of tar on the floor of the Gulf of Mexico. *Image courtesy of the NOAA Office of Ocean Exploration and Research, Gulf of Mexico 2014.*

NOAA Ship *Okeanos Explorer:* Wrapping up the 2017 Field Season and 2018 Field Season Overview

The NOAA Ship *Okeanos Explorer* pulled into Pascagoula, Mississippi, late in December after completing the Gulf of Mexico 2017 expedition. Over the last year, the ship conducted several successful expeditions and made its way from the Pacific Ocean through the Panama Canal to the Gulf of Mexico. Three years of expeditions in the western and central Pacific resulted in the identification of new species, exploration of a number of shipwrecks, and many exciting new discoveries!

NOAA Ship *Okeanos Explorer exploring the deep seas. Image courtesy of NOAA OER.*

The *Okeanos Explorer* rings in the New Year with continued exploration of the deep waters of the U.S. Gulf of Mexico and a return to the Atlantic Ocean. In 2018, a multidisciplinary team of scientists, technicians, and engineers - both on board the ship and on shore - will investigate the Gulf of Mexico, Mid- and South Atlantic Bight, Northeast U.S./Canada transboundary area, and a priority mapping area in international waters south of Bermuda. Explorers will conduct undersea mapping and remotely operated vehicle (ROV) explorations of the geological, biological, archaeological, and chemical features of these vast areas. An overview of the 2018 exploration season can be found here.

Video of the Month

Engineering for Discovery: Meet *Deep Discoverer*, A Remotely Operated Vehicle Exploring the Deep Sea

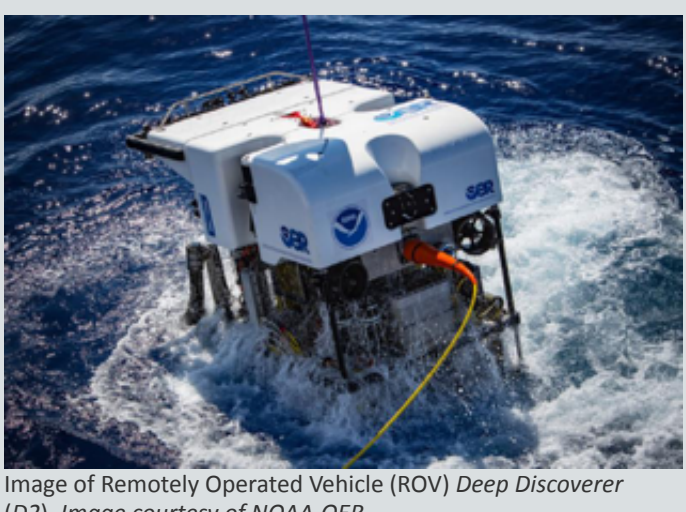


Image of Remotely Operated Vehicle (ROV) *Deep Discoverer* (*D2*). *Image courtesy of NOAA-OER.*

The *Deep Discoverer* (D2) remotely operated vehicle (ROV) supports ocean exploration efforts aboard NOAA Ship *Okeanos Explorer*. *D2* is connected to 'camera sled' named *Seirios* via a 30 meter-long tether which provides *D2* with a "spherical" workspace around *Seirios*. *Seirios,* in turn, is directly tethered to the *Okeanos Explorer* by a five mile-long steel cable.This configuration also allows *Seirios* to absorb the heave from the ship while keeping *D2* stable as it explores the ocean floor. It is this tandem robot configuration that allows stunning imagery to be captured for an undisturbed look at the seafloor.

D2 gives scientists unprecedented access to the deep ocean - from delivering stunning high-definition video and gathering physical data about surrounding waters, to allowing the collection of biological and geological samples. Data collected helps scientists better understand ocean ecosystems in their entirety, catalyzes further exploration and research, and informs current and future management decisions.

Watch this video to learn more about ROV technology and its capabilities and see stunning footage collected by *D2*.

Just For Kids:

Explore New NOAA Activities and Resources for Children

A new Just For Kids page on NOAA's National Ocean Service Web site offers a variety of educational resources especially designed for children.

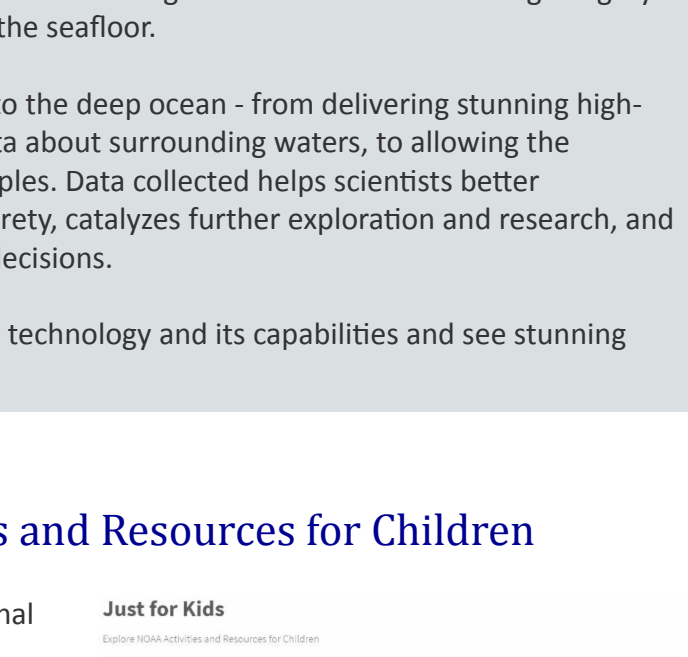
On this page you will find a collection of online and offline games and activities from a variety of NOAA offices, including videos, group activities, origami, coloring sheets, puzzles, outdoor and tabletop challenges, and a bunch of other projects that are fun, entertaining, and educational.

Exploring the Deep Ocean with NOAA: Educator Professional Development

NOAA OER's free full-day professional development workshops provide opportunities for educators to engage in learning more about ocean exploration. These workshops are designed to introduce participants to exemplary tools and resources for the classroom to enhance the teaching and learning of ocean science and NOAA endeavors in ocean exploration.

Onsite professional development workshops are offered around the country in cooperation with our Ocean Explorer Education Alliance Partners. If you would like to learn why and how we explore the deep ocean, please attend one of our workshops at an aquarium or science center near you. Upcoming workshops are listed on our website.

Note: *This workshop is a combination of the previously offered Why Do We Explore? and How Do We Explore? workshops.*



Educators use learning shapes to play a game called To Boldly Go during a professional development workshop. *Image courtesy of Dauphin Island Sea Lab.*

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