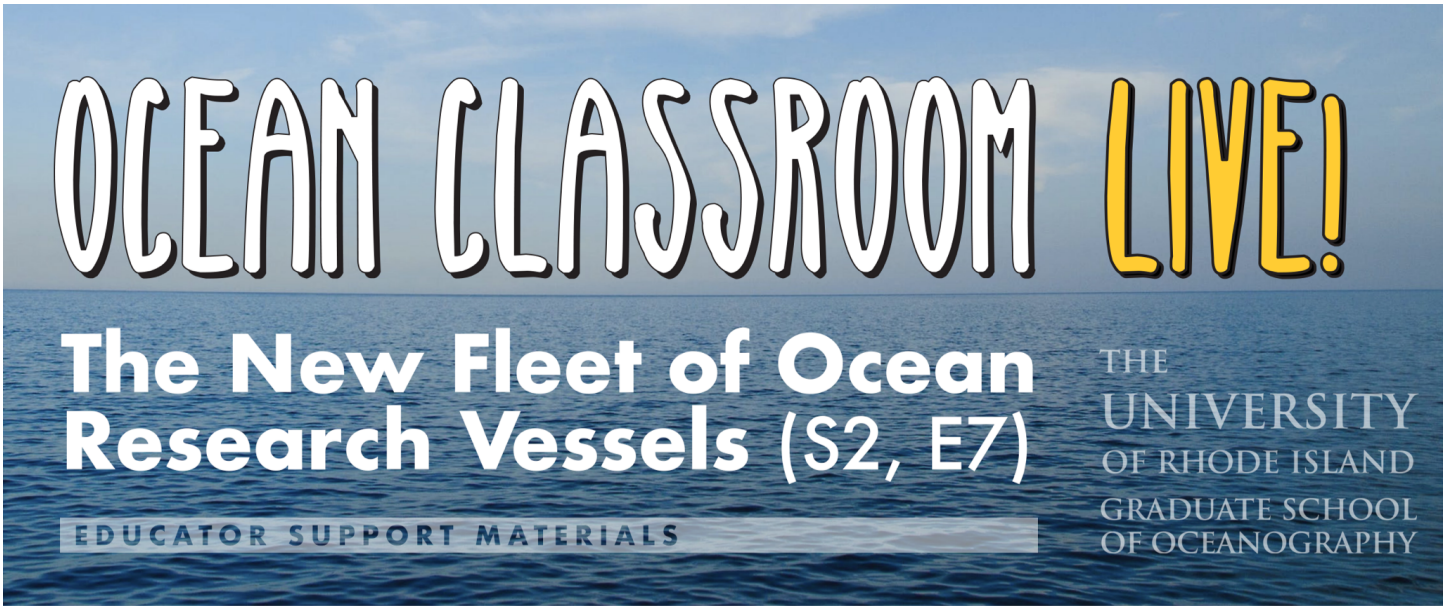

One of the most important tools in oceanography is a research vessel, and so the National Science Foundation has funded completion of three new Regional Class Research Vessels to address the most pressing issues facing the U.S. coast. Join oceanographer and project scientist from Oregon State University, Clare Reimers, National Science Foundation Ship Operations Program Director, Rose Dufour, and the University-National Oceanographic Laboratory System (UNOLS) chair, Doug Russell for a conversation about how and why we need to keep our fleet up-to-date and why this renewal is important for the future of oceanography.

Discussion Questions

- Why is at sea research important?
- What are some career opportunities on a research vessel?
- What is the Regional Class Research Vessel (RCRV) program?

Resources

Graduate School of Oceanography
As one of the nation's premier academic oceanographic institutions, the University of Rhode Island's Graduate School of Oceanography (GSO) educates marine scientists, students, policymakers, business leaders and citizens and helps develop the knowledge and skills necessary to address present and future marine challenges.

- GSO: https://web.uri.edu/gso/
- Inner Space Center: http://innerspacecenter.org/
- Rhode Island Teachers At Sea: https://web.uri.edu/gso/research/outreach/rhode-island-teachers-at-sea-program/
- GSO Ocean Classroom: https://web.uri.edu/gso/outreach/ocean-classroom/
- GSO Facebook: https://www.facebook.com/URIGSO/
- GSO YouTube: https://www.youtube.com/c/URIGraduateSchoolofOceanography
- GSO Twitter: https://twitter.com/urigso

Other Resources

- Forging the Future of Ocean Science short doc: https://youtu.be/INtosWlboSc
- Regional Class Research Vessels Overview: https://ceoas.oregonstate.edu/regional-class-research-vessel-rcrv
- Regional Class Research Vessels Outreach: https://ceoas.oregonstate.edu/regional-class-research-vessel-outreach
- About Clare Reimers, Oregon State University: https://ceoas.oregonstate.edu/people/clare-reimers
- UNOLS: https://www.unols.org
- NSF RCRV3 Named for Gulf Coast Civil Rights Icon Gilbert R. Mason: https://www.unols.org/news/ships-news/nsf-rcrv3-named-gulf-coast-civil-rights-icon-gilbert-r-mason
- Regional Class Research Vessels FAQs: https://ceoas.oregonstate.edu/regional-class-research-vessel-faq
- Regional Class Research Vessels construction webcams: https://web.uri.edu/gso/webcams/
- At-Sea Internship Opportunities for College Students
    - MATE Program: https://www.marinetech.org/internships/
- Science, Technology, Engineering and Math Student Experiences Aboard Ships (STEMSEAS) Program: https://mlp.ldeo.columbia.edu/stemseas/

Suggested Standards

Next Generation Science Standards K-12 Performance Expectations relating to Art & Marine Science.

Elementary School

K-2-ETS1 Engineering Design

- K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

3-5-ETS1 Engineering Design

- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Middle School

MS-ESS2 Earth's Systems

- MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.

MS-ETS1 Engineering Design

- MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

- MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
- MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
- MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

High School

HS-ETS1 Engineering Design

- HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- HS-ETS1-4. Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Ocean Literacy Essential Principles and Fundamental Concepts

Ocean Literacy Principles

OLP1: The Earth has one big ocean with many features.
OLP7: The ocean is largely unexplored.