SHIPS

Scripps has one of the largest academic research fleets in the world, with four research vessels—R/V *Sally Ride*, the newest in America's research fleet; R/V *Roger Revelle*; R/V *Robert Gordon Sproul*; and the new scientific workboat R/V *Bob and Betty Beyster*—and the famous research platform FLIP.

New Scientific Workboat Enhances Coastal Research

The research vessel (R/V) *Bob and Betty Beyster* was commissioned in April, and the vessel has filled a need to provide nearshore access at a lower daily cost to scientists, students, and others conducting ocean-based education. R/V *Bob and Betty Beyster* is a 42-foot scientific workboat with a range of 800 kilometers (500 nautical miles) and a fast cruising speed. The vessel has an A-frame hoist, an adaptable deck foundation for configuring mission-specific instruments, and computer-controlled propulsion that enables dynamic positioning and precise maneuvering. Scientific equipment includes a state-of-the-art seafloor mapping system, a knuckle crane that will enable the vessel to deploy and recover autonomous vehicles, and a mini remotely operated vehicle (ROV).

"Scripps operates a world-class fleet of oceangoing research vessels, which is made even more capable with the R/V *Bob and Betty Beyster*," said Bruce Appelgate, associate director at Scripps Oceanography and director of Ship Operations and Marine Technical Support. "As a fast, nimble platform equipped to fulfill heavy coastal scientific applications, the vessel enables tremendous new opportunities, whether conducting experiments in the La Jolla Canyon just offshore, or expeditions throughout the Channel Islands."

Since its arrival in April, the vessel has been heavily subscribed, with missions supporting whale acoustics, wave buoy deployments, physical oceanography surveys, and ROV deployments for student teaching.

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https://scripps.ucsd.edu/ships/beyster


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CF 0171 XD

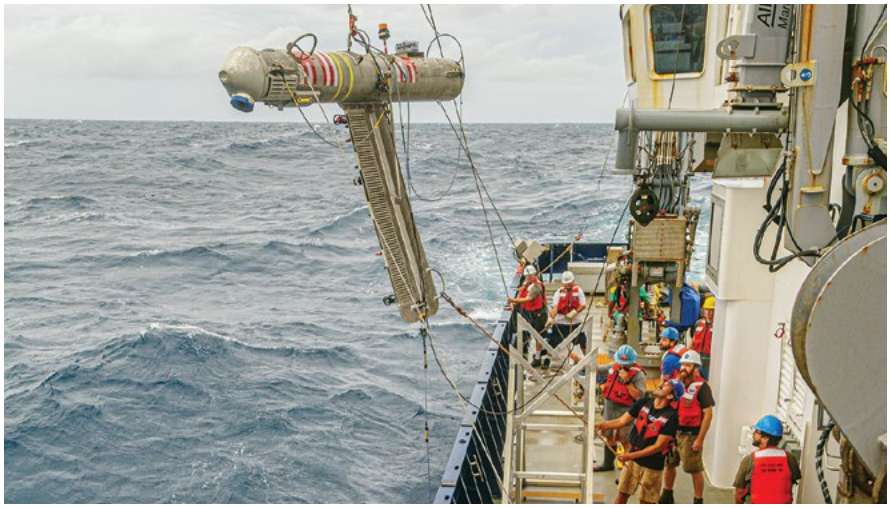
R/V *Roger Revelle* Undergoes Midlife Refit

Research vessel *Roger Revelle* entered service in 1996, and quickly established itself as vitally important to the U.S. oceanographic research effort due to its range, payload, duration, and ability to effectively conduct scientific operations in remote areas.

Since *Roger Revelle*'s delivery, enormous technological advances have taken place in marine engineering, instrumentation, and the ability to reduce environmental impact. To bring these benefits to seagoing scientists, and to extend the service life by 15 to 20 years, *Roger Revelle* was removed from service in April to begin a one-year midlife refit.

Supported by the Office of Naval Research, with ancillary support from the National Science Foundation and Scripps, the midlife refit will deliver significant benefits including:

- A new modern propulsion system
- Improved electrical generators to improve reliability
- New bow thruster with a retractable design and better dynamic positioning
- Modernized safety systems
- Installation of a ballast water treatment system that will prevent invasive marine species from being discharged with the ship's ballast water
- New Tier 3 diesel engines that will reduce emissions by up to two-thirds
- New shipboard climate control systems that will improve ventilation, cooling, and heating while reducing ambient airborne noise
- New scientific capabilities including shipboard cyberinfrastructure, a variety of new modern instruments, and a submerged acoustics gondola for improved sonar performance



R/V *Sally Ride*—Monsoon Research in Bay of Bengal

Research vessel *Sally Ride* hosted two dozen scientists from the U.S. and India for a comprehensive study of the ocean physics that drive the South Asian monsoon every year. A suite of specialized instruments—many custom-made at Scripps—made detailed measurements of turbulence, currents, temperature, and other variables. The researchers' goal is to understand how that activity at the surface ocean is linked to the oscillations between rain and dry weather during monsoon season.

Among the instruments used were the Wirewalker, a platform invented by Scripps oceanographer Rob Pinkel that is powered by the ocean's own energy, and the fast CTD, which enables high-resolution profiling of fundamental variables such as temperature and salinity, traveling up and down in the water column at 11 knots as the vessel travels at four knots.

"You can't go out and buy that kind of technology," said Scripps oceanographer Drew Lucas.

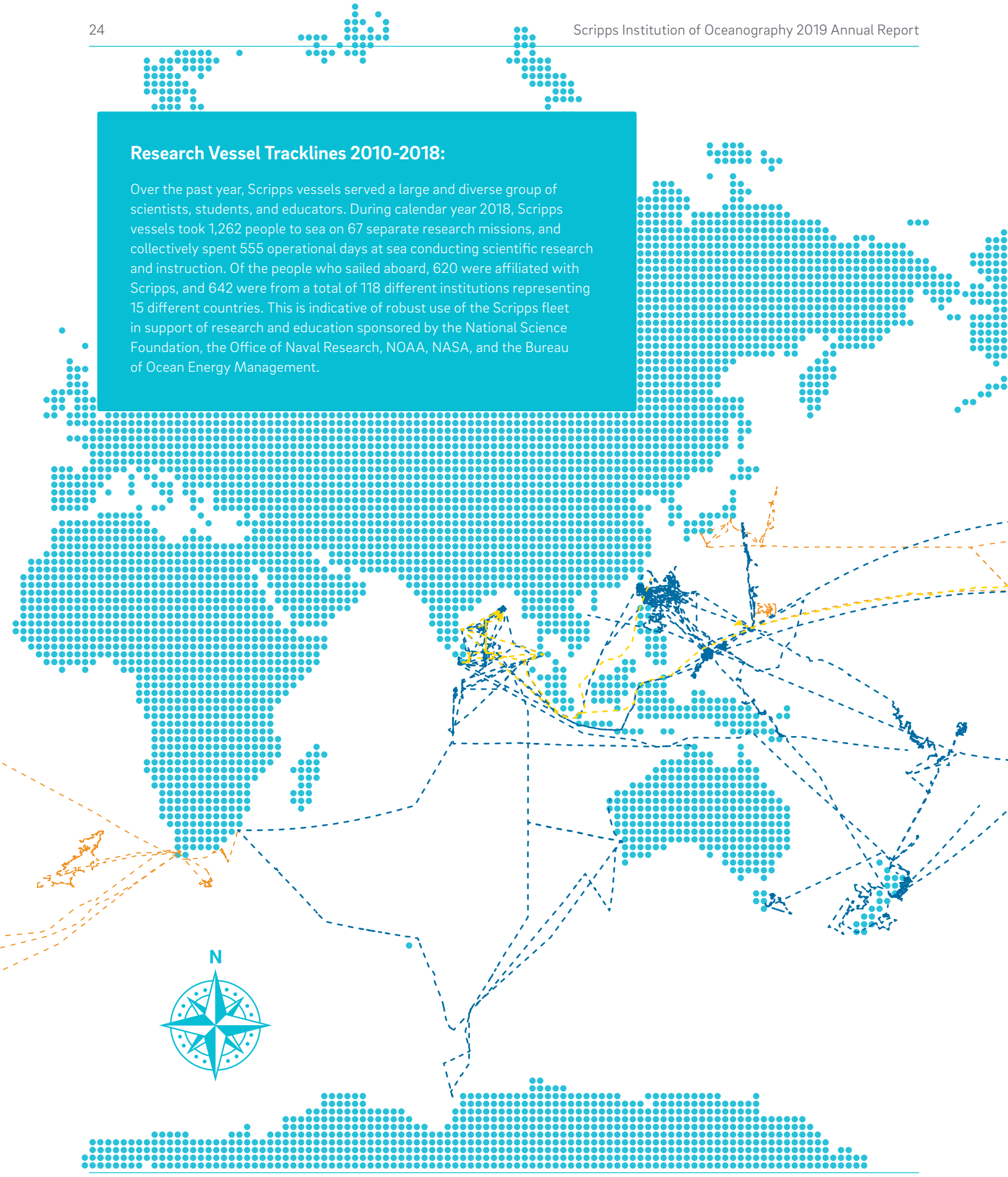
This research program is funded by the Office of Naval Research (ONR).

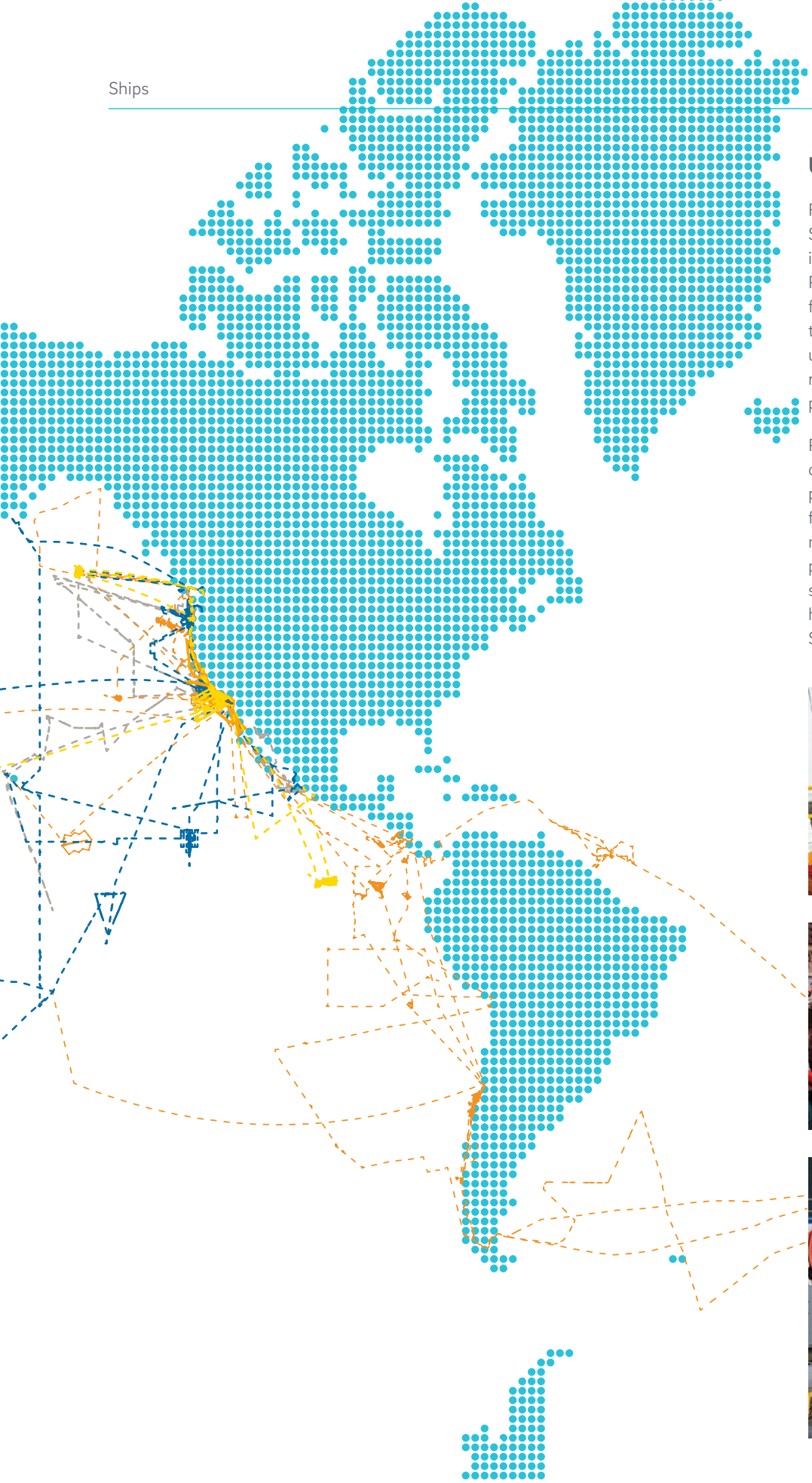
"Understanding the maritime environment is critical for safe and efficient naval operations around the globe," said ONR program manager Scott Harper. "Research should help support that by improving the Navy's ability to forecast the environment in the future."

Photos by San Nguyen

Research Vessel Tracklines 2010-2018:

Over the past year, Scripps vessels served a large and diverse group of scientists, students, and educators. During calendar year 2018, Scripps vessels took 1,262 people to sea on 67 separate research missions, and collectively spent 555 operational days at sea conducting scientific research and instruction. Of the people who sailed aboard, 620 were affiliated with Scripps, and 642 were from a total of 118 different institutions representing 15 different countries. This is indicative of robust use of the Scripps fleet in support of research and education sponsored by the National Science Foundation, the Office of Naval Research, NOAA, NASA, and the Bureau of Ocean Energy Management.

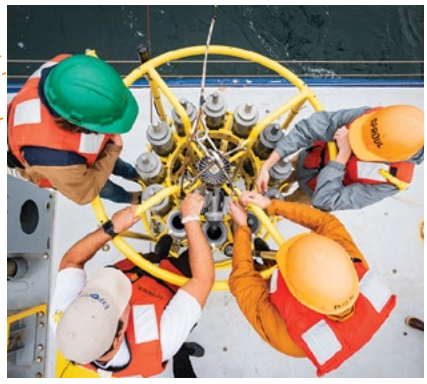




UC Ship Funds Program

Research training is fundamental to the Scripps mission, and this commitment is exemplified by the UC Ship Funds Program. Made possible by support from UC San Diego, Scripps, and donors, this program enables graduate and undergraduate students, postdoctoral researchers, and early career faculty to pursue research and instruction at sea.

Program awards are made through a competitive internal peer-reviewed proposal process. Missions can range from one-day trips off San Diego to month-long expeditions from foreign ports. During the 2018 calendar year, 520 students, faculty, and staff obtained first-hand experience at sea courtesy of the UC Ship Funds Program.



Students in the Observational Physical Oceanography class participate in an instructional cruise aboard the research vessel *Robert Gordon Sproul*. The cruise gave students the opportunity to test hand built instruments as part of the curriculum.