

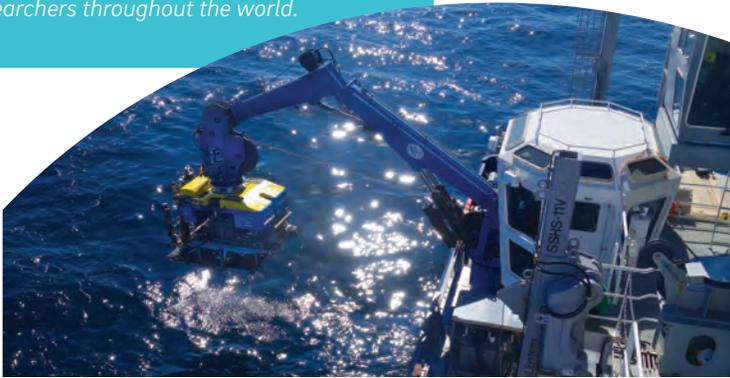
R/V SALLY RIDE

R/V *Sally Ride*'s historic arrival in home port at the Nimitz Marine Facility in Point Loma in August 2016 marked a major milestone for Scripps, but not the end of our effort to develop the vessel into a world-class research machine.



SCRIPPS FLEET

Scripps Fleet Scripps operates oceanographic research vessels recognized worldwide for their outstanding capabilities. Equipped with innovative instruments, these ships are mobile laboratories and observatories serving students and researchers throughout the world.



Scientific Verification

Our commitment to the U.S. Office of Naval Research involved a year-long period of configuring, testing, and proving R/V *Sally Ride*'s systems and instruments. To accomplish this, we organized a series of science verification cruises under the leadership of scientists from Scripps and across the country who are experts in expeditionary oceanography. Missions were organized to test the vessel's capabilities, including dynamic positioning, seafloor sampling, deep- and shallow-water mooring installation, biological net sampling, water column profiling,

heavy instrument overboarding using the starboard side handling systems (robot arms), autonomous underwater vehicle operations, midwater imaging for fisheries research, seafloor imaging, and dozens of other capabilities.

Additional scientific instruments were also installed, including a scientific wave radar, a flow-through CO₂ system to continuously monitor CO₂ in the surface water, an upgrade to the shallow-water seafloor imaging system, and enterprise-level computing infrastructure.

Research Missions

With the testing completed and modifications made, the long journey to bring a new Ocean Class vessel into operation is now complete. R/V *Sally Ride* has embarked on regularly scheduled scientific research missions and successfully carried out major funded research programs in the California Current, the Channel Islands, the California Borderlands, Ocean Station Papa (Gulf of Alaska), and an ambitious multi-ship program off Point Sal.



R/V ROGER REVELLE

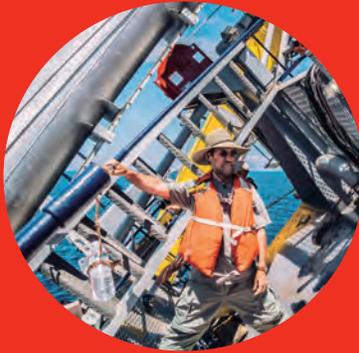


R/V Roger Revelle completed a series of significant research programs during the past year that fully capitalized on the capabilities of this flagship vessel. The NASA-supported EXPORTS program was a 42-day expedition that traveled 2,100 nautical miles southeast of Hawaii to characterize small-scale upper ocean variability during heavy rain events. This mission was followed by projects in the western Pacific near Palau, Micronesia, and Taiwan before heading back to the West Coast. Research missions conducted closer to home included a California Current research program led by Scripps professor Mark Ohman, and deep-diving research programs off the coast of Oregon and Washington supported by the National Science Foundation.



R/P FLIP

Research Platform FLIP was recently outfitted with a host of upgrades including a robust face boom, new sensors, upgraded networking infrastructure, and improved satellite broadband communications systems for internet coverage while deployed at sea. These upgrades have been put into productive use over the past year, with FLIP involved in three major programs off Southern California. Scripps scientist Luc Lenain used FLIP in an experiment to observe how ocean surface waves interact with the upper ocean boundary layer, which has implications for the physical, chemical, biological, optical, and acoustic properties of the upper ocean. This ambitious program involved research vessels *Sally Ride* and *Robert Gordon Sproul*, plus research aircraft, working together.



R/V ROBERT GORDON SPROUL

R/V Robert Gordon Sproul is the institution's stalwart local research vessel, conducting regional and nearshore scientific projects vital to our teaching, research, and development activities. This year was our busiest in a decade, involving several major expeditions ranging southward off Mexico and into California's central coast. *R/V Robert Gordon Sproul* continued its important service to students by conducting trips offshore for graduate and undergraduate classes to learn methods and acquire samples and data. Another vital service to students is the UC Ship Funds Program for students to conceive, propose, and (if selected by competitive peer review) conduct their own research at sea. This year, 247 Scripps students participated in seagoing research aboard *R/V Robert Gordon Sproul*.

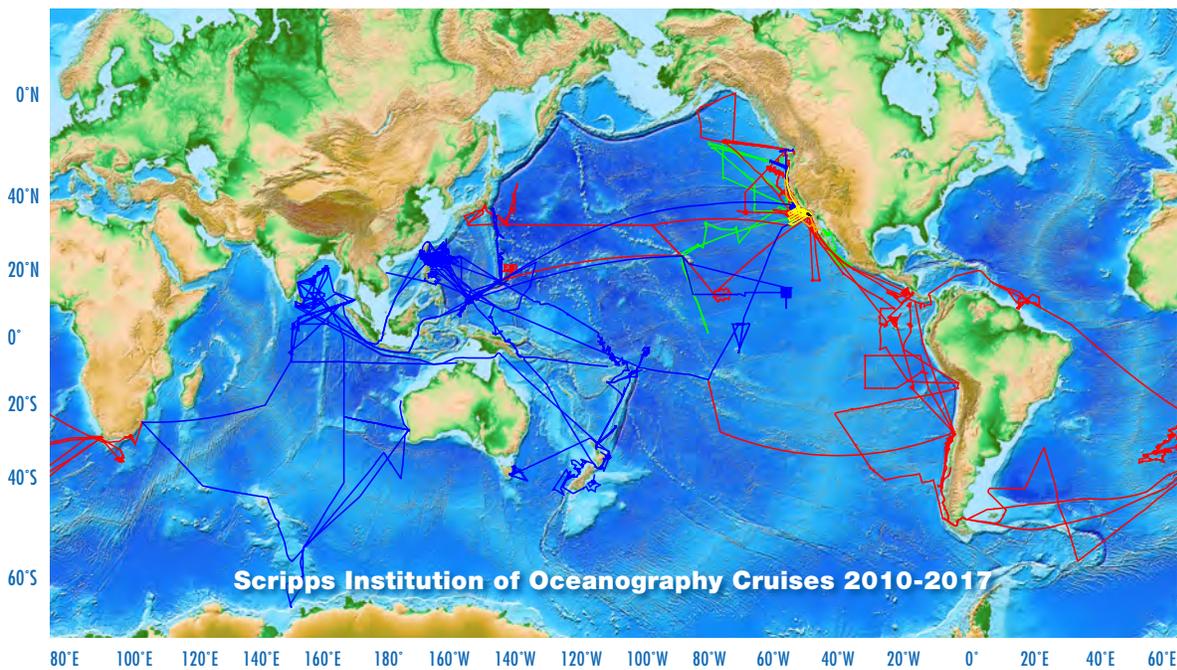




RESEARCH VESSEL

TRACKLINES

2010-2017



- R/V Roger Revelle
- R/V Melville
- R/V New Horizon
- R/V Sally Ride
- R/V Robert Gordon Sproul

Over the past year, Scripps vessels served a large and diverse group of scientists, students, and educators. During calendar year 2016, Scripps vessels took 752 people to sea on 56 separate research missions, and collectively spent 463 days at sea conducting scientific research and instruction. Of the people who sailed aboard, 580 were affiliated with Scripps, and 172 were from a total of 62 different institutions representing five different countries. This is indicative of robust utilization of the Scripps fleet in support of research and education sponsored by the National Science Foundation, the Office of Naval Research, NOAA, NASA, and other agencies.