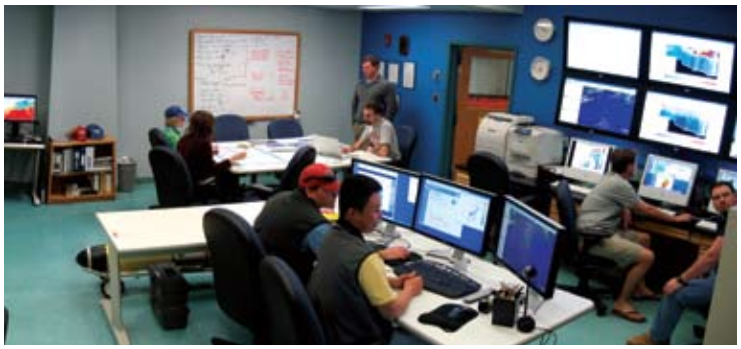
RUTGERS

Coastal Ocean Observation Lab (R.U. COOL)



The Rutgers University Coastal Ocean Observation Lab, a unit of the School of Environmental and Biological Sciences, pursues mission-based teaching, research, and outreach that address real-world problems. It is an internationally recognized proving ground for the latest ocean-observing technologies. Cost-effective sustained sampling of the coastal ocean is accomplished through: (1) the acquisition of data streams from U.S. and foreign satellites in space, (2) a network of high-frequency radars deployed along the shore, and (3) a fleet of robotic gliders flying beneath the ocean surface. These technologies are coordinated through an on-campus operations center, providing an unprecedented view of the coastal ocean.

Developing New Technologies

- COOL partners with over 25 companies to develop new oceanographic sensors, sampling platforms, power systems, and communication networks.
- New Jersey waters serve as a proving ground for the latest technologies and applications, providing the state with the opportunity to be the first in the nation to experience the benefits.
- Rutgers students are exposed to the latest technologies as they come to market, improving their ability to land rewarding jobs.
- COOL collaborates with Rutgers' engineering and computer science faculty to construct intelligent ocean sampling networks.

Delivering Leading-Edge Research in Science and Education

- Ocean observatories have brought in over $50 million in federal research funds to Rutgers in the last decade.
- Rutgers regularly hosts collaborative interdisciplinary research programs in New Jersey's coastal waters, attracting hundreds of researchers from around the world.
- Rutgers marine scientists are invited speakers to dozens of international scientific conferences and meetings each year, providing an internationally recognized approach to ocean observing and attracting the world's best students to Rutgers.
- COOL works with faculty at Rutgers Graduate School of Education to design materials and research inquiry-based learning environments in which students can explore current research and trends in ocean sciences.

Educating a Technology-Enabled Workforce

- The K-12 community is engaged through the Marine Activities Resources and Education program in collaboration with Lawrence Hall of Science.
- Undergraduate involvement is encouraged by one of the nation's few major sea-going oceanographic institutions located on a university main campus rather than a distant shore lab.
- Graduate studies in Rutgers' interdisciplinary environment provide doctoral and master's students with a unique learning experience.
- COOL serves lifelong learners through innovative education and field programs at the Liberty Science Center, Tuckerton Seaport, and Ocean County Parks.

Photo credits (from l. to r.): Hugh Roarty (photos 1 and 2); Gary Kirkpatrick (photo 3).

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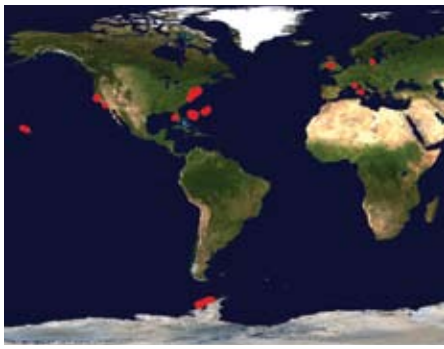

New Jersey and the Mid-Atlantic region face enormous challenges and economic opportunities related to the understanding, management, and stewardship of our shared ocean resources. Rutgers University, Stevens Institute of Technology, and Monmouth University have substantial institutional capacity and commitment to coastal and ocean monitoring and observations, and the state of New Jersey is uniquely positioned to take a leadership role in development of an operational Integrated Ocean Observing System (IOOS). This partnership, as well as others with entities around the world, place R.U. COOL firmly at the forefront of coastal and ocean research.

Guiding National Investments

- Investment in NOAA-led U.S. IOOS is expected to grow to several hundred million dollars annually over the next decade.
- The National Science Foundation has begun the Ocean Observing Initiative to invest over $350 million in new ocean-observing infrastructure.
- The Navy has begun the Littoral Battle Space Fusion and Integration Initiative, a $185 million program to develop unmanned ocean-observing capabilities in forward deployed areas.
- New Jersey ocean observing has inspired and contributed to all three initiatives.

Serving the Needs of New Jersey and the Nation

- A national radar network with Rutgers as the East Coast hub is being constructed to improve Coast Guard search and rescue, potentially saving hundreds of lives a year and providing improved guidance for hazardous spill response.
- New Jersey and California lead the nation in demonstrating the use of shore-based radars to help predict beach closures.
- Recreational and commercial fishing and fisheries management benefit from the improved capability to understand the complex and changing environment of vital fisheries.
- Improved severe weather forecasts are used by power utilities to reduce downtime from storm-induced power outages.
- Improved forecasts in New Jersey harbors and their approaches improve the efficiency, security, and resiliency of the maritime transportation network.
- Improved knowledge of the oceans as an environmental resource may improve and facilitate the use of alternative energy sources such as winds and waves.

Expanding Globally

- Improved science—Monitoring the extreme pulse points of global change in the harsh Arctic and Antarctic Oceans will improve our ability to understand and model processes effecting our changing climate and weather patterns.
- Environmental stewardship—Global populations are moving to the coast, further stressing the coastal infrastructure and the quality of waterways in rapidly developing regions of Europe, China, and India.
- Humanitarian aid—Many underdeveloped countries rely on an increasingly scarce fish resource to feed their populations and cannot afford the luxury of fisheries management plans based on standard monitoring technologies.

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THE STATE UNIVERSITY OF NEW JERSEY

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