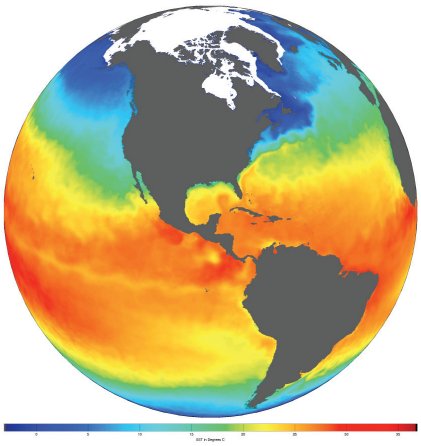
COLLEGE OF THE ENVIRONMENT
UNIVERSITY of WASHINGTON

Ocean Change

Oceans the world-over are changing, driven by both natural processes and human activities. From the air we breathe to the seafood on our table, oceans play a critical role in our everyday lives. College of the Environment researchers have deep roots in the ocean sciences, and are immersed in understanding its physical, chemical, and biological systems, how they are changing, and the implications of those changes on marine environments and humans alike..



Global sea surface temperature. (*Image: NOAA*)

Non-native species, like the purple varnish clam that is now established on northeastern Pacific shores, can cause shifts in how native ecosystems function. (*Photo: L. Schroeder*)

(*Banner photo: John Meyer*)

Understanding Ocean Change

The oceans cover more than 70% of the world's surface area, and contain 97% of the planet's water. They drive weather systems, provide a substantial food source, enable global commerce, and inspire scores of people who have stood on their shores. Yet oceans are changing rapidly—waters are warming and becoming more acidic, sea ice is melting, species are shifting their home range, new species are transported via modern modes of transport across ocean basins—and these changes have consequences for the ecosystems and societies that are connected to them.

Understanding these changes and how they will affect marine systems informs scientists, decision makers, ocean stakeholders, the interested public, and others about how our world works and how we can integrate into a changing seascape.

Addressing Ocean Change at the College of the Environment

The College of the Environment excels at equipping both future scientists and community leaders to understand our changing oceans and how best to adapt, mitigate, and steward marine resources. This is achieved through cutting-edge research, top-tier education, access to hands-on field and laboratory settings, and a depth and expertise that span both the social and natural sciences.

Advancing the Science

Research and Education throughout the College

Understanding how the oceans work and the factors that influence them is no small undertaking. The Schools of Aquatic and Fishery Sciences, Oceanography, Marine and Environmental Affairs, and others cover the gamut of research that connect to our oceans. This includes the physical, chemical, and biological sciences, as well as the social sciences that seek

to better understand how humans interact with the sea. Undergraduate and graduate students work with world-renowned faculty to address real-world problems facing the oceans and execute research that will solve some of the remaining mysteries of the sea and unlock the solutions to safeguard our marine resources.

Research Centers and Initiatives

The College has numerous research centers and initiatives, allowing us to engage in and study ocean systems at multiple scales and in myriad ways.

- Friday Harbor Laboratories on San Juan Island have stood sentinel over the Salish Sea for more than 100 years, serving as an incubator and catalyst for ocean-related science.
- The newly established Washington Ocean Acidification Center resides within the College of the Environment, with the goal to advance our understanding of how local marine systems are affected and how we can adapt economically and ecologically.
- The National Science Foundation Integrative Graduate Education and Research Traineeship allows students to focus on how oceans are changing worldwide, what that means to the human communities connected to them, and ways to solve the complex ecological problems arising from conflicts of use and impact.
- Interdisciplinary initiatives, like the Future of Ice, are building on UW's rich expertise in the polar regions, documenting changes in the high latitudes and how that affects both ecosystems and society.
- The Alaska Salmon Program—originally a partnership between the salmon industry and the UW—now supports research, teaching, and service related to salmon at three major field stations in Alaska
- The Olympic Natural Resources Center on the Olympic Peninsula provides scientific information to address critical issues and solve problems concerning forestry and marine sciences in the region.
- The Ocean Observatories Initiative is aimed at launching a new era of scientific discovery and understanding of the oceans, focused on the Northeast Pacific Ocean in a way that serves researchers, students, educators, policymakers, and the public.
- Research Vessels are key to doing field-based experiments and sampling, and the College of the Environment has three major vessels, as well as a cadre of smaller boats.

Building Strong Partnerships

Not only is there tremendous capacity to address ocean change on campus, but the College leverages expertise through numerous connections and partners off campus that serve to strengthen our work and its impact.

- The Joint Institute for the Study of Atmosphere and Ocean fosters collaborative efforts between the UW and the National Oceanic and Atmospheric Administration (NOAA) centered on seven key research themes.
- UW scientists collaborate with NOAA's Alaskan and Northwest Fishery Science Centers on issues of fisheries science and management.
- Washington Sea Grant serves as a conduit of information to and collaboration with communities, industries, and the people of the Pacific Northwest and the nation through research, education, and outreach.
- Cooperative studies, like the Simons Collaboration on Ocean Processes and Ecology, leverage the expertise of numerous investigators to advance our understanding of the processes that drive patterns in the global ocean.
- Pacific Northwest Indian Tribes have a cultural connection to Puget Sound and a deep interest in ocean health, and collaborate with UW scientists on issues such as salmon and ecosystem recovery and ocean acidification.
- College scientists advise policy-making bodies on regional, national, and international scales, including the International Whaling Commission, the Pacific Fisheries Management Council, and the Puget Sound Partnership.
- The Applied Physics Laboratory partners with College of the Environment marine scientists, focusing studies on marine physics and systems science in the Arctic and Antarctic.

For more information, please contact the College of the Environment at: coenv@uw.edu or 206-685-5410

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