Water Research at the University of Michigan

University of Michigan faculty have significant water-related research interests and expertise spread across a myriad of schools, colleges, departments, centers, and institutes. Below is a brief summary of water-related faculty efforts at the university.

College of Engineering

Atmospheric, Oceanic, and Space Sciences
Research focuses on the effects of atmospheric and climate forces on the dynamics of ice and the hydrologic cycle on both short and long time scales, and on space scales from local to global. Additional research includes studying the distribution and intensity of clouds and precipitation.

Civil and Environmental Engineering
Research includes a focus on water flow and contaminant sensing, modeling, and remediation, including identifying novel approaches and design technology for rapidly sensing contaminants. Faculty also study biological processes and groundwater fluid dynamics.

Naval Architecture and Marine Engineering
Faculty explore the dynamics of water flow and wave action, the development and use of remotely operated vehicles (ROVs), acoustics technology, and water-related renewable energy devices.

College of Literature, Science, and the Arts

Bio Station
The U-M Biological Station, located in northern Michigan, supports faculty studying the Great Lakes and other freshwater ecosystems. Faculty from many universities study aquatic food webs, how animals use chemical signals to dictate ecological decisions, and the implications of water chemistry for surrounding ecosystems.

Earth and Environmental Science
Faculty focus on physical elements of the earth's water systems, past, present, and future, using a diverse array of techniques. Research ranges from the evolution and

mapping of landscapes to using geochemistry, geological data, and fossil records to outline ancient ocean basins and rivers and to find underground aquifers.

Ecology and Evolutionary Biology
Faculty study marine and freshwater species on both micro and macro scales. They explore questions such as the effects of viruses on populations or food chains, and their response to the changes in an ecosystem, as well as exploring the temporal accumulation of adaptations in freshwater species.

Ford School of Public Policy

Ford School faculty focus on science policy and public policy related to the environment, including water. Some faculty focus their research on political and governance issues in hazardous waste management, cross-border and cross-media transfer of pollutants, and intergovernmental cooperation in federal grant and regulatory programs. Other faculty are investigating the life histories of different salmon streams in Lake Michigan.

Law School

Law faculty investigate water quantity and quality policies at local, national, and global scales. They explore environmental regulation, water law, environmental criminal enforcement, conservation, and land use. Many faculty serve in senior positions with government and non-government organizations as experts on environmental regulation and other areas.

School of Natural Resources and Environment

Faculty focus on the biological, chemical, and social dimensions of water, including fisheries; nutrient cycling in lakes, rivers, coastal marine systems; coastal resiliency, and watershed dynamics. Human dimension research includes the social drivers of water use, local to national water policy, and the social and economic impacts of changes in water quality. The School is also home for the *Cooperative Institute for Limnology and Ecosystems Research* and the *Michigan Sea Grant College Program* that focus on Great Lakes and Michigan water issues, respectively.

School of Public Health

Faculty in *Environmental Health Sciences* study the movement and impacts of water-borne toxins and diseases on individuals and communities related to water and

wastewater sanitation. Current work focuses on pesticides, bisphenol A, arsenic, mercury, and lead in the Great Lakes and water systems throughout the world.

Taubman College of Architecture and Urban Planning

Faculty study local, regional, and global land use, including water-related urban sustainability. Research includes evaluating current and future policy and zoning, as well as the water impacts of how buildings are constructed. Faculty that focus on urban sustainability assess the implications of the contraction or expansion of urban areas, and how cities may be affected by a variety of changes in the future.

University-level Institutes

Graham Sustainability Institute – The Institute's Water and Climate Centers and Integrated Assessment program support natural and social science research and assessments, integrating scientists and policy makers across a range of water-related issues, including habitats, contaminants, nutrient over enrichment, lake level variations, and climate impacts in the Great Lakes and estuaries.

Life Sciences Institute – Faculty explore fundamental biological and chemical processes of life, including investigating the biochemical pathways of marine organisms that may lead to new drugs for treating infectious diseases and cancers.