THE WATER RESOURCES INSTITUTE

AT THE UNIVERSITY OF VERMONT

OUR MISSION

The Water Resources Institute facilitates an innovative network of programs, researchers, partners, facilities, and services to build a nationally-recognized center at the forefront of interdisciplinary water-related research, innovation, education, and community outreach.

ENHANCE the flow of information and ideas among scholars and trainees by establishing a hub of water research at the nexus of natural and social sciences, human health, design, engineering, and governance.

EDUCATE the next generation of problem solvers on water issues and water justice.

COORDINATE and develop new water-related programs, facilities, and services on campus.

BUILD bridges with external academic, nonprofit, state, federal, and international partners that accelerate the translation of research to practice.

"We strive to advance knowledge, develop innovative solutions, and drive collective action towards a sustainable, just, and resilient water future."

- WATER RESOURCES INSTITUTE VISION

RESEARCH FOR A SUSTAINABLE FUTURE

DATA SCIENCE AND SENSING TECHNOLOGIES

The development of new technologies to monitor quality and quantity supports forecasting and community resilience to changing water conditions and weather events. Accessibility to these data in real-time supports forecasters in predicting when certain events occur, improving community response to extreme events.

COMMUNICATION AND RISK PERCEPTION

Social sciences are key to understanding human relationships with water and perception of water threats. Researchers involved with The Water Resources Institute use techniques such as interviews, surveys, design charettes, and experimental gaming to understand how people value water and respond to messaging around water-related emergencies.

RIVERS AND LANDSCAPE PROCESSES

There is a great need to integrate observations and field work to create more accurate models that predict floods, drought, and changes in water quality. Research around Critical Zone processes (i.e. the zone where rock meets life from bedrock to treetop) enhances our understanding of floodplain dynamics, nutrient loading, and ways to improve stormwater management.

PLANETARY HEALTH

Water quality is a key concern for the health of individuals, the health of communities, and the health of aquatic ecosystems. The Water Resources Institute supports human health research as it relates to topic areas such water-borne pathogens and contaminants. It also supports research on ecosystem health and function, as it relates to changes in nutrient availability, habitat quality, and species composition of aquatic systems.

CIROH@UVM

The Water Resources Institute hosts UVM's projects with the Cooperative Institute for Research to Operations in Hydrology (CIROH), a consortium of 28 universities and partner institutions funded by the National Oceanic and Atmospheric Administration (NOAA) to improve flood and drought forecasting and the delivery of early warning systems for the nation. At UVM, we are improving the representation of mountainous settings and river corridors in forecasting models, developing the capacity to forecast water quality and harmful algal blooms, pioneering the use of artificial intelligence and cyberinfrastructure to advance forecasting, and improving the understanding of how individuals, communities, and businesses respond to water risks.

EDUCATION AND WORKFORCE DEVELOPMENT

Water resources education runs deep at UVM. We are training the next generation of scientists, engineers, designers, planners, and policy makers to address society's water security challenges. The Water Resources Institute provides trainee workspace, research assistantships, and seminar programming to engage students in collaborative projects and connections to community partners. We co-manage a network of natural areas from the summit of Mt. Mansfield to the shores of Lake Champlain as core research facilities for education, outreach, and the translation of research to operations.

MEET OUR LEA DERSHIP TEAM

BEVERLEY C. WEMPLE

Faculty Director

Beverley Wemple, PhD, is a Professor in the Department of Geography & Geosciences in the College of Arts and Sciences. Her research focuses on watershed processes, with a particular interest mountain hydrology, stormwater management, and the resilience of communities and ecosystems to extreme events. Wemple serves as an associate editor of the journal Water Resources Research, and as a member of the Board of Trustees for the Vermont chapter of The Nature Conservancy. She also serves as UVM's institutional point of contact for The Cooperative Institute for Research to Operations in Hydrology (CIROH).

BERNARD COLE

Senior Faculty Advisor

Bernard Cole, PhD, is Professor of Biostatistics in the Department of Mathematics and Statistics in the College of Engineering and Mathematical Sciences. He serves as director of the Vermont Space Grant Consortium and the Vermont NASA EPSCoR program. His research focuses on statistical methods in biomedicine and public health, with emphasis on applications to cancer clinical research and epidemiology. Dr. Cole served as interim dean of The College of Engineering and Mathematical Sciences from 2008-2013.

ANNE JEFFERSON

Senior Faculty Advisor

Anne Jefferson, PhD, is the Robert F. and Genevieve B. Patrick Endowed Chair in Watershed Science and Planning in the Rubenstein School of Environment and Natural Resources. She serves as director of the Vermont Water Resources and Lake Studies Center, the Lake Champlain Sea Grant program, and the Northeastern States Research Cooperative. Her research focuses on water in urban environments, combining field studies, lab work and numerical modeling. Since 2020 she has served on the board of directors for the Consortium of Universities for the Advancement of Hydrologic Sciences Inc (CUAHSI) and as chair of the board of directors in 2024.

ASIM ZIA

Senior Faculty Advisor

Asim Zia, PhD, is Professor of Public Policy in the Department of Community Development and Applied Economics in the College of Agriculture and Life Sciences (CALS). He also serves as co-director of the Social-Ecological Gaming and Simulation (SEGS) lab, where he works jointly with colleagues to explore human perceptions and behaviors through simulation experiments. Dr. Zia is a past research theme lead for two phases of Vermont's NSF EPSCoR programs focused on Lake Champlain and is the Associate Dean for Research in CALS.

University of Vermont