



The College of Engineering's [Center for Ecohydraulics Research](#) (CER) is working with local, national and international entities to protect Idaho's pristine waterways and balance the needs of our river systems and communities.

Idaho has more than 93,000 miles of streams and over 3,000 miles of world-class whitewater. Recreation along these state waterways [contributes \\$1.2 billion to Idaho's economy](#) annually.

Idaho's Most Valuable Resource

[More than 7 million people visit Idaho each year](#) to camp, fish and enjoy outdoor recreation programs, according to Idaho Parks and Recreation data. With that level of destination travel, in addition to having the second highest population growth in the country in 2022, we can expect challenges if we don't take steps to sustainably manage water resources in our state.

Located in the highly-collaborative, multi-disciplinary environment of the

[Idaho Water Center](#) in Boise, CER is changing the way we look at water and its impact on our lives.

Elevating Water Research in the Pacific Northwest and Beyond



Sediment flumes in the center allow for advanced simulation of Idaho's streams and rivers.

The CER laboratory offers research teams unparalleled access to physically model headwater streams and mountain rivers in Idaho and beyond with unique scalable and computer-controlled instrumentation. Our Streamlab includes a 20-meter-long sediment flume and 7-meter Aquatic Imaging Flume with optical access, allowing researchers to study the chemical and biological processes that occur in waterflow through sediment.

As of 2022, the StreamLab has hosted over 40 national and international projects from universities, federal and state agencies, and regional companies.

Global Research: Bringing Solutions to Idaho

CER teams work globally to shape critical areas of water research and build solutions with direct application in our own state and region.

CER Co-Director and Civil Engineering Professor [Elwyn Yager](#) and Research Assistant Professor [Andy Tranmer](#) are continuing a [Department of Energy-sponsored project in New Mexico](#) to better understand variations in the release of essential riverbed nutrients - carbon and phosphorus – into water and identify potential problems that could arise in our own river systems.



Student researchers in New Mexico are defining the onset of sediment transport, a crucial element to understanding effects of flooding on Idaho waterways.

Yager and a student team are also working in Switzerland under a National Science Foundation project to reinforce our prediction of the onset of

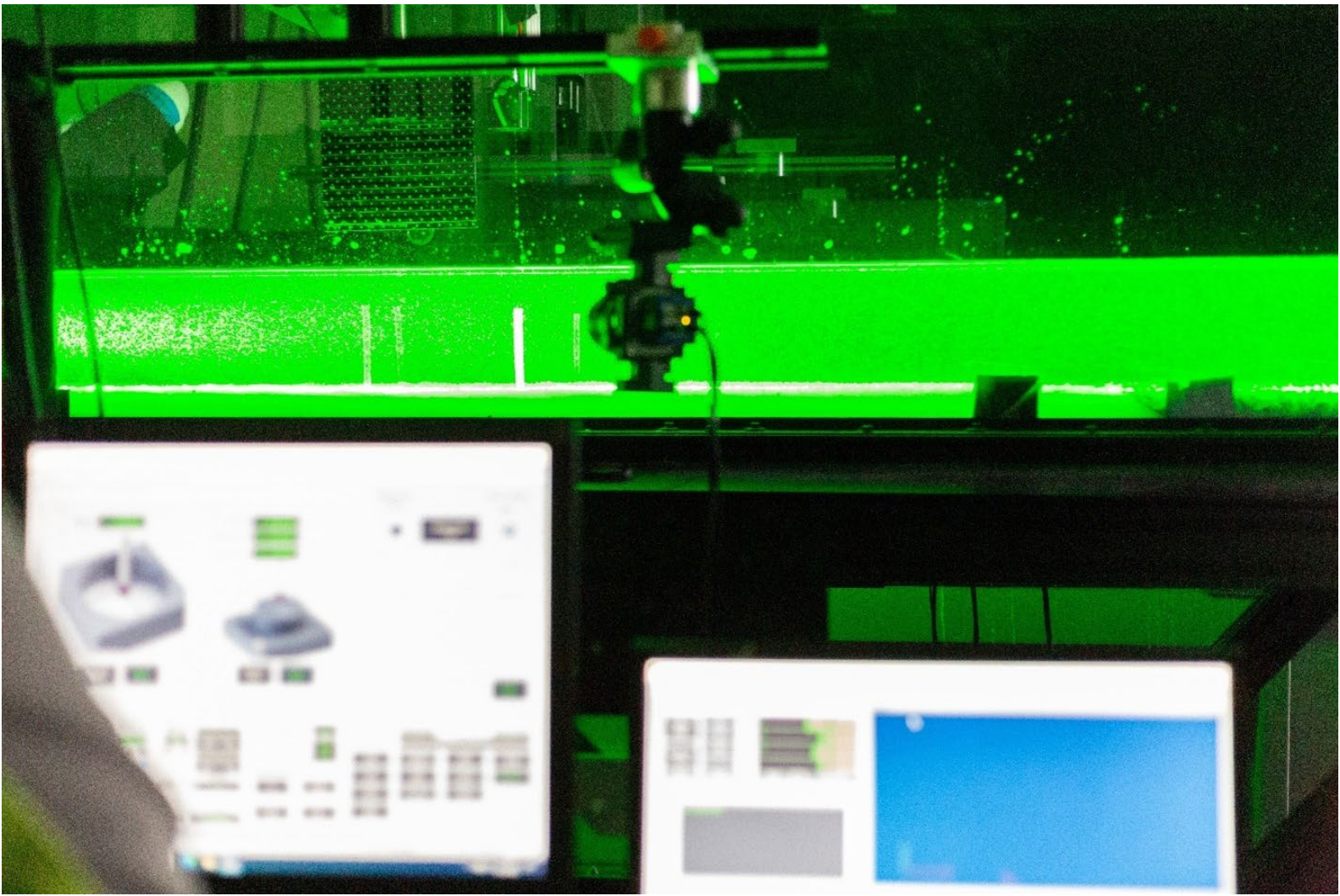
sediment transport, helping us better estimate when large rainstorms or snowmelt will lead to flooding, the filling of reservoirs and how erosion affects aquatic habitats.

Operating under additional grants from the U.S. Forest Service, Idaho Transportation Department and the Idaho Governor's Office of Species Conservation, CER boasts a broad portfolio of research accomplishments.

Co-Director of CER and Civil Engineering [Professor Daniele Tonina's](#) research has broadened our understanding of [the role streams and rivers play in contributing to global greenhouse gases](#). Working with researchers from Yale University, Italy's University of Trento and Texas A&M, Tonina developed a model to predict the effects of nitrous oxide, an ozone-depleting substance, in stream sediments.

Tonina is also researching [environmental impacts on Idaho's iconic Chinook salmon population](#). Using a remote sensing system and hydraulic modeling to predict how conditions will change in Bear Valley Creek, a tributary of the Middle Fork of the Salmon River, Tonina has uncovered threats to the species that has been in the Pacific Northwest for thousands of years.

Tonina and Tranmer are finishing up a project this year on the Grande Ronde River for the U.S. Bureau of Reclamation, analyzing how groundwater can locally cool stream temperatures for Chinook salmon in areas where water temperatures are too high for their survival.

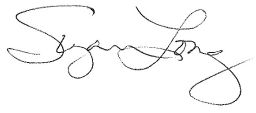


Our Aquatic Imaging Flume allows researchers to study the chemical and biological processes that occur in water flow through sediment.

Our expertise within CER is growing. Last fall, Assistant Professor [Gianluca Blois](#) joined the research team. His expertise in studying water flow in otherwise inaccessible natural environments will greatly expand our research capabilities across Idaho's challenging topography.

For 130 years, our college has led innovative solutions in water resources through our world-class research centers and internationally recognized faculty. CER is a shining example of our longstanding history.

SIGN UP FOR CER RESEARCH UPDATES



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College of Engineering Social Media



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