

BE WHAT THE WORLD NEEDS



Water at USask



UNIVERSITY OF
SASKATCHEWAN



Global Institute for
Water Security



**WITH YOUR
SUPPORT,
WATER
SECURITY
WILL CHANGE
OUR WORLD**

From the Director



Water at the University of Saskatchewan (USask) has a long history that began with the establishment of the College of Agriculture and the College of Engineering in 1907.

Since then, water at USask has celebrated several milestones, including establishment of a Division of Hydrology, the Centre for Toxicology, and the Global Institute for Water Security (GIWS). Many networks and programs have contributed to our success, including donors like you.

Our water-related disciplinary and interdisciplinary strengths at USask are broad. USask is home to all standard university natural science, social science, and humanities departments as well as professional schools for business, engineering, education, law, medicine, and veterinary medicine. USask also boasts world-class laboratories and facilities including the Canadian Centre for Rural and Agricultural Health, the Canadian Light Source, the Global Institute for Food Security, the Sylvia Fedoruk Canadian Centre for Nuclear Innovation, and the Vaccine and Infectious Disease Organization.

Based in Saskatchewan, our geographic location shapes some of our expertise and commitments, such as agriculture, bioresources, food security, Indigenization, reconciliation, and rural health as well as, of course, water.

Established in 2011, GIWS is dedicated to helping manage the world's precious freshwater resources sustainably and equitably for protection and enhanced quality of life, strong economies, and healthy ecosystems. We do this through generating water solutions for the world's growing demand for sustainable food production; mitigating the risk of water-related disasters such as floods, droughts, and fires; predicting and forecasting extremes of global change using advanced remote sensing and modelling techniques; supporting resilient

communities and ecosystems; and co-creating research that braids Traditional Knowledge with western science.

GIWS is a key representation of water at USask, which is highly ranked nationally and internationally. This is a testament to the researchers, staff, and students through the years and the vision of creating supporting infrastructure at USask, including a signature area around water.

As the executive director of GIWS, I would like to take this opportunity to invite you into the water community at USask. Our dedicated group of world class researchers, faculty, students, and staff are here to work with you to develop water solutions for a better tomorrow in Saskatchewan and globally.

Join us!

Sincerely,

A handwritten signature in blue ink, appearing to read 'Corinne Schuster-Wallace'.

Corinne Schuster-Wallace
Executive Director, Global Institute for Water Security

BE WHAT THE WORLD NEEDS

Donor Opportunities in the Global Institute for Water Security

With alumni, donors and community partners like you, positive contributions will support and examine global water security. Your support will make a powerful difference in helping to protect our precious freshwater resources. Together, we will address the important issues of our world.



Endowed and Enhanced Research Chairs

Women Plus Water

Indigenous Community Research Engagement Fund

Indigenous Water Scholarships

Water Scholarships

Thematic Water Research

Research Infrastructure

Visionary Spaces

Endowed and Enhanced Research Chairs

The University of Saskatchewan is one of the top institutions for water resources research in Canada and the world. Your support will allow us to continue our excellence in water research by addressing escalating water-related challenges. By investing in endowed and enhanced research chairs, we will lead research that is critical to the advancement of knowledge in the Prairies, Canada, and internationally on emerging topics.

Your generous contribution will play a vital role in attracting the very best researchers in the following areas:

WATER AND FOOD SECURITY

A growing world requires increased and assured food productions systems. This requires reliable water supplies that are under increasing threat due to climate uncertainty. Saskatchewan and the Prairie Provinces are a critical region for global food security and are a significant contributor to the Canadian economy. This chair, joint with the Global Institute for Food Security (GIFS) and located in the College of Agriculture and Bioresources, will focus on interactions between water and food production and decision support tools or mechanisms to increase “crop per drop” efficiencies.

WATER EQUITY AND JUSTICE

Water is gendered and exclusionary in many ways, from responsibilities in homes without adequate access and in water stewardship to roles in governance, universities, and the water sector. Water is also an issue of social and environmental justice. Diversity is known to foster innovation and this chair, located in the College of Arts and Science, will focus on identifying and overcoming barriers facing equity deserving groups towards a more diverse water community and more equitable water resources management.





IMAGES OF RESEARCH 2019: Caroline Aubry-Wake

HYDROCLIMATOLOGY AND PREDICTION

The water cycle is driven by the global energy cycle. Predicting water futures and understanding the increasing uncertainty in timing and amounts of water requires an understanding of climate processes at different scales and how these are changing over time. This chair, located in the College of Engineering, will focus on enhancing our understanding of dynamic and small-scale processes towards improved prediction and reduced uncertainty around changes in solid versus liquid precipitation, amounts, and timing of water to support investments in resilience and adaptation across communities and sectors.

TRADITIONAL ECOLOGICAL KNOWLEDGE FOR WATER SUSTAINABILITY

Colonialism, and the commodification of water as opposed to an essential component of our environment, underpins current water crises. These encompass floods, droughts, and drinking water access and management in Indigenous communities. Historically, water and land have been stewarded based on Indigenous science and concepts of wholism or interconnectedness that maintain the balance between people and nature. However, Indigenous science and epistemologies around water are too often relegated rather than celebrated within a system dominated by modern knowledge systems. This chair, located in USask's Department of Indigenous Studies or College of Agriculture and Bioresources within the Kanawayihetaytan Askiy program, will start to redress this, with an emphasis on braided knowledge systems and self-determination.

WATER AND CRITICAL MINERALS

Advances in technology are driven by critical minerals such as lithium, cobalt, uranium and rare earth minerals. Saskatchewan, and Canada more broadly, has deposits that represent a significant proportion of global resources. Extracting and processing these resources requires large volumes of water. Understanding processes and advancing technologies to treat and recycle this water is critical to reducing water footprints and impacts on ecosystems and people. This chair, located in USask's School of Environmental Sustainability (SENS), will focus on sustainable water management as part of the emerging shifts to green and net zero mining that is essential for our economy and our wellbeing.

WATER IN ONE HEALTH

As the COVID-19 pandemic has shown, access to water plays an essential role in infection control. It also underpins personal, household, and animal hygiene practices that go a long way to prevent the spread of infectious diseases between people and between animals and people. One Health is the study of interactions between people, animals, and the environment in order to understand how diseases emerge and spread. Water is not only critical for hygiene, but also for environmental health and biodiversity that supports improved animal and human health. This chair, located in the College of Medicine or the Western College of Veterinary Medicine, will advance One Health research through the lens of water towards improved understandings and interventions that enhance resilience of people, animals, and the environment.

ARTIFICIAL AND GEOSPATIAL INTELLIGENCE AND QUANTUM COMPUTING

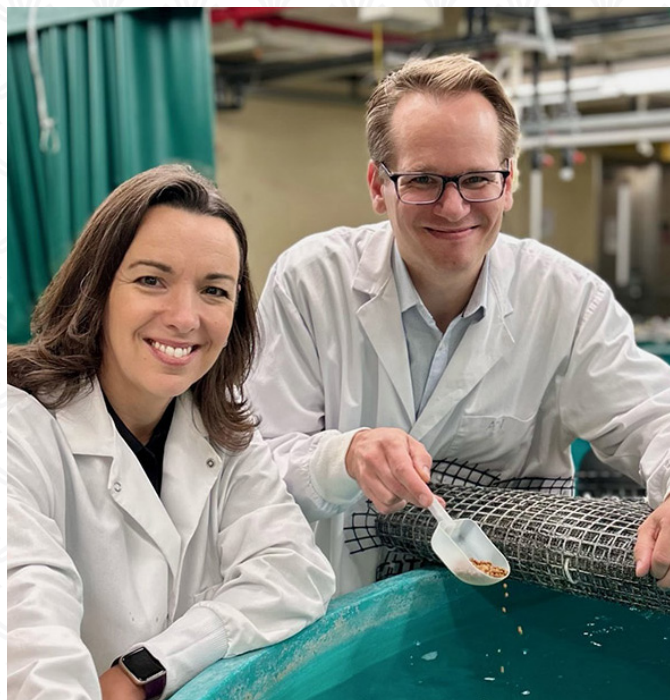
The ways in which our environment is changing in response to threats such as climate change, flooding, drought, wildfires, health threats, urbanization, and land use/cover change are critical to measure and map. Even though data gaps still exist, we have access to so much data that require faster processing and different techniques to analyze and present large and complex data sets. These advances to better harness data mean that we can better understand and manage effects on communities, sectors, and ecosystems. This chair would advance the field of geospatial intelligence, drone-based remote sensing, and big-data analytics by using novel artificial intelligence algorithms and advanced data science techniques supported by powerful hardware that, in addition to traditional high-performance computing, may include quantum information processing. In the process, they would develop applications to enhance resilience and reduce vulnerability to changing water-related threats.

ECO-HYDROLOGY AND NATURE BASED SOLUTIONS

By tapping into the inherent mechanisms of nature, such as wetlands, beavers, and forests, we can effectively reduce the impact of threats like floods and droughts. These natural features play a pivotal role in stabilizing local hydrology. As a society, it is imperative that we both conserve and emulate these elements as integral components of a comprehensive strategy to mitigate water-related risks. The establishment of this research chair, located in the Department of Geography and Planning, will propel innovation through research and education of nature-based solutions, specifically within upstream and urban contexts. With your support, we will reduce the impact of floods and droughts in the face of a changing climate, ultimately safeguarding public well-being.

INCLUSIVE AND ADAPTIVE WATER POLICY AND GOVERNANCE

USask is committed to transitioning to action-orientated research. Doing so requires new forms of interactive governance, that is, how we work together to make evidence-based decisions about future water management. We also need to reflect on the types of policies and structures that will be appropriate and inclusive. Working with Indigenous and non-Indigenous communities, government agencies, not for profits, and private sector partners is essential as we navigate our increasingly uncertain water futures. This chair, located in the Johnson Shoyama Graduate School of Public Policy, Department of Political Science, or School of Environment and Sustainability, will use water management tools and interactive simulations to explore solutions to more water-



secure futures. It will support solution choices based on the best available evidence that combines deep knowledge of the land and water with state-of-the-art modern science towards more inclusive water management.

WATER, ENVIRONMENT, AND SUSTAINABILITY IN EDUCATION

USask is home to the Sustainability Education Research Institute in the College of Education. The proposed chair would take on the role of Director of the Institute, connecting across multiple signature areas at USask, including water and sustainability and communities. Education is the gateway to our youth - growing future leaders and generations who care about water and sustainability. The chair would develop and deliver programs at both undergraduate and graduate levels around sustainability and education and the connections to water management, to climate change and climate change mitigation, and to the role of formal and non-formal education in securing sustainable healthy access to water and wider understandings of sustainability and climate change challenges.

WATER RESILIENCE AND ADAPTATION

Changing water quantities and quality over time, especially extreme events, create greater uncertainty for water managers, communities, and sectors that depend on water (e.g., hydropower and agriculture). As a society, we need to adapt to anticipated events, learning from our experiences. However, we can no longer use historical records to accurately predict the future. This means that we need to design



flexibility into our responses and water management to be resilient to a broad spectrum of water threats as well as what is now being termed compound disasters, or more than one disaster at the same time. This chair, located in the College of Arts and Science, will cross science and social science disciplines to examine uncertainty, early warning systems, and other tools and approaches that can be implemented at the local level to adapt to our changing water futures and enhance water resilience.

ART AND WATER WITHOUT BORDERS

Art is a very powerful medium for communicating science, but art is also a vehicle for scientific discovery. For example, artists compiled what amounts to a catalogue of different cloud shapes well before the classification system was established, which in turn, inspired art. Art remains at the fringes of water research despite recognition of the relationships and feedbacks between research, scholarly, and artistic works. This chair, located in the humanities, will advance the concept of the sci-artist, establishing a space for the creation of new knowledge and advancing social and environmental justice.

LAND-AND WATER-BASED EDUCATION

USask is home to a one-of-a-kind Masters degree in Indigenous land-based-based education. This chair, located in the College of Education, would connect land, water, knowledge, and language. Working through Indigenous ways of knowing, land-based education, and water as a knowledge source, the chair will bridge roles in pedagogical research and as an educator, continuing to develop USask as a world

leading university in bringing Indigenous ways of knowing and being into the classroom, and by extension, into many elementary and high school classrooms across Canada.

ECONOMICS OF WATER

Water is essential for our economy. From energy generation to agriculture, oil and gas, mineral extraction, and processing and manufacturing industries, we depend on water. As such, uncertainties and extremes can have significant financial consequences. For example, the atmospheric river and ensuing record-breaking rainfalls that destroyed transportation infrastructure in British Columbia in 2021 reverberated through the entire economy of Canada. This chair, located in the Edwards School of Business or the College of Agriculture and Bioresources, will focus on understanding exposures and liabilities and water-proofing Saskatchewan and prairie economies.

WATER QUALITY AND REMEDIATION

Water quality in our watersheds is affected by naturally occurring contaminants, pollution from communities and industries, nutrients, and pathogens. Warmer air temperatures and periods of little to no rainfall can help to decrease the quality of our water. Over time, this can make it difficult or more expensive to treat our water or can result in harm to animals and people. This chair, located in the College of Engineering, Department of Chemistry or Department of Biology, will develop technical solutions to remediate water quality, focusing on specific contaminants or on specific sources of pollution.

SUSTAINABLE GROUNDWATER RESOURCES

Groundwater is a critical resource facing pressing and increasing demand—in Saskatchewan, in Canada, and around the world. Changing precipitation patterns and growing water demands for domestic use as well as productive uses such as agriculture, energy, industry, and critical mineral extraction require sustainable management of groundwater resources. Understanding groundwater in Saskatchewan is challenging given its complex geology. It is also subject to contamination. This chair would build on the legacy of the world's top living groundwater scientist and recent winner of the Stockholm Water Prize, Dr. John Cherry, a graduate of the University of Saskatchewan. The chair, based in the College of Engineering, School of Environment and Sustainability, Department of Geology, or Department of Geography, will explore sustainable groundwater management in ways that maintain groundwater integrity while mitigating water-associated risks to the economy and maintaining vibrant communities. In doing so, research will support irrigation, potash development, uranium mining and other key economic sectors that are of local and global relevance.

Woman Plus Water

Women Plus Water is a thriving international community where relationships connect people across borders, elevate women's voices and those of other equity-deserving groups, and creates space for innovative conversations that redefine inclusive excellence in water.

Women Plus Water Visionary

Support the Women Plus Water community that will fund the Women Plus Water online conversation series, expert list, virtual mentorship circles, and exciting growth opportunities.

The Women Plus Water Conversation Series

Informed by academic research and lived experience, our hosts and guests are credible voices from academia, government, Indigenous Peoples, private sector, and civil society, centering equity in water and inviting everyone into conversations around different water themes. Each on-line event is accessible, with live English language captioning, live French interpretation, and post-production French captioning. Sponsorship would support up to five sessions per year.

The Women Plus Water Expert List

This curated list connects people with a demonstrated track record of gender equity in water research, publications, policy, practice, community or youth engagement, entrepreneurship, or art with an international community to solve the world's pressing water challenges and meet the United Nations Sustainable Development Goals (SDGs) by 2030.

Women Plus Water Mentorship Circles

Women Plus Water gives women, young professionals, and allies of all identities on the Expert List opportunities for professional development through active mentorship while empowering a global network of water experts committed to diversity, equity, inclusion, and justice in water.

Women Plus Water Doctoral Scholarships

Fully funded doctoral scholarships create the opportunity to train the next generation of women and people in equity-deserving groups as leaders in water research.

Women Plus Water Endowed Research Chairs (2)

First of their kind research chairs in Canada will develop complementary research programs in gender, intersectionality, justice and water. The rationale for establishing a pair is to create a supportive environment which increases success when working with equity deserving groups.

With your generous support, proposed two Women Plus Water Research Chairs will create opportunities for collaboration, transdisciplinary research, and contribute to a centre of excellence in "Women Plus" water research in Saskatchewan. Given the centrality of water to both natural and social systems, potential themes are multiple and include:

- Intersectionality in Water Research and Practice
- Equity in Water Governance and Management
- Equity, Environmental Integrity, and Economic Growth
- Equity and Food Security in a Changing Water Future
- Participatory Research and Engagement for Equity
- Truth and Reconciliation in Water Research & Practice
- Equity and Disaster Risk Reduction and Response

Women Plus Water Travel Fund

A bursary fund for women and people in equity-deserving groups to travel to conferences, workshops, and international meetings over the next four years. Your investment in this fund will support members of equity-deserving groups to raise their voices on the national and international stage.

Biennial Women Plus Water Conference

Bring the virtual water community together for two biannual in-person Women Plus Water Conferences. Conferences will connect people representing and supporting equity deserving groups from academia, government, civil society, and the private sector around a shared experience of being together to learn and exchange ideas through keynote presentations, panel discussions, training workshops, and individual presentations.



Indigenous Community Research Engagement Fund

As identified in the **“Everyone Together” Global Water Futures-Mistawasis Water Gathering Statement (2023)**, Indigenous communities have a responsibility to design research as stewards of their lands, waters, and peoples. Co-creation of research and learning require time and resources for partnerships, trust, and friendships to develop. The GIWS Indigenous Water Engagement Fund will provide funds to Indigenous communities and organizations to engage with researchers and students at USask in developing research, seeking funding, and designing and delivering collaborative courses.

Indigenous Water Research Fund

For more advanced partnerships, the Indigenous Water Research Fund will provide grants of up to \$25,000 for proposal development or proof of concept small research projects towards obtaining large funding grants. These grants can support, for example, broader community engagement, presentations to Chief and Council, proposal writing, and initial data collection and co-analyses. Ultimately, these funds will catalyze research and longer-term funding for issues such as drinking water access, sustainable water management, and groundwater security.



Water Scholarships

Education and research are imperative to the future of water management. As one of the top water research universities, students and scholars from Saskatchewan and around the world come here to learn and grow while surrounded by the very best and brightest minds. Our students today will be the stewards of the future. Your support of the following scholarships and programs will help students and scholars of all levels and disciplines in their dedication to excellence in water research.

- Undergraduate Student Summer Research Assistantships
- Undergraduate Honours Thesis Scholarships
- Undergraduate Travel Fund Scholarships
- Indigenous Undergraduate Student Summer Research Assistantships
- Indigenous Undergraduate Honours Thesis Scholarships
- Indigenous Undergraduate Travel Fund Scholarships
- Graduate Student Summer Research Assistantships
- Graduate Scholarships (annual)
- Graduate Travel Fund Scholarships
- Indigenous Graduate Student Summer Research Assistantships
- Indigenous Graduate Scholarships (annual)
- Indigenous Graduate Travel Fund Scholarships
- Visiting Scholars Program
- International Exchange Program

Thematic Research Funding

Provide growth opportunities for future generations of water researchers and allow GIWS scientists to respond to external research needs quickly by supporting four-year PhD scholarships or five-year research scientists in critical water research areas such as:

- Climate resilience
- Sustainable development
- Vulnerability to extremes
- Drainage and irrigation
- Water security
- Water-health
- Future water resources / Water sustainability Assistantships



Research Infrastructure

We cannot manage what we do not know. Water research at USask is supported by longstanding field sites and networks (observatories) and cutting-edge analytical equipment. Observatories and analytical equipment are critical to data collection and to establishing longer term trends. Your contributions to this area will support ongoing operation and maintenance as well as expansion of observatories into critical ecosystems, establishing and maintaining community-based monitoring networks, and as a leverage for other funds to replace aging equipment and legacy assets.

- Support environmental monitoring networks
- Support a capital equipment replacement fund

Visionary Spaces

This is your open invitation to support innovation in transdisciplinary water and environment research and training through investing in visionary spaces at USask that will create gathering spaces for people to collectively address the water challenges of the future.



Together, let's

BE WHAT THE WORLD NEEDS

With your generous support, the University of Saskatchewan and the Global Institute for Water Security will generate water solutions for the world for protection and enhanced quality of life, strong economies, and healthy ecosystems.

This is your opportunity to contribute to these critical and innovative solutions alongside world leading scientists, students and faculty.

Will you join us?

In our next chapter, we will transform Saskatchewan and the world by addressing those things you care most about and leave a better world for future generations.

With your support, vision and spirit, the University of Saskatchewan will bridge our deep roots with a bright future. With your support, we will be what the world needs.



UNIVERSITY OF
SASKATCHEWAN



**Global Institute for
Water Security**

give.usask.ca

Contact us for more information:

Dr. Corinne Schuster-Wallace, PhD
Executive Director, Global Institute for Water Security
cschuster.wallace@usask.ca | 306-966-2103

Bea Ewanchuk
Principal and Major Giving
bea.ewanchuk@usask.ca | 403-875-2951