



## Welcome

FROM HOWARD WHEATER

September marks the beginning of a new academic year with students arriving on campus, classes beginning and new connections being made. It is therefore an appropriate time not only to welcome new arrivals, but also to recognise the importance of our students, who will become the next generation of leaders in water research and practice.

The Global Institute for Water Security (GIWS) is committed to offering opportunities for students to join in activities to develop their understanding of the challenges of water security, and to appreciate the need to bring a wide range of expertise together to address these critical issues. We welcome students from the natural sciences and engineering, as well as the humanities and social sciences, and encourage them to learn from each other about the many dimensions of water security.

This newsletter marks an important milestone - the launch of our student member committee, which has come together to host events and seminars to engage University of Saskatchewan students interested in water research. I would like to commend the group on the success of their inaugural event on the 28<sup>th</sup> of September. It was very encouraging to see the high turnout, and the enthusiasm among students for their subject and for the research happening at the U of S and our institute. I hope and expect that the connections made at this event and initiatives to follow will inspire our future leaders in water stewardship and research.



Regards,

Howard Wheeler

*Canada Excellence Research Chair in Water Security*

*Director,  
Global Institute for Water Security*



*A beautiful fall evening descends over Emma Lake, SK. Photo by Raea Gooding, GIWS student member and masters candidate.*

## Student membership takes off

On September 28<sup>th</sup>, the newly formed GIWS student member committee hosted their first event at Browsers on the U of S campus. Over 60 undergraduate and graduate students interested in water research came out to mingle and enjoy food and drink while learning about institute research and how to become involved.

“We had a great turnout – over 60 students signed up for GIWS membership. We are really pleased with how enthusiastic and engaged the U of S student community is when it comes to water research,” said organizing committee and student member Kathryn Hearson. “We definitely achieved our objective of connecting students with each other.”

The student member committee includes masters students Raea Gooding, Kerry Head, Kristine Hunter and Jessica Johansson, and PhD students Chris Marsh and Kathryn Hearson. Their next event, a seminar and panel discussion titled *Attack of the Blue-Green Algae*, is scheduled for October 31, 2012.

# GIWS welcomes Jeff McDonnell as new associate director

Jeff McDonnell is internationally recognized for watershed hydrology research, specifically process studies in hillslope hydrology, isotope hydrology and forest hydrology. This past July, he joined GIWS as associate director, and as professor with the School of Environment and Sustainability (SENS).

The move to the U of S from his position as Richardson Chair in Watershed Science and university distinguished professor of hydrology at Oregon State University was a timely one for this Toronto-born hydrologist ready to return to his home country and join the innovative research team developing at the institute.

“The Global Institute for Water Security presents a rare and exciting opportunity in water research, which I’m happy to be a part of,” said McDonnell. “I was drawn by the magnetic pull of the developments happening here as well as the location of the team at Environment Canada’s National Hydrology Research Centre.”

Watersheds are McDonnell’s focus. He is a field hydrologist and explores the common features of watershed response across diverse scales, climates and hydrogeological settings to develop new frameworks for understanding and modelling streamflow generation. He has set up monitoring and data collection stations at basins all over the world – with current projects in New Zealand, Scotland, Australia, Luxembourg, Chile, Brazil and in the United States in Oregon, California and the Carolinas.

“My research helps answer the basic questions of ‘Where does water go when it rains and when the snow melts?’, ‘What flowpath does it take to the stream?’, and ‘How long does it reside in the watershed?’,” explains McDonnell.

“This research helps us understand nutrient pathways, slope stability and other questions of importance such as understanding where floods come from.”



*Professor Jeff McDonnell joined GIWS in July as associate director.*

He is eager to add Canadian basins to his list of sites and to work with the institute to establish his research program in the Saskatchewan River Basin. As GIWS associate director, McDonnell is looking forward to building the international reputation of the institute and mentoring young faculty.

McDonnell is recognized for attracting high-quality students and postdoctoral fellows and providing strong mentorship and graduate student supervision. He is currently teaching the undergraduate course *Introduction to Hydrology* and is excited about developing new styles of graduate courses within SENS.

“I hope to offer a short course at SENS called *Launching an Academic Career* that helps students understand how the academic environment works and how to succeed within it.”

The course will link to a short course of the same name which Jeff teaches each year at the American Geophysical Union fall meeting in San Francisco.

A hard-working and dedicated academic, McDonnell is nonetheless finding some time to relax and enjoy getting to know his new city. He has joined the department of soil science hockey team, but after his first game last week is unsure whether his knees will last the season!

“The people here in Saskatoon are very friendly and the river is beautiful. There are a lot of opportunities to see live music, and I have been playing a few rounds of golf at the local courses.”





# Building a talented team

Fall is an exciting and busy time of year on a university campus; there's a buzz in the air as new students arrive and begin their studies and get to know their way around campus. A key part of the Canada Excellence Research Chair in Water Security is the commitment to fund training for over 60 graduate students and postdoctoral fellows. Below and on the following page are the profiles of students recently welcomed by the institute.



## **Elvis Zilefac, MSc, BSc PhD student**

Elvis is pursuing his PhD in Environment and Sustainability with professor Howard Wheeler and associate professor Naveed Khaliq. Elvis holds a MSc in Water Resources Engineering from the Lund Institute of Technology, Sweden and has worked in Cameroon on groundwater flow modelling for landfills, wetland design and project management for a local organization. His PhD will focus on bridging the gap between large-scale and local-scale climate model simulations for the needs of end-users. The local-scale model is useful for extreme flood and drought impact assessments.



## **Anna Coles, MSc, BSc PhD student**

Anna is pursuing her PhD in Environment and Sustainability with professor Jeff McDonnell and is exploring the hydrological connectivity processes between prairie pothole geography in the St. Denis National Wildlife Area. She holds a BSc in geography and an MSc in risk and environmental hazards from Durham University in the United Kingdom. Last year, she worked in hydrology labs at Oregon State University and at the Centre de Recherche Public in Luxembourg.

*“The Global Institute for Water Security is a new and exciting place with fantastic facilities and connections with other U of S research groups. As a student here, I feel I will be able to play a part in research into important issues.”*

**-Anna Coles, GIWS student member and PhD candidate in Environment and Sustainability**



## **Kristen Bruce, BA MPP student**

Kristen joined the institute on June 1<sup>st</sup> in a joint student position held with Agriculture and Agri-Food Canada. She graduated from the U of S with a BA in psychology in 2011 and worked in quality control in the potash industry following her degree. She is pursuing her Master of Public Policy at the Johnson-Shoyama Graduate School of Public Policy under the supervision of professor Patricia Gober, and participating in the socio-hydrology research project examining stakeholders' perspectives of water security in the Saskatchewan River Basin.



## **Edward Bam, MPhil PhD student**

Through his PhD research with assistant professor Andrew Ireson, Edward Bam will be assessing the sustainability of groundwater in rural Ghana under the effects of climate change. Prior to joining GIWS, Edward worked as research scientist and deputy head of the Isotope Hydrology Laboratory for the Ghana Atomic Energy Commission. He is pursuing his PhD in Environment and Sustainability.





Raea Gooding (right) and Alyssa Roth pull mummichogs and other creatures out of a seine net in New Brunswick as part of a CWN workshop.

## Inspiring water leaders

In June, GIWS and SENS masters candidate Raea Gooding attended a week-long Canadian Water Network workshop on coastal watershed management in the Northumberland Strait on Canada's east coast. Here is her account of the experience:

*"The week was packed with informative presentations of issues and current research, visits to hatcheries, oyster farms, First Nations reserves and other sites, and hands-on activities.*

*Coming from Saskatchewan, it was interesting to see the water-related issues in the Northumberland Strait and how they differed from and were similar to those on the Prairies.*

*There were graduate students and young professionals from various disciplines related to hydrology all across Canada, and we came together to discuss and present a new policy plan for the Northumberland Strait that would address emerging and persistent issues in the area.*

*I was deeply impressed and inspired by the knowledge, experience, enthusiasm and ingenuity of all these young people. I am really looking forward to more opportunities to apply my studies in the future."*

**-Raea Gooding,  
MES candidate and GIWS student member**

## GIWS student profiles



### **Badrul Masud, MEng PhD student**

Badrul is pursuing his PhD in Environment and Sustainability with associate professor Naveed Khaliq and will be conducting dynamic downscaling and drought analysis for the institute. He holds a MEng in Agricultural Systems and Engineering from the Asian Institute of Technology in Thailand.

### **Noel Galuschik, BSc MES student**

Noel joined the institute in September to study with assistant professor Helen Baulch, specifically contributing to biogeochemistry research examining nutrient cycling in the Tobacco Creek Watershed. She holds a BSc in biology from Westminster College, Utah and is pursuing her Master of Environment and Sustainability.



## Mark your calendars: Upcoming GIWS guest lectures

**November 6:** GIWS is pleased to welcome Gordon Grant, research hydrologist, USDA Forest Service and courtesy professor, College of Earth, Ocean and Atmospheric Sciences, Oregon State University. Grant will give a seminar titled *It's Not Just About the Snow: How Geology Controls Streamflow Response to Climate Change in the Western Cordillera*.

**November 14:** The institute is also pleased to welcome Michael Chu, assistant professor with the College of Engineering and Architecture, North Dakota State University. The title of Chu's lecture is *A New Look at Overland Flow: Why Do Puddles Matter?*

More details will be listed shortly on our website.







*In Bangladesh, women and girls are responsible for gathering water for families. During cyclones, freshwater supplies normally accessed may become contaminated by sea water.*

## Investigating maternal health and water salinity

GIWS and SENS assistant professor Andrew Ireson is part of an international research team investigating the links between a rise in pre-eclampsia, eclampsia and hypertension in pregnancy, and drinking water salinity for women living in the Ganges-Brahmaputra Delta in Bangladesh.

“During the dry season, when rainwater harvesting is not viable, water resources come from a combination of ponds and groundwater, both of which are vulnerable to salinization by sea-water originating in the Bay of Bengal,” explains Ireson. “We are investigating the causes of salinity, and how these may be affected by agricultural practices, in particular shrimp farming, and water management in the river systems. The area is also particularly vulnerable to climate change.”

In May, Ireson spent ten days in Bangladesh leading initial field investigations for the research project. The time was spent identifying important water supply ponds and aquifers, scoping out field sites for ongoing monitoring of the hydrological conditions and salt dynamics, and meeting with local people, doctors and experts to discuss the issues.

“We hope that by understanding the physical mechanisms that lead to salinization, management policies may be designed that will mitigate against these problems and protect freshwater supplies and the health of pregnant women.”

## Upcoming events and important dates

**October 19, The Walkerton Inquiry Ten Years Later: Lessons Learned**, SENS seminar by guest lecturer Justice Dennis O’Connor from the Ontario Court of Appeal.

**October 31, Attack of the Blue-Green Algae**, seminar and panel discussion organized by the GIWS student member committee.

**November 3, Co-operating to Build a Better West conference**, keynote speech by Howard Wheeler.

**November 27, Canadian Water Resources Association Fall Workshop, Integrating Agriculture, Environment and Economics at a Watershed Scale**, keynote speech by Howard Wheeler.

For up-to-date event listings and more information, we encourage you to visit [www.usask.ca/water](http://www.usask.ca/water) regularly.

## U of S enhances groundwater expertise in sustainable resource development

Matthew Lindsay, assistant professor in the department of geological sciences is one of the most recent water research faculty to join the U of S.



Lindsay holds a PhD in Earth Sciences from the University of Waterloo and most recently held a postdoctoral fellowship in the department of earth and ocean sciences at the University of British Columbia.

His research at the U of S will focus on understanding the linkages between biogeochemical processes, hydrogeological conditions and water quality at oil sands and metal mining operations. He will be examining methods to promote beneficial processes during land reclamation with the overall aim to aid the development of management and closure strategies that offer measureable long-term improvements to water quality.