



## From the Executive Director's Chair

### Inside:

- *World Water Day Preparations*
- *WI Workshop proposals awarded*
- *Waterloo hiring for five new water research positions*
- *Progress with the graduate student chapter*

A critical mission of the Water Institute (WI) is to foster opportunities for interdisciplinary research and education. In discussions I've had with similar institutions this goal has been elusive. Encouraging researchers to move out of their comfort zone to "talk shop" with people speaking what is often another language is critical. There is no doubt that researchers at the University of Waterloo, in collaboration with numerous partner institutions, are engaged in multidisciplinary research on several of the most compelling water issues of the day. However, introducing a greater level and appreciation for interdisciplinarity remains a significant challenge.

Take, for example, the "water-energy nexus" associated with the development of the Alberta oil sands. WI members from several faculties have been involved in aspects of this highly complex issue for over a decade, working on tailings management, ecologic impacts, downstream effects, reclamation and associated governance issues. Although there is some degree of cross-disciplinary activity, much of the work has been completed by separate groups in individual departments. The challenge for the Water Institute is to help coordinate our overall efforts to maximize access to the enormous opportunities that lie in dealing with the future management of this natural resource.

The rapidly evolving challenge of agricultural management in Canada is another case in point. Changes in world economies, food pricing, increasing demand for bioproducts, conjunctive water use stresses and the spectre of climate change has thrust this topic onto the world stage. Again, numerous WI members are engaged in different components of the agricultural challenge (where water plays a pivotal role), yet to fully realize the opportunities in this area, co-ordination of our joint efforts are critical. There is hardly a week that goes by that either one or both of these issues does not make the front page of our national newspapers. These areas, and others, are ripe with opportunity for interdisciplinary collaboration and WI is working on mechanisms to promote their development.

*Introducing an appreciation for interdisciplinarity remains a significant challenge*

One approach the WI is taking to help facilitate more interdisciplinary discussion and collaboration is through the Water Institute Workshops program. This program was designed to provide a venue for WI researchers to explore new collaborative opportunities with other WI members, collaborators from partner institutions, industrial collaborators

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## Director's Chair (cont.)

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and members of civil society. In the first series, announced in January this year, workshops are being organized in membrane-based water treatment, ecosystem resilience, and wetland management and governance (see pg. 5). Each is designed to explore new opportunities with a broad mix of participants.

A second WI initiative that is firmly rooted in the culture of interdisciplinarity is the graduate student chapter of WI, which has made great strides in the last few months. SWIGS (Students of the Water Institute, Graduate Section) has gone out of its way to be inclusive and currently has actively participating graduate student members from across campus. This organization is unique in that it is perhaps the only graduate student organization on campus with dedicated funding to help support student-driven initiatives and programs. The events coordinated by this ever-growing group of young researchers are exposing the next generation to a broad spectrum of water issues. What better way to foster an interdisciplinary culture?

Lastly, the arrival of the CERC chair in the emerging cross-disciplinary field of ecohydrology is another mechanism to improve the interdisciplinary culture of water research at UW. As described on page 4 of this newsletter, the

appearance of the CERC chair is accompanied by three new faculty positions in a range of areas. These job positions have been advertised without mention of department for a reason: not only does the university want to attract the best candidates, but it also wants to look past conventional department affiliations, with an eye toward encouraging a campus-wide climate of collaboration.

The Water Institute is committed to fostering interdisciplinary thinking and action in all forms. These current initiatives represent just the start.

Dave Rudolph  
Director  
Water Institute



## Water in the News

### Chemistry professor inducted into RSC

Janusz Pawliszyn, professor of chemistry, was inducted as a Fellow of the Royal Society of Canada in an awards ceremony in Ottawa in November 2010. His noted research contributions are in the development of state-of-the-art, integrated and automated analytical methods and instruments for on-site analysis and monitoring of living and environmental systems.

### Finalist for "Water's Next" announced

Water's Next, a special supplement published in January by Water Canada, showcases some of the best and brightest in Canada's water sector. After a long nomination and selection process, Dr. Peter Huck was selected as one of five finalists in the people category. Huck and his research team were acknowledged for their research which "makes increasingly polluted water safer to drink." This is fuelled by their

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## Water Institute Events and Activities

### Recent Events

- It was recently announced that Rob de Loë of Environment and Resource Studies is one of four winners of the University Award of Excellence in Graduate Supervision.
- The Water Institute has expanded its search for a managing director to include external candidates. Applications were due by January 24, and the review and interview process will begin shortly.
- The Water Institute hosted two great seminars from speakers Alex Cambell, of Lifewater.ca, and Jack Imhof, of Trout Unlimited.

### Upcoming Events

- World Water Day Graduate Fair poster submissions due **March 1** (see pg. 6)
- The 3rd Annual Student Colloquium on Climate Change, South Campus Hall (SCH), **March 10-11**. The Colloquium will take place during Climate Change Awareness Week (March 7-11). Activities include a symposium and a number of prominent speakers.

- Canada Water Week **March 14-22**.
- World Water Day Graduate Research Fair and Water Celebration. **March 22, EIT foyer. See pg. 6 (poster abstracts due March 1)**
- Water Institute Seminar Series: Steve Hrudehy, University of Alberta. "Royal Society of Canada's report on the Oil Sands" **March 24, RCH 211**
- Park Reilly Distinguished Seminar Series in Chemical Engineering: Panagiotis D. Christofides, University of California, Los Angeles. "Optimal operation and control of reverse osmosis desalination systems" **April 18, DWE 2529**.

See our website for detailed and up-to-date event listings:

<http://water.uwaterloo.ca/>

### Water Institute Photo Contest!

We are on the hunt for great photos of water research! Prizes will be awarded to the best photos received. Keep on the lookout for an online upload site. In the meantime, please e-mail your best photos to [water.institute@uwaterloo.ca](mailto:water.institute@uwaterloo.ca), and we'll put you in the running.

## Beyond Waterloo: Water-related Events

- Zero Flow: A PUB (Predictions in Ungauged Basins) Workshop on Intermittent Streams. **February 23-25, Drumheller, Alberta.**
- Connecting Water Resources 2011: Responding to the Opportunities, **February 28-March 3, Ottawa, Ontario**. Organized by the Canadian Water Network.
- Seminar: Professor G. Pollack, University of Washington, "The Secret Life of Water: E=H<sub>2</sub>O", **March 29**, 4 p.m., LLC Room 1714, **University of Guelph**
- 1st Biennial Lake Simcoe Protection Plan Science Forum: Science at Work, **May 26-27, Kempenfelt Conference Centre, Barrie, Ontario**
- Canadian Water Summit 2011: Opportunities for Designing our Water Future, **June 14, Toronto, Ontario**
- Canadian Water Resources Association 64th Annual Conference. "Our Water-Our Life-The Most Valuable Resource." **June 27-30, St. John's, Newfoundland**
- 2nd International Forum on Integrated Water Management. "Stormwater Management in Urban Areas", **October 23-25, Sherbrooke, Quebec**

## Faculty Profile: Bill Taylor, Biology



Bill Taylor recently finished his term as the Canada Research Chair in Limnology, but that doesn't mean that he's slowing down. Bill, whose research focus is the ecology of inland waters, is an expert in nutrient cycling in surface water systems, studying the impact of human activities, particularly agricultural runoff, on the healthy functioning of stream, river, and lake ecosystems. With continual changes in land management in southern Ontario, it is a constant battle trying to both understand and manage the negative influences of an excess of nitrogen and phosphorus. With too much of these nutrients in aquatic systems, plant life tends to thrive so much so that algae can choke up streams, depleting the oxygen supply needed for healthy ecosystem functioning. In these low-oxygen

streams, fish cannot survive, biodiversity suffers, and aesthetics diminish, making the waterways less appealing for recreation.

Taylor's group focuses on filling knowledge gaps in the understanding of fate and transport of phosphorus by determining how phosphorus cycles through the food web. This has direct implications for practical management. For example, working with the Grand River Conservation Authority, Bill and his research group work to improve the Grand River, which, with a number of wastewater treatment plants and extensive agriculture, suffers from significant problems related to nutrients.

While much of this work is locally focused with global implications, Bill has a long history of research in East Africa where he has worked studying lakes in the Rift Valley. Bill is about to begin researching the massive Three Gorges Dam Reservoir in China with researchers from the University of Windsor.

## Water news (cont.)

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examination of water treatment issues, particularly at the municipal level.

Dr. Wayne Parker (CEE) was among the five additional nominees receiving special mention from Water's Next. Parker's research is in the area of wastewater treatment and emerging contaminants.

### **New water faculty positions at Waterloo**

The University of Waterloo is seeking applications for tenure-stream faculty positions in the following three, broadly defined areas:

- Geomicrobiology or biogeochemistry of continental hydrosystems
- Hydroecological modeling
- Water resource management and governance from a social science perspective.

These positions, which are not specific to any given department, are part of the university's

attempt to further increase its capacity and reach in the area of water research.

In addition to these university-wide job opportunities, ads are currently being circulated for positions in Engineering Hydrology (Civil & Environmental Engineering), and for an Industrial Chair in Groundwater Remediation (Earth and Environmental Sciences). Expect new WI members soon!

### **CERC chair makes plans for arrival**

Plans are progressing well for Philippe Van Cappellen's (CERC in Ecohydrology) transition from Georgia Tech to Waterloo (June 1, 2011). Philippe will occupy office and lab space in the EIT and physics buildings, and though the space has been identified, having renovations completed for his arrival will be a challenge. (Thanks to Shaun Frape and Scott Nicoll for their efforts on this front.) We have also had visits from four members of Philippe's group that are likely to transfer to Waterloo, and the

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## Water Institute Workshop Proposals Awarded

Early this year the Water Institute was pleased to offer financial support for the development of workshops or small symposia that had the potential to further the goals of WI, notably to encourage new and novel collaborative activities both on and off-campus. These workshops or small symposia were evaluated on their potential to enhance interdisciplinary research, to increase academic-government-industry partnerships, to educate and address issues concerning water management, and their anticipated outcomes.

The Water Institute is pleased to announce the winners of the workshop funding.

- Larry Swatuk (Environment, Enterprise and Development) and Jonathan Price (Geography and Environmental Management) were selected for their proposal, *"Governing and managing wetlands and watersheds: Comparing international practices."* This 2-day workshop will hold two public lectures on sustainable water governance and management, and will be followed by a closed one-day session to discuss e-learning courses in wetland governance and management.
- Stephen Murphy, Maren Oelbermann, and Sarah Wolfe, (Environment and Resource Studies), *"Assessing the adaptation and resilience of water based ecosystems"*. The workshop would focus on the often slippery nature of 'managing' water based ecosystems where administrative and disciplinary silos often prevent effective design of research or implementation of decisions. The workshop aims to bring together scientists and decision makers at the new Summit Centre for the Environment in Huntsville, Ontario to investigate how best to unite stakeholders goals.
- Christine Moresoli's and Ramila Peiris, (Chemical Engineering) *"Opportunities for research partnerships in membrane-based water treatment applications."* Focused on membrane technology, this 1-day workshop brings together industry with high-profile international and Canadian researchers to identify potential synergistic collaboration opportunities. Top membrane experts from Switzerland and Australia will be invited to the table to discuss the future of membrane treatment technology.

### Spotlight: Interdisciplinary Centre on Climate Change

The Interdisciplinary Centre on Climate Change (IC<sup>3</sup> or "ice cube") advances research on climate change through an interdisciplinary approach; understanding the physical basis of climate change, its impacts on biophysical and human systems, and adaptation and mitigation strategies in response to changes. Research at IC<sup>3</sup> is supported by cutting-edge developments in observing system technologies and advanced numerical modeling. The centre is a focal point for researchers from different disciplines working on climate change on a variety of spatial (local to global) and temporal (annual to millennium) scales, as well as a hub for graduate students enrolled in Master's and PhD programs of participating centre members. IC<sup>3</sup> has five areas of research: atmospheric science; cryospheric science; human dimensions; observing systems and modeling; water, ecosystems and biogeochemical cycling. A sixth integrating theme, called Education, Outreach and Services provides a vehicle to showcase the activities of the centre, to deliver climate-related information to the public, and to liaise with government agencies and industry.

The Centre is based in the Faculty of Environment but includes researchers from Waterloo's faculties of engineering, mathematics, and science, as well as from Environment Canada.



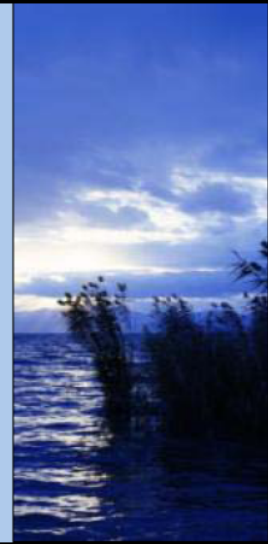


# World Water Day

## Graduate Research Fair & Water Celebration

**Tuesday, March 22<sup>nd</sup>, 2011**

**EIT Foyer, University of Waterloo**



We would like to invite you to participate in the second annual World Water Day Graduate Research Fair and Water Celebration, an offshoot of a similar event held at Wilfrid Laurier in 2010.

The Water Institute and its student chapter, SWIGS, have teamed up with Laurier's Institute for Water Science and Cold Regions Research Centre to host an all-day event on March 22nd, UN World Water Day. The event is intended to highlight the depth and breadth of local water research, provide networking opportunities between water researchers and practitioners, and encourage awareness of local and global world water issues. The event includes:

- An afternoon of graduate and undergraduate poster presentations in water research. Poster submissions are due March 1, and may be submitted online.
- Talks on water science, technology, and policy, including a keynote speech from author and University of Waterloo/CIGI Professor Thomas Homer-Dixon
- Booths from local community, government, and business
- Water sector networking and job opportunities

We are actively looking for water sector industry/business/government partners to help sponsor the event and/or set up a booth to network with researchers and current graduate students. If you are interested in participating, please contact [water.institute@uwaterloo.ca](mailto:water.institute@uwaterloo.ca)

## Water news (cont.)

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logistics for ordering and receiving equipment are now being worked out.

Philippe will be in Waterloo from Feb. 27 to March 2 and again from March 21 to March 27. If you wish to meet with him during these visits, please contact Lorraine Albrecht ([klalbrec@uwaterloo.ca](mailto:klalbrec@uwaterloo.ca))

The Water Institute is actively soliciting suggestions for ways we can help individual members, both students and faculty, push the envelope in the area of water research and ensure that Waterloo continues to be a leader in the field. If you would like your research, recent successes or future water-related events highlighted in future issues please contact Assistant Professor James Craig at [jrcraig@uwaterloo.ca](mailto:jrcraig@uwaterloo.ca).

## Students of the Water Institute, Graduate Section

SWIGS is a newly formed student group at the University of Waterloo. A subsection of the Water Institute, it is focused on encouraging interdisciplinary collaboration among students and the faculty and partners of the Water Institute. Membership is open to graduate students of all faculties who have an interest in water-related issues.

### News

- SWIGS' constitution and by-laws have been written and accepted by members at a general meeting on Feb. 3. They will soon be submitted to the Graduate Student Association to obtain official status as a graduate student group.
- Three student seminars, focusing on interdisciplinary research, have been held with a great turnout. Contact SWIGS if you are interested in participating.
- The Ban the Bottle campaign has begun with efforts to garner support and awareness about plastic bottled water on and around the university; they are also building relationships with other organizations inter-

ested in stopping bottled water use (WPIRG, Polaris)

- The SWIGS website ([swigs.uwaterloo.ca](http://swigs.uwaterloo.ca)) has been expanded. It now includes a forum where members can discuss water-related issues and research.

### Upcoming Events

- World Water Day conference: a student driven research conference that will include speakers, poster presentations and networking opportunities. **March 22, EIT Foyer.** Student volunteers are still needed. (see page 6)
- A "Blue Drink" mixer is being planned. Students, faculty and industry professionals can meet and discuss topics off campus and in a relaxed atmosphere.

**SWIGS is seeking student volunteers from all departments!**



## Student Profile: Michele-Lee Moore



Michele-Lee is pursuing a PhD in Global Governance at the Balsillie School for International Affairs, a joint initiative between Waterloo and Wilfrid Laurier. Michele-Lee gained her bachelor's in Ecology and Evolution from the University of Western Ontario before going west for her master's in Geography at the University of Victoria. Now at the Balsillie School, she is focusing her studies on water governance and the role of networks in enabling cross scale interactions between local river basin organizations and water ex-

perts at the global level. Michele-Lee is a Balsillie Fellow at the Centre for International Governance Innovation and a McConnell Fellow at Social Innovation Generation (SiG), a national collaboration dedicated to addressing social and ecological issues in Canada.

Michele-Lee is also the vice-chair of outreach initiatives at SWIGS. In that capacity she is working on the "ban the bottle" campaign and developing outreach activities to connect graduate students involved in water research with the Kitchener-Waterloo community at large.



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## UNIVERSITY OF WATERLOO

The sustainable management of the world's fragile water resources has emerged as one of our greatest challenges. The University of Waterloo has been actively involved in water-related research throughout its history. Since its inception in 1957, Waterloo has deliberately and systematically fostered a highly diversified water research capacity in topics that cross faculty boundaries campus wide. Over the more than five decades of growth, Waterloo has emerged as an internationally recognized research institution specializing in aquatic ecology and toxicology, groundwater, atmospheric sciences, hydrological sciences, water and wastewater treatment, and water policy, management and governance. More than 110 faculty members from all six faculties and close to 20 departments are engaged in these key areas providing innovative expertise in research, education, and technology development.

Fostering interdisciplinary research and empowering individual faculty, the Water Institute aims to use the strength of Waterloo's people to improve the management and understanding of our most precious commodity.

"We forget that the water cycle and the life cycle are one."  
Jacques Yves Cousteau



### Contact Us!

The Water Institute is actively recruiting student and faculty volunteers, and always on the lookout for new ways to improve the services we provide. Contact [water.institute@uwaterloo.ca](mailto:water.institute@uwaterloo.ca) or talk to one of the SPC members to get involved.