



From the Executive Director's Chair

Editor's Note: As many of you are aware, there has recently been a leadership change at the Water Institute. We are very pleased to announce that Dr. Robert (Bob) Gillham has been appointed Executive Director of the Institute. Bob brings tremendous experience and credibility to this important role. The inaugural Executive Director, Dr. Dave Rudolph, will remain with the Institute as Associate Director. Dave's leadership and passion were instrumental in guiding the Institute through its formative years. Bob and Dave have contributed the following editorial.

As approved by the University of Waterloo Senate in 2009, the primary goal of the Water Institute (WI) is to increase the national and international profile of the University of Waterloo as a centre of excellence in water research and teaching. As we approach the mid-point of the initial mandate, it is perhaps appropriate to reflect on the road travelled, or more importantly, on the road yet travelled. It is our intention here to briefly acknowledge some of the progress and activities of the first three years, but primarily to suggest priorities to be pursued over the next two to three years.

With no clear model to follow, establishing the administrative structure and the policies and procedures of the Institute within the larger structure of the university was a challenging and time-consuming task. During this period the web page was estab-

lished as well as various programming activities, including the seminar series, the workshop competition, the distinguished lecture series and our inaugural graduate student scholarships. Of particular note, the graduate students established the affiliated and very active student association, SWIGS. Of the various research initiatives supported by WI, the Canadian Excellence Research Chair (CERC) in Ecohydrology and the Southern Ontario Water Consortium (SOWC) were clearly the most significant, with both programs bringing substantial resources and recognition to the university.

As we approach the mid-point of the initial mandate, it is perhaps appropriate to reflect on the road travelled, or more importantly, on the road yet travelled.

Looking to the future, we suggest three areas requiring early attention:

Education Programs: The development of interdisciplinary teaching programs at the undergraduate and graduate levels is viewed as a critical component of the Water Institute mandate. In particular, as the growing complexity of water issues is recognized, there is a pressing need for professionals who have a much broader interdisciplinary background

(Continued on page 2)

Inside:

- World Water Day preparations
- WI in Brazil and Israel
- WI Workshops
- WI Scholarship Recipients

Director's Chair (cont.)

(Continued from page 1)

than is currently provided by most educational programs. A committee of WI members was recently established to consider a range of educational options and ultimately to recommend a course of action to the Institute's Strategic Planning Committee (SPC). Offerings ranging from new courses and new degree programs to professional development programs are under consideration. However, based on very early discussions, the committee is likely to focus initially on the opportunities and challenges associated with the introduction of an interdisciplinary component to the existing graduate degree programs. While there are many details yet to consider, in principal, students would continue to focus on discipline expertise while gaining exposure to principles, concepts, tools and terminology of other water-related disciplines.

External Relations: A significant strategy towards meeting the WI goals is the engagement of external partners. Strong relations between the WI and industry, governments, civil society organizations and other research institutes is important for increasing recognition and providing opportunity for our members. Though the WI has developed numerous relations with external organizations over the past three years, this activity has not proceeded in an organized and systematic manner. A committee was recently formed to explore options to engage our external partners in a more focused and effective manner. As part of its activities, the committee will examine the potential for a corporate membership program. Such a program could facilitate more regular corporate access to WI members, students, research and events in exchange for modest financial support. We are also in the process of establishing an external advisory board for the purpose of advising WI on a number of matters, including opportunities for strengthening partnerships.

Engagement of Faculty Membership: With over 130 members spread across all six faculties, communication with, and engagement of,

the faculty membership is an essential but challenging task. As participation in the Institute is voluntary and researchers have other commitments to departments and research programs, the WI must clearly articulate and demonstrate its purpose and value. The WI does not fund researchers or research so WI must achieve its goals through facilitating collaboration, identifying opportunities, supporting development of new research and education programs and disseminating knowledge. This, of course, requires mutual understanding and close communication between WI and its members.

While the Water Institute has made significant progress through its first two years, year three will see a renewed focus on interdisciplinary water education and external partnerships. We look forward to your support as we address these priorities.

Bob Gillham
Executive Director



Dave Rudolph
Associate Director



The Water Institute in Brazil and Israel

The Water Institute accepted invitations to participate in two high-profile international missions in late-2011. Kevin Boehmer represented Waterloo/the Water Institute on a joint Federal (Department of Foreign Affairs and Trade) - Ontario (Ministry of Economic Development and Innovation) water/wastewater mission to Brazil in early November 2011. The mission consisted of Ontario-based government, university and water industry representatives and visits to the Brazilian cities of Belo Horizonte and São Paulo. In each city, the Water Institute participated in workshops, site visits and individual meetings with Brazilian water utilities, universities and private sector companies. Several potential Waterloo/the Water Institute—Brazilian institutional or research agreements were identified during the mission and are presently being assessed in more detail.

Representing the Water Institute and the Southern Ontario Water Consortium (SOWC), Bob Gillham travelled to Israel last November as a member of the Canadian contingent of the Canada-Israel Water Working Group. The Working Group was established in response to the Canada-Israel Innovation Initiative of 2010

and is charged with the identification and development of topics of mutual interest concerning water technology collaboration. The meeting was held in conjunction with a major international conference/trade show on water technology (WATEC 2011) and built on two previous meetings, one in Toronto (November 2010) and one in Tel Aviv (July 2011). The next meeting is likely to be held in Toronto in July, 2012. Currently the Working Group is directing much of its attention to the development of technology demonstration platforms, and thus the SOWC could become an important and integral component of the Canadian contribution.

Many in the Canadian delegation were surprised to learn that by 2015, it is expected that the domestic water supply of Israel will be independent of climatic conditions. One of the consequences is a strong engineering and technological focus on desalination, water and wastewater treatment and reuse, with perhaps less attention to watershed processes.

Water Institute members with particular interest in working with Brazilian or Israeli partners are encouraged to contact Kevin or Bob.

Spotlight: Canadian Cryospheric Information Network

The Canadian Cryospheric Information Network ([CCIN](#)), located in the Department of Geography and Environmental Management, was developed through a collaborative partnership between the Canadian Space Agency, Environment Canada, Natural Resources Canada, Dr. Ellsworth LeDrew, Department of Geography, University of Waterloo, and Noetix Research to provide data management for the Canadian cryospheric community. CCIN has been operating continuously for nearly two decades to enhance awareness and access to Canadian cryospheric information and data.



In July 2007, the Polar Data Catalogue (PDC, www.polardata.ca) was launched as an on-line metadata Discovery Portal. The PDC is hosted by the Department of Geography and Environmental Management at the University of Waterloo and is currently supported by numerous partners. The PDC website is a metadata repository for Arctic and Antarctic researchers who collect information on natural sciences, public policy, health and social sciences, and other fields. Metadata are descriptive information about a dataset that can be searched to allow others to discover the data's existence and characteristics. At present, there are approximately 1,200 metadata records in the PDC, making it the largest archive of polar metadata in Canada. The metadata can be freely accessed via a geospatial search tool as well as through partner metadata portals in other countries.

Faculty Profile: Larry Swatuk, School of Environment, Enterprise and Development



Dr. [Larry Swatuk](#) is an Associate Professor and Director of the International Development program in Waterloo's Faculty of Environment. Prior to coming to Waterloo in the fall of

2008, Larry spent 13 years in Africa, the last 11 at the University of Botswana - seven on the main campus in Gaborone and four at the Okavango Research Institute (ORI) in Maun where we was Associate Professor of Natural Resource Governance. He has published extensively on issues pertaining to the 'wise use' of the resources of the Okavango River basin.

For three weeks during each Canadian summer he teaches a modular course on Water and Security at the University of Western Cape in South Africa - a course he initially developed 11 years ago for the SADC region multi-university M.Sc. in Integrated Water Resources Management. Partly due to his training in political science and international relations, Larry specializes not only in decision-making around the use of water resources, but in the training of decision makers for dispute resolution and negotiation on these same resources. In 2008 he produced a training manual based on his experiences for the

UNDP-sponsored Cap-Net (available free online in 3 languages at www.cap-net.org), and continues to facilitate short courses, most recently for the UNDP/OSCE in Dushanbe, Tajikistan and in Delft, The Netherlands through UNESCO's PCCP program.

Larry was instrumental in recently establishing a new Masters in Development Practice program through Waterloo's School of Environment, Enterprise and Development (SEED). The program aims to produce graduates with a set of practical skills and functional forms of knowledge in the interrelated areas of management, social science, physical science, and health as they relate to the practice of international development. The program is part of an international network of 25 universities put together by the [MacArthur Foundation](#) that strives to fill the serious practical and multi-disciplinary gaps in existing International Development Studies (IDS) programs that do not match the needs and aspirations of young people today. As part of this program, the MDP at Waterloo will offer a series of four water courses (three online) for those wishing to pursue water resource management as their area of concentration.

Larry continues to research and educate on opportunities and challenges of implementing integrated water resources management (IWRM) in Southern Africa.

Water Institute Scholarship Recipients

Nearly 60 applications from across four faculties were received for the four-\$5,000 scholarships offered by the Water Institute. One Masters-level recipient and one doctoral-level recipient were selected for each scholarship.

The 2012 **Golder Associates** Graduate Scholarships in Water recipients are:

Ms. Lauren MacDonald, Ph.D. student, Biology: Hydroecological and biogeochemical conditions of Wapusk National Park lakes.

Ms. Jana Tondou, MSc student, Biology: Water isotope tracers, periphyton and paleolimnology: An interdisciplinary approach to aquatic monitoring in lakes of Old Crow Flats, Yukon Territory.

The 2012 **ARCADIS** Graduate Scholarships in Water recipients are:

Ms. Madeline Rosamond, PhD student, Earth and Environmental Sciences: Impacts of agricultural and wastewater effluent on nitrogen

(Continued on page 8)

Water Institute Events and Activities

Recent Events

- The Water Institute hosted a seminar in January and two seminars in February. **Roland Hall**, University of Waterloo, addressed "Information across broad spatial and temporal scales is important for water resource management: A case study from the Peace-Athabasca Delta." **Gerald Pollack**, University of Washington, spoke about: "The secret life of water: $E=H_2O$." and **Zafar Adeel**, United Nations University, presented a talk entitled: "Crawling under the roadblocks to global water solutions."

Upcoming Events

- World Water Day Graduate Fair poster submissions are due **March 9** (See page 7).
- The ecohydrology research group offers a monthly seminar series. See ecohydrology.uwaterloo.ca for details.
- Adrian Smith Lecture: The 2012 lecturer is Philippe Van Cappellen. The lecture, titled "The hitchhiker's guide to the Earth system

(using silicon as an example)" is scheduled for **March 20**, OPT 1129, 2:00 pm.

- WI Workshop: March 21-23: Governing Wetlands and Watersheds: Issues, Cases, Practices. Keynote addresses will occur along with student sessions. Keynote speakers are: **March 21**: Bill Mitsch, **March 22**: Doug Merrey, **March 23**: Pieter van de Zaag.
- World Water Day Graduate Research Fair and Water Celebration. **March 22**, 10:00-5:00, Federation Hall (See pg. 6).
- Water Institute Seminar: **March 29**, 2:30 pm, PHY 150. Jeff McDonnell, Oregon State University, will deliver his 2011 Birdsall-Dreiss lecture: "Where does water go when it rains? Conceptualizing runoff processes in headwater catchments."
- 2012 [Darcy Lecturer](#): Majid Hassanizadeh, Utrecht University, will deliver a lecture titled: "Transport of viruses in partially saturated soil and groundwater." **September 13**, DC 1302.

Water Institute Workshops

The Water Institute is pleased to financially support the development of workshops or small symposia that enhance interdisciplinary water research, facilitate university-government-private sector partnerships and build knowledge and capacity to address emerging water management issues.

The first Water Institute call for workshop proposals was conducted in 2011. Three applicants were awarded funding with the final workshop scheduled for March 21-23, 2012. "*Governing Wetlands and Watersheds: Issues, Cases, Practices*" is being organized by Larry Swatuk (Environment, Enterprise and Development) with Prof. Bill Mitsch, Dr. Doug Merrey and Prof. Pieter van der Zaag as keynote speakers. Details are available [online](#).

The Water Institute's second call for workshop proposals closed in January 2012 with seven

first-rate applications received. The Water Institute is pleased to announce support for the following workshops during 2012/13:

"International science-policy dialogue on transboundary water governance, environmental flows and global change" from Derek Armitage, Environment and Resource Studies, Rob de Loë, Environment and Resource Studies, Tom Edwards, Earth and Environmental Sciences, Roland Hall, Biology, and Brent Wolfe, Geography and Environmental Studies (Wilfrid Laurier University)

"Complex Systems and Agent-based Modeling: Applications in Integrated Management of Water Systems" from Sheree Pagsuyoin, Civil and Environmental Engineering and Gerard Learmonth, Systems and Information Engineering (University of Virginia).



World Water Day

Graduate Research Fair & Water Celebration

Thursday, March 22nd, 2012

Federation Hall, University of Waterloo

We invite you to join us at the third annual World Water Day Graduate Research Fair and Water Celebration on Thursday March 22nd, UN World Water Day. The event is co-hosted by the Water Institute, SWIGS, the Laurier Institute for Water Science, and the Cold Regions Research Centre and will be held at Federation Hall, University of Waterloo.

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:

- The official Canadian release of the 2012 United Nations World Water Development Report ([UN WWDR4](#)), including comments on implications for Canada by William Cosgrove, Senior Advisor to UN WWDR4.
- Graduate and undergraduate poster presentations in water research. Poster title submissions are due March 9th. Prizes will be provided in five categories.
- A keynote presentation at 11:40 am from Drs. Alex Bielak and Corrinne Wallace, UNU-INWEH: *Water Careers with, and making, a Difference*.
- A keynote presentation at 4:00 pm by Dr. Steven Renzetti, Brock University: *Good to the Last Drop? Assessing Water's Contribution to Canada's Well-being*.
- Booths from local community, government, and business
- Water sector networking and job opportunities
- March's monthly Blue Drinks mixer will occur after the event.

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



Students of the Water Institute, Graduate Section

[SWIGS](#) is the graduate student section of the Water Institute at the University of Waterloo. 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.

Upcoming Events

- **March 2, 1:30 pm, DC 1302:** Engineers Without Borders (EWB) seminar by Rob Sparrow. He will discuss overseas volunteer opportunities.
- Water research posters will be displayed at the World Water Day event. Only a title is needed to secure a spot. Five prizes of \$150 will be awarded. The submission deadline is **March 9**.
- A photo contest is being held as part of World Water Day. The two categories are Water Research and Water Inspiration. All submitted photos will be displayed at the WWD celebration. [Email](#) your entries by **March 15**.
- World Water Day Graduate Research Fair & Water Celebration, **March 22, Federation Hall**. This student-driven research conference will include keynote speakers, poster presentations and networking opportunities. Student volunteers are still needed. Contact [Jana Tondur](#) to volunteer.
- The March “Blue Drink” mixer is **March 22, 5:00-7:00 pm**, Federation Hall. Students, faculty and industry professionals can meet and discuss topics in a relaxed atmosphere.
- SWIGS will be holding its Annual General Meeting **March 29, 5:00 pm**, at the Grad House when a new executive will be elected. Nomination procedures are posted on the SWIGS website.

SWIGS is seeking student volunteers from all departments!

STUDENTS OF THE WATER INSTITUTE
SWIGS
 GRADUATE SECTION

Student Profile: Andrew Snowdon



Andy Snowdon is pursuing a PhD in Civil and Environmental Engineering under the supervision of James Craig. Andy earned his Bachelors of Physical Science from the University of Guelph before attending the University of Waterloo where he completed his Master's in Civil and Environmental Engineering. Andy's research focuses on the improvement of hydrological modelling and he, along with his supervisor, has spent the last few years investigating the impact of mathematical solver choice in hydrological models. Now in his second year of PhD studies, Andy is developing upscaling techniques to improve

the efficiency and accuracy of groundwater models. These techniques will serve to improve the solution speed of groundwater models through the use of topographic-process relationships. Andy has been completing his work not only at the University of Waterloo but also with his industrial partner, Matrix Solutions. For the last two years, Andy has been the Chair of SWIGS, the graduate section of the Water Institute where he has been trying to increase the prominence of the group while providing graduate student opportunities through academic, social and outreach activities. Andy was one of the founding members of the organization and has helped define the graduate section's scope and involvement in the Water Institute and beyond.



University of Waterloo
200 University Ave W.
Waterloo, ON
N2L 3G1

Phone: 519-888-4567 x32643
E-mail: water.institute@uwaterloo.ca

water.uwaterloo.ca



UNIVERSITY OF WATERLOO

Over its short history (founded in 1957) the University of Waterloo has made a significant and consistent commitment to research on water-related topics. Now, well into the university's sixth decade, there are approximately 130 faculty members, distributed across 20 academic departments in all six university faculties, that conduct research on water-related topics. The research programs are diverse, and collectively comprehensive, with acknowledged excellence in aquatic ecology and toxicology, groundwater, hydrological sciences, ecohydrology, water and wastewater treatment, innovative analytical instruments, and water economics, policy, management and governance.

Global water issues are becoming more numerous, larger in scale and increasingly complex. The Water Institute was formed to facilitate greater interdisciplinary research and teaching such that the university would have the capacity and experience to address some of the most challenging issues facing this most precious resource.

"Snowflakes are one of nature's most fragile things, but just look what they can do when they stick together."

Vista M. Kelly

Warwick Vincent



WI Scholarships (cont.)

(Continued from page 4)

cycling in the eutrophic Grand River, Ontario. Ms. Taylor Wilkes, MES student, Environment & Resource Studies: Israeli-Canadian comparative water research.

The scholarships will be formally awarded during celebrations of World Water Day on March 22, 2012.