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THE NEWSLETTER OF THE CANADIAN GEOPHYSICAL UNION

IN THIS ISSUE

LE BULLETIN DE L'UNION GÉOPHYSIQUE CANADIENNE

Message from the President

Dear fellow CGU members,

A new President always looks ahead to new challenges! Before I do that, however, I would like to take the time to reflect on the recent past. I would like to thank the past President, Prof. Brian Branfireun, and the many volunteers who served on the boards, who contributed to make our union strong and vibrant. I would like to thank all of you who attended our 2015 annual meeting in Montréal and who contributed to make it a dynamic forum for all geophysical sciences.

Our union can already count on the excellent services of Dr. Gordon Young, Executive Director. We have also recently added Creekside Communication to improve our website and stimulate our outreach efforts through Twitter and Facebook. There have been more than 2,000 CGU tweets since the beginning of the year! This initiative is designed to bring the CGU ever closer to you, the members. The CGU is your organization and it will be as strong as the effort members invest in it. Please consider sharing your news with the community by contacting **cgu.outreach@gmail.com**. Not only will this increase public exposure to your work and to

the CGU, but it will also help members learn about each other and from one another.

I wish everyone a pleasant summer full of discoveries of all sort, especially to those of you heading out to the field!

Take care,

Claire

*Claire Samson's nomination to the CGU Presidency was **promoted in a press release** from her home institution, Carleton University.*

The next IUGG assembly will be in Montréal in 2019!
See Gordon's report on the 2015 IUGG Assembly in Prague, p. 9.

2015 CGU/AGU/GAC/MAC Joint Assembly

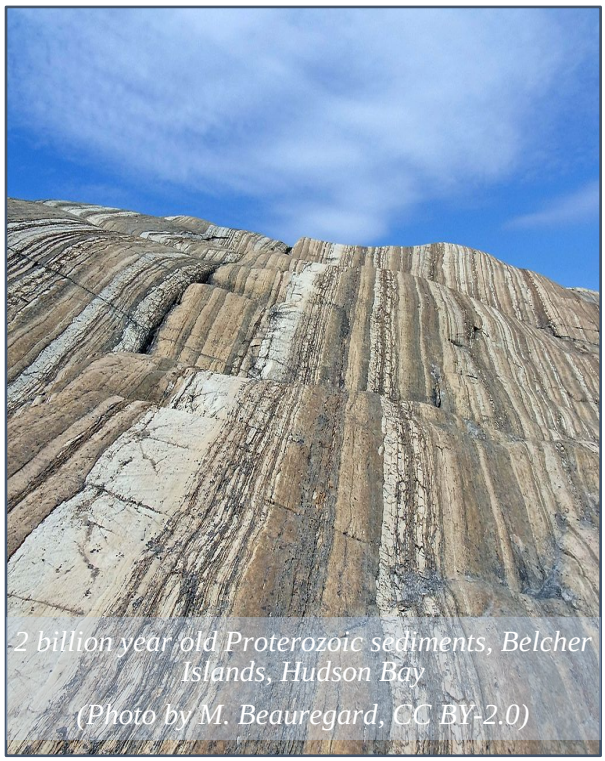
A very successful Joint Assembly was held in the Palais des congrès de Montréal from 3-8 May 2015, organized by the Canadian Geophysical Union, American Geophysical Union, Geological Association of Canada, and Mineralogical Association of Canada.

The event attracted 2500 participants with over 2100 abstracts on the entire range of subjects covered within Geodesy and Geophysics. There were 183 oral sessions, 121 poster sessions, and 60 other events, including major invited presentations by leaders in the fields of geophysics. A full listing of sessions can be found **here**. The complete abstracts have been exported to a PDF available **on the meeting website**.

The assembly also received extensive media coverage. As of 1 June, the Assembly had generated more than 150 stories in print, radio, television, and online media outlets. AGU's information office organized six press conferences that generated stories on a variety of subjects of particular public interest, demonstrating how knowledge of geophysical processes can have beneficial and practical effects on people's everyday lives. The Joint Assembly hashtag (#JA15) was tweeted over 3,000 times by more than 800 people, resulting in more than 16 million timeline deliveries to more than 2 million individual Twitter accounts.

CGU held its major annual Executive meeting just prior to the Assembly, and the five Sections within CGU held their own meetings during the Assembly. An excellent CGU banquet was held at which major awards were announced. The generous contribution of our awards sponsors – Chevron Canada, Shell Canada and Campbell Scientific – were duly acknowledged with thanks, as were the family of Don Gray and the estate of Stan Paterson.

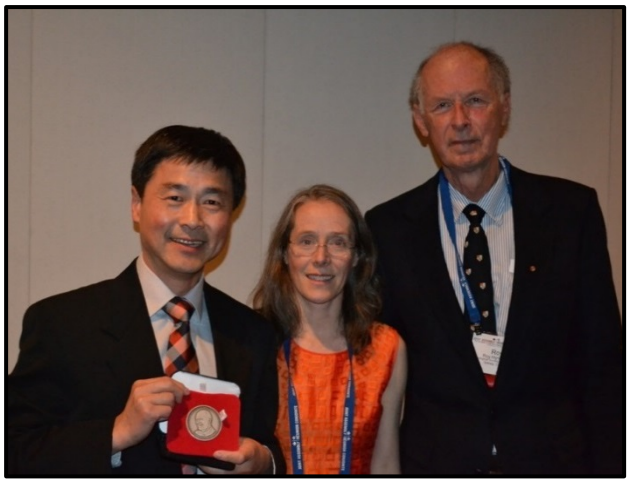
-Gordon Young



2 billion year old Proterozoic sediments, Belcher Islands, Hudson Bay
(Photo by M. Beauregard, CC BY-2.0)

2015 Joint Assembly Union Level Award Winners

J. Tuzo Wilson Medal



Dr. Wang (L) with CGU President Dr. Claire Samson (centre), and nominator Dr. Roy Hyndman (R).

Dr. Kelin Wang, Natural Resources Canada – Pacific Geoscience Centre

Dr. Wang has been a pioneer and world leader in geophysics, making fundamental contributions to the observation, theory, and modeling of earthquake and geodynamic processes at subduction plate boundaries, and exceptional contributions in geophysical modeling.

His nominators describe him as *"an incredibly nice guy, very accessible and happy to engage in a wide range of project, problems, and conversations, with almost anyone on all topics."*

*Read the full **citation & acceptance** here*

Young Scientist Award

Dr. Jeffrey McKenzie, McGill University

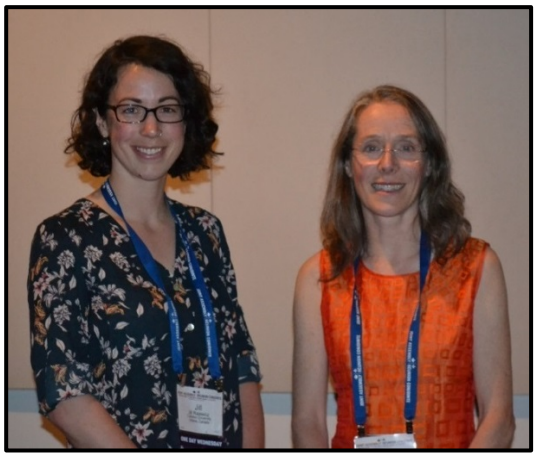
Interestingly, Dr. McKenzie began his university studies in music. He has subsequently made important contributions to physical hydrology and hydrogeology, including alpine hydrology in the glaciated Peruvian Andes and the numerical modelling of cold region processes. He has also applied novel geochemical techniques to wetland hydrology, contaminated sites, and most recently to identifying pathways for shale gas extraction contaminants.

As one of his referees notes, *"he is truly modest and definitely not a self-important prima donna. He is the type of colleague with whom I look forward to meeting at conferences to bounce ideas around over a beer at the end of a day's sessions."*

Dr. McKenzie (centre) with nominator Dr. Sean Carey (R), and CGU President Dr. Claire Samson (L).

*Read the full **citation & acceptance** here*

Stan Paterson Scholarship in Canadian Glaciology



Jill Rajewicz (L) with CGU President Dr. Claire Samson.

Jill Rajewicz, Carleton University

Jill is an MSc student with Dr. Derek Mueller in the Department of Geography and Environmental Studies at Carleton University. She spent three summers in the Arctic with Dr. Shawn Marshall (University of Calgary) during her BSc, from which she published her first paper. She is now studying the mechanisms contributing to ice shelf collapse in the Canadian Arctic.

*Read more on Jill **here**.*

Don Gray Scholarship in Canadian Hydrology

Michael Lathuillière,
University of British Columbia

Michael is a PhD student with Dr. Mark Johnson in the EcoHydro Lab in the Institute for Resources, Environment and Sustainability, University of British Columbia. He is studying the water footprint of agricultural production in southern Amazonia, and its role in sustainable river basin management.

*Read more on Michael **here***

Michael Lathuillière

Best Student Paper Award

Colin McCarter

Colin McCarter, University of Waterloo

Hydrochemical Transport of Wastewater Solutes from a Continuous Point Source in a Northern Ribbed Fen
C. McCarter and J. Price

Colin is a PhD student with Dr. Jonathan Price in the Department of Geography & Environmental Management at the University of Waterloo. He studies how wastewater is transported through fen peatlands in sub-arctic Canada.

*Read the abstract **here***

Shell Canada Best Student Poster Award

Joshua Guerrero, University of Toronto Scarborough

Mapping the Transition to the Stagnant-lid Regime in Variable Core Size Spherical Shell Convection with a Temperature-Dependent Viscosity
J. Guerrero, J. Lowman, F. Deschamps, P. Tackley

Joshua is a physics PhD student with Dr. Julian Lowman in the Department of Physical and Environmental Sciences at the University of Toronto Scarborough. He models mantle convection in terrestrial planets based on the relative size of the planet's core and surface area, and the temperature-dependency of the mantle fluids.

*Read the abstract **here***

Joshua Guerrero

Chevron Canada Outstanding Student Paper in Seismology

Mr. Hassani (R) with CGU President Dr. Claire Samson.

Behzad Hassani, Western University

Estimation of Moment Magnitude and Stress Parameter from ShakeMap Ground-motion Parameters for Real-time Applications
B. Hassani and G.M. Atkinson

Behzad is a geophysics PhD student with Dr. Gail Atkinson in the Department of Earth Sciences at Western University. He studies ways to map the intensity of earthquake shaking from small to medium magnitude quakes, for real-time hazard and risk management.

*Read the abstract **here***

2015 Joint Assembly Section Award Winners

Biogeosciences Section: Best Student Paper Award

Kristine Haynes, University of Toronto Scarborough

Climate Change Impacts on Mercury Mobility in Peatland Ecosystems
K. Haynes, C. Mitchell, E. Kane, L. Potvin, E. Lilleskov, R. Kolka

Kristine is a PhD student with Dr. Carl Mitchell in the Department of Physical and Environmental Sciences at the University of Toronto Scarborough. She's studying climate change impacts on mercury cycling in peatland systems.

*Read the abstract **here***

Geodesy Section: Best Student Paper Award

Ebrahim Ghaderpour, York University

Least Squares Wavelet Analysis
E. Ghaderpour and S. Pagiatakis

Ebrahim is a PhD student with Dr. Spiros Pagiatakis in the Lassonde School of Engineering at York University. He is developing a time series analysis technique called least squares wavelet analysis, which can be applied to unequally spaced, strongly non-stationary, and non-ergodic time series. This technique has applications in electrical engineering, geodesy, and wireless networks.

*Read the abstract **here***

Ebrahim (L) with CGU President Dr. Claire Samson.

HYDROLOGY SECTION: *DM GRAY AWARD FOR BEST STUDENT PAPER*

Colin McCarter

Colin McCarter, University of Waterloo

Hydrochemical Transport of Wastewater Solutes from a Continuous Point Source in a Northern Ribbed Fen
C. McCarter and J. Price

Colin is a PhD student with Dr. Jonathan Price in the Department of Geography and Environmental Management at the University of Waterloo. He studies how wastewater is transported through fen peatlands in sub-arctic Canada.

*Read the abstract **here***

HYDROLOGY SECTION: *CAMPBELL SCIENTIFIC AWARD FOR BEST STUDENT POSTER*

Md Aminul Haque, University of Manitoba

Connectivity Between Wetlands and Streams: Patterns of Phosphorus Export in the Prairie Pothole Region
M.A. Haque and G. Ali

Md Aminul is a PhD student with Dr. Geneviève Ali in the Department of Geological Sciences at the University of Manitoba. He's studying the effect of Prairie pothole wetlands on downstream water quality – particularly the movement of phosphorous from wetlands to streams.

*Read the abstract **here***

Md Aminul Haque

SOLID EARTH SECTION: *BEST STUDENT PAPER AWARD*

Joshua Guerrero

Joshua Guerrero, University of Toronto Scarborough

Mapping the Transition to the Stagnant-lid Regime in Variable Core Size Spherical Shell Convection with a Temperature-Dependent Viscosity
J. Guerrero, J. Lowman, F. Deschamps, P. Tackley

Joshua is a physics PhD student with Dr. Julian Lowman in the Department of Physical and Environmental Sciences at the University of Toronto Scarborough. He models mantle convection in terrestrial planets based on the relative size of the planet's core and surface area, and the temperature-dependency of the mantle fluids.

*Read the abstract **here***

Now is the time to start thinking about nominating your colleagues for next year's CGU awards!
See the Awards webpage for details and deadlines.

Other Awards Won by CGU Members

John Clague (Simon Fraser University) was nominated **one of Canada's top 100 Modern-Day Trailblazers** by *Canadian Geographic Magazine*.

Nicole Couture (Natural Resources Canada, Geological Survey of Canada) **won the CGRG 2014 JR Mackay Award** for a significant contribution by a young Canadian geomorphologist, presented at the 2015 Joint Assembly.

Yelena Kropivnitskaya (Western University PhD student with Kristy Tiampo) won an **AGU Outstanding Student Paper Award** in Seismology at the 2015 Joint Assembly.

Erin Nicholls (McMaster University MSc student with Sean Carey) won the Canadian Society for Agricultural and Forest Meteorology **Student Presentation Award** at the 2015 Joint Assembly.

Luc Pelletier (McGill University PhD student with Ian Strachan) won the Canadian Society for Agricultural and Forest Meteorology **Bert Tanner Student Prize** at the 2015 Joint Assembly.

Sarah Scarlett (University of Waterloo MSc student with Jonathan Price) won an **AGU Outstanding Student Paper Award** in Hydrology at the 2015 Joint Assembly.

Phillippe van Cappellen (University of Waterloo) won the **European Association of Geochemistry Science Innovation Award.** He will receive the award on August 19 at Goldschmidt 2015 in Prague. Van Cappellen also gave the annual Woo Lecture at the Joint Assembly in Montreal.

Chris Wellen (McMaster University) won the Journal of Great Lakes Research/Elsevier **Early Career Scientist Award** from the International Association for Great Lakes Research for **his PhD research at the University of Toronto Scarborough**.

Cherie Westbrook (University of Saskatchewan) was awarded an NSERC CREATE grant to **train students to help solve current and future water security issues**.

26th IUGG General Assembly, Prague

Some 4,300 participants from more than 100 countries gathered in Prague from 22 June-2 July for the International Union of Geodesy and Geophysics (IUGG) General Assembly. They contributed to more than 200 symposia, workshops, and informal discussions on all aspects of Geodesy and Geophysics. The Assembly was held in the very conducive atmosphere of the Prague Congress Centre, with easy access to the heart of the old city.

Canadian participants were very proud that Michael Sideris of the University of Calgary was elected as President of the Union, which he will lead over the next four years. Michael will be supported by Zoltan Hajnal, Chair of the Canadian National Committee for IUGG, and by the Canadian national representatives of the eight Associations comprising IUGG.

In addition, Rich Petrone (University of Waterloo and Canadian senior representative for IAHS) was elected Vice President of the IAHS International Commission on Coupled Land-Atmosphere Systems, Chris Hopkinson (University of Lethbridge) was elected Vice President of the IAHS International Commission on Remote Sensing, and Geneviève Ali (University of Manitoba and Canadian junior representative for IAHS) became Secretary of the Network of National Hydrological Associations.

There was considerable excitement around the competition to host the next IUGG Assembly in 2019. Canada (Montréal) was in competition with India (Delhi). 42 countries within the IUGG Council had the right to vote – the result was a narrow win for Canada (25 votes to 17). Thus Canada will prepare over the next four years to host an exciting and vibrant Assembly designed to bring top-rate scientists together. We look forward to involving all Canadian geoscientists in this process.

-Gordon Young

THE PRAGUE CONGRESS CENTRE.

A Hydrologist's Retrospective of the Prague IUGG

I had the great pleasure of attending my first International Union of Geodesy and Geophysics (IUGG) General Assembly in Prague, Czech Republic from June 22nd to July 2nd, 2015. While I had heard of IUGG before, I had never considered attending any of their scientific meetings until I became one of the two national representatives of the Canadian National Committee (CNC) of the International Association of Hydrological Sciences (IAHS). The IUGG is the umbrella union for eight associations and therefore welcomes hydrologists as well as meteorologists, geomagnetism and aeronomy specialists, seismologists, volcanologists, cryospheric scientists, oceanographers, and geodesists. With several thousand attendees – around 4,500 in Prague – IUGG assemblies are big but remain inclusive of all disciplines and promote cross-disciplinary discussions, thus providing geophysical scientists at all career stages with fantastic opportunities to broaden their horizons.

My experience at the 2015 IUGG assembly was as a hydrologist and IAHS member. IUGG general assemblies take place every four years, while IAHS general assemblies take place two years after IUGG assemblies. The Prague General Assembly was unlike most conferences I've attended in my (short) career, so I thought I'd report on the top reasons why hydrologists at all career stages should consider attending future IAHS and IUGG meetings:

1. Discover a new city or a new country every two years.
2. Showcase your work in a truly international setting.
3. Learn from high-profile interdisciplinary scientists (e.g., Nobel Prize winners) via Union lectures.
4. Get involved in international research by actively participating in IAHS science decades such as the Panta Rhei initiative (2013-2022) on *Change in Hydrology and Society*.
5. Share best practices and discuss the role of hydrology in society by attending roundtables between representatives of national hydrological associations from around the world.
6. Interact – and partner up – with hydrologists from a range of developing countries.
7. Understand how your research can help frame international environmental policies by interacting with people from UNESCO, UNEP, and the World Meteorological Organization (WMO).
8. Exchange with young scientists in specialized forums organized specifically for that purpose.

Mark your calendars: the next IAHS general assembly will take place in Port Elizabeth, South Africa in July 2017, while the next IUGG General Assembly is coming to Montréal, Québec in July 2019. Look forward to seeing you at both venues.

-Geneviève Ali

CGU Announcements

General Announcements

The CGU website is under renovation, stay tuned for the new look!

The CGU is seeking a student representative for the Executive. Contact **Jeff McKenzie** for details.

The Solid Earth Section sponsored the **Advances in Earth Science Research Conference**, 27-29 March 2015 at Queen's University.

CGU Eastern Section Student Meeting

The Biogeosciences, Hydrology, and Earth Surface Processes Sections held a joint Eastern Section Student Meeting on February 7, 2015. Hosted by Wilfrid Laurier University, the event attracted over 50 oral presentations and posters. **Congratulations to the student presentation award winners at this conference**: Allison McManus (Laurier MSc student with Bill Quinton), Colin McCarter (Waterloo PhD student with Jonathan Price), Patrick Padovan (Guelph MSc student with Jaclyn Cockburn), and Ashley Rudy (Queen's PhD student with Scott Lamoureux).

Biogeosciences Section: Student representative needed

The Biogeosciences Section (BGS) is seeking a student member (PhD or MSc) for their Executive, and may be members for a term of 1-2 years. Student roles may include assisting with section website content, co-organizing a social event at the annual meeting (possibly with other student members from other sections), and increasing the presence of the BGS on social media. You will have a leadership role in student engagement in the CGU! If interested, submit an application that includes a paragraph on why you wish to serve, innovative ideas you have for the position, and contact information to your advisor for a reference. The deadline for applications is September 1, 2015. Please send applications to **Merrin Macrae**.

Wondering what else the CGU Sections have been up to? Read the latest section reports.

Hydrology **Solid Earth** **Geodesy** **Biogeosciences** **Earth Surface Processes**

CGU Member Profiles

STUDENT MEMBER: PO KONG LAI

Po Lai is a second year PhD student at the University of Ottawa, studying computer vision. He completed his MCS at Carleton University with the current CGU President, Dr. Claire Samson, and Dr. Prosenjit Bose.

Although he's mainly trained as a computer scientist, Po's Master's degree combined computer science and geosciences. This work in laser imaging of rock surfaces sparked his interest in laser imaging in general.

The overall theme of his PhD research is the tracking of objects (static or moving) using a camera (which can be stationary or moving). This has various applications in security, and is often a fundamental step in higher level machine vision tasks such as autonomous driving. He's currently using standard video and laser cameras to build a 3D model of the environment as the camera moves from location to location. The final goal is to track moving objects or changes that occur over time within the 3D model. Because of his geosciences training, Po always considers the application of computer science techniques to geosciences when reading new articles, and looks forward to applying imaging- and vision-based algorithms from computer vision to geosciences problems.

Po originally joined CGU because of the opportunity to apply for awards, and enjoys attending annual meetings because he gains greater exposure to the current state of the art in various geophysics fields in Canada. He'd like to see CGU increase this type of exposure to colleagues at the undergraduate level, by involving students in more frequent localized meet-ups or conferences, and by connecting them with experts in the fields they are interested in.

When we asked what Po's ultimate career goal is, he had a very pragmatic answer. "This is a difficult question as I'd like to remain flexible and "ultimate" implies a certain finality," he said. He sees himself working with remote vision sensors, either as the CSO/CTO of a company or as a professor of computer science.

Po isn't just about computer science – he enjoys cycling and kickboxing, and is working on a number of pet software projects. He can also ride a unicycle (!), and is currently reading Tina Fey's *Bossypants* (though not at the same time).

REGULAR MEMBER: *BRIAN BRANFIREUN*

Brian has been an Associate Professor and CRC in the Dept of Biology and Centre for Environment & Sustainability at Western University since 2010. He spent the 10 years prior to that in the University of Toronto's Dept of Geography.

How did you get to your current position?

I followed a pretty academic path. I had no plan B! I came from a non-academic family and had no particular aspirations, but felt being a teacher would be a good career, as I had several inspirational teachers in high school. My family worked hard to create the opportunity for me to go to university. I took some undergrad physical geography courses at Western and had an exceptional glacier field experience with Dr. Chris Smart that changed my direction. I thought, "I can be a teacher and do this kind of thing too?? This is for me!" I credit Dr. Smart and Dr. Peter Ashmore (current President of the Earth Surface Processes Section), my undergrad thesis supervisor, for setting me on the path to becoming a university professor.

What's your favourite part of your job?

Unequivocally it's being able to be completely comfortable feeling ignorant. There's so much to know about the world, and I realized long ago that I know so little. I thrive on meeting new people, reading new things, experiencing new places and sharing the pleasure of discovery with friends, colleagues and students.

Briefly describe your research program.

My students and I are interested in the interactions among hydrological, ecological and biogeochemical processes in watersheds and ultimately how they govern downstream water quality with a particular focus on mercury. Much of our work is now focused on Canada's north, with ongoing research on lakes and rivers in northern Ontario, Yukon, and the NWT.

What led you to join CGU, and how long have you been a member? Did you start as a student member?

I became a member during my MSc, in 1993. My supervisor, Dr. Nigel Roulet, encouraged me to join so I could make connections with the broader geophysical sciences community in Canada.

Nigel flew me to Banff to present a paper in 1994. There are many colleagues in my personal and professional world who I met then, and who have been critical to my career and success.

What's the biggest benefit to being a CGU member?

Our annual meetings provide an incredible opportunity to connect with colleagues in the Canadian geophysical sciences community. Canada is a big country, and I have many friends and colleagues who I have few opportunities to meet with except at our annual meeting. It is, and always has been, an exceptional networking for Canadian geophysical scientists.

What are you most proud of achieving with CGU during your term as CGU President?

I'm pleased that we were able to establish the new Earth Surface Processes Section, and that we've developed some major initiatives to increase awareness of the CGU and increase membership – such as our communications and outreach plan!

Where do you see CGU going in the future?

My hope is for the CGU to be a true "Union" in the sense that it serves as the umbrella organizations for the geophysical sciences in Canada. In a way, this fulfills its original mandate and lends our scientific community the national voice that it deserves.

What's your favourite activity outside of work?

I love playing guitar as some of our members know. I'm also setting up a home studio with all vintage electronics (including reel-to-reel tape), which kind of leads to the next question…

Tell us something most people don't know about you.

I'm a really unstoppable tinkerer. I'll tear anything down and rebuild it to make it work/keep it working. I have a 1971 MGB, a 1996 Toyota Tacoma, a Gaggia XD espresso machine, and tons of vintage music equipment – all of which get a lot of mechanical time from me, and some of which have been completely rebuilt from the frame up. Oh, and I also build guitars. Maybe I should have been an engineer?

What are you currently reading that's not a scientific article?

I just finished *Moby Dick*, and I absolutely loved it. I can't believe I hadn't read it before!

Anything you'd like to add?

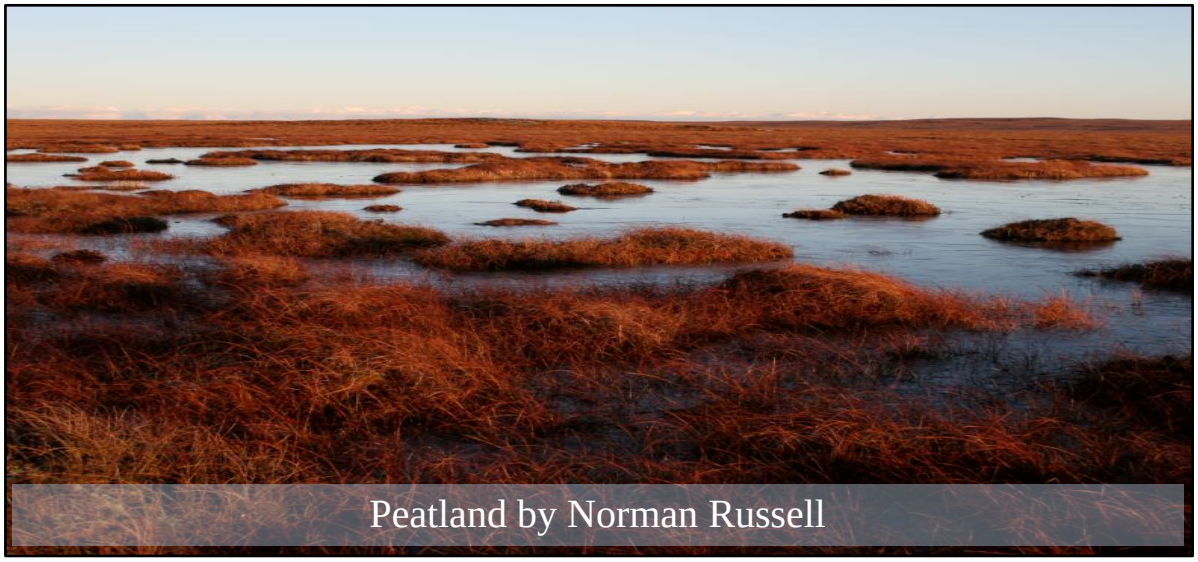
I once told a colleague I was frustrated at not having the time to do all the things I wanted to. His reply was "Be glad you have so many things to occupy your mind. The alternative would be terribly boring."

CGU Members in the News

- **Gail Atkinson** talks about **earthquakes associated with fracking in Alberta**
- **Jules Blais** on a recent report that shows **the impact of agricultural pesticides on surface water**
- **Jules Blais** on a **flawed research study on heavy metal contamination in the oilsands region**
- **Jules Blais** appointed **Editor of new interdisciplinary Canadian journal, FACETS**
- **Garry Clarke, Brian Menounos**, and co-authors featured in various media outlets for their research **modelling the future retreat of western Canadian glaciers**
- **Stephen Déry** featured in APEGBC magazine article on **remote sensing for water in British Columbia**
- Stephen Déry and UNBC colleagues featured in various media outlets for their **research on the impacts of the Mount Polley mine disaster**
- **Merrin Macrae**'s research on the movement of phosphorous from agricultural fields to waterways is featured in **this podcast from Real Agriculture's Agronomy Geeks**
- **Merrin Macrae** discusses **algal bloom solutions**
- **Jeff McDonnell** was a participating researcher **on this report** that points the way to a sustainable energy future for Canada

Mount Polley Tailings Breach (Cariboo Regional District)

- **John Pomeroy** **on his new research program**, the International Network for Alpine Research Catchment Hydrology (INARCH)
- **John Pomeroy** discusses **the low 2014-2015 snowpack**
- **John Pomeroy** on the **need for a national climate change strategy**
- **Bill Quinton** and **Phil Marsh** predict **changes to the hydrologic cycle as NWT warms**
- **Bill Quinton**'s Scotty Creek research site mentioned in this **National Geographic article about global forest die-off**
- **Nigel Roulet** and colleague Jeffrey Wells with an op-ed in the Montreal Gazette on the **importance of cold carbon conservation (forests, peatlands) in fighting climate change**
- **Claire Samson** **featured in a video** created by the Ontario NSERC Chair for Women in Science and Engineering, celebrating women in science
- **Maria Strack** on the **value of northern wetlands**
- **Phillippe van Cappellen**'s **research on plastic in the Great Lakes** featured in various media outlets
- PhD student **Kim van Meter** discusses the **role of wetland size in restoration**
- **Cherie Westbrook** featured in Science News for her research on **the role of beavers in mitigating floods**
- **Kelin Wang**'s J. Tuzo Wilson Medal was mentioned by the **International Professionals for the Advancement of Chinese Earth Sciences**
- **Howard Wheater** **talks about water security for World Water Day**



Peatland by Norman Russell

Recent Papers from CGU Members

Ali G, Tetzlaff D, **McDonnell J**, Soulsby C, **Carey S**, Laudon H, McGuire K, **Buttle J**, Seibert J, Shanley J. 2015. **Comparison of threshold hydrologic response across northern catchments.** *Hydrological Processes* doi:10.1002/hyp.10527.

Burke MJ, **Brennand TA,** Sjogren DB. 2015. **The role of sediment supply in esker formation and ice tunnel evolution.** *Quaternary Science Reviews* **115**: 50-77.

Church M and RI Ferguson. 2015. **Morphodynamics: Rivers beyond steady state.** *Water Resources Research* **51**(4): 1883-1897.

Clarke GKC, Jarosch AH, Anslow FS, Radić V, **Menounos B**. 2015. **Projected deglaciation of western Canada in the twenty-first century.** *Nature Geoscience* **8**: 372-377.

Gue AE, **Mayer B**, Grasby SE. 2015. **Origin and geochemistry of saline spring waters in the Athabasca Oil Sands region, Alberta, Canada**. *Applied Geochemistry*. Doi:10.1016/j.apgeochem.2015.05.015

Hernández-Henríquez MA, **Déry SJ**, Derksen C. 2015. **Polar amplification and elevation-dependence in trends of Northern Hemisphere snow cover extent, 1971–2014**. *Environmental Research Letters* **10** 044010 doi: 10.1088/1748-9326/10/4/044010.

Jakob M, **Clague JJ, Church M.** 2015. **Rare and dangerous: Recognizing extra-ordinary events in stream channels.** *Canadian Water Resources Journal*. DOI:10.1080/07011784.2015.1028451

Kurylyk BL, MacQuarrie KTB, **Caissie D, McKenzie JM**. 2015. **Shallow groundwater thermal sensitivity to climate change and land cover disturbances: derivation of analytical expressions and implications for stream temperature modeling.** *Hydrology and Earth System Sciences* **19**: 2469-2489.

Kurylyk BL. 2015. **Discussion of 'A Simple Thaw-Freeze Algorithm for a Multi-Layered Soil using the Stefan Equation' by Xie and Gough (2013).** *Permafrost and Periglacial Processes* doi:10.1002/ppp.1834.

Leggat MS, Owens PN, Stott TA, Forrester BJ, **Déry SJ, Menounos B**. 2015. **Hydro-meteorological drivers and sources of suspended sediment flux in the proglacial zone of the retreating Castle Creek glacier, Cariboo Mountains, British Columbia, Canada**. *Earth Surface Processes and Landforms* doi:10.1002/esp.3755.

Lindsay JB, Cockburn JMH, Russell HAJ. 2015. **An integral image approach to performing multi-scale topographic position analysis.** *Geomorphology* **245**:51-61.

Little KE, **Hayashi M**, LiangS. 2015. **Community-based groundwater monitoring using a citizen-science approach.** *Groundwater* doi:10.1111/gwat.12336.

Lukenbach MC, Devito KJ, Kettridge N, **Petrone RM, Waddington JM**. 2015. **Burn severity alters peatland moss water availability: implications for post-fire recovery.** *Ecohydrology* doi: 10.1002/eco.1639.

Maavara T, Hood JLA, North RL, Doig LE, Parsons CT, Johansson J, Liber K, Hudson JJ, Lucas BT, Vandergucht DM, **Van Cappellen P**. 2015. **Reactive silicon dynamics in a large prairie reservoir (Lake Deifenbaker, Saskatchewan).** *Journal of Great Lakes Research* doi:10.1016/j.jglr.2015.04.003.

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- **Wheater HS.** 2015. **Water Security – science and management challenges**. IAHS 366: 23-30.
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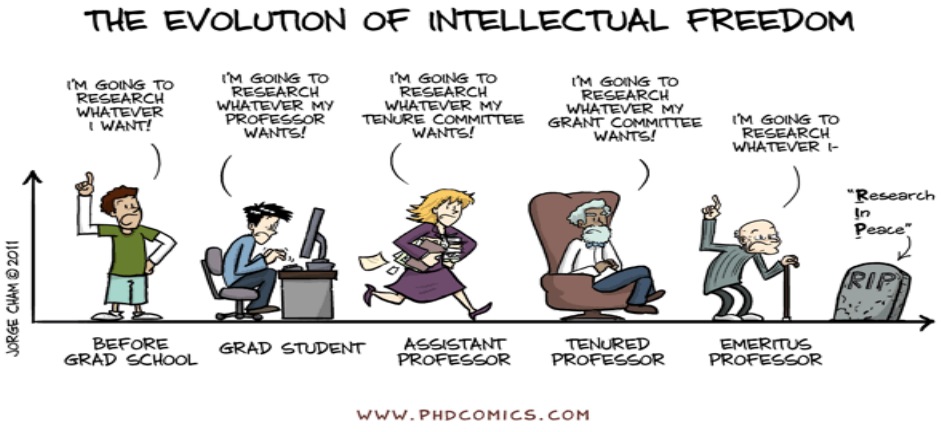
Job Postings

GRADUATE POSITIONS

Positions	Program	Topic	Location and link
2	MSc	Fluvial geomorphology & hydrology	**University of Guelph**
2	MSc	Forest soils	**Dalhousie University**
1	MSc	Water quality modelling	**University of Waterloo**
1	MSc	Glaciology & hydrology	**Université du Québec à Trois-Rivières**
	MSc	Water quality & hydrology	**Nipissing University**
	MSc	Catchment hydrology & biogeochemistry	**University of Winnipeg**
4	MSc/PhD	Remote sensing & environmental monitoring	**University of Lethbridge**
2/1	MSc/PhD	Hydrologic modelling & precipitation data collection	**INRS**
5/2	MSc/PhD		**Consortium for Permafrost Ecosystems in Transition** at Laurier, Guelph & Waterloo
5/1	MSc/PhD		**Memorial University Geography**
3	MSc/PhD	Arctic snow hydrology	**Wilfrid Laurier University**
	MSc/PhD	Ecohydrology & hydrometeorology	**University of Waterloo**
	MSc/PhD	Arctic research	University of Manitoba **Arctic Science Partnership**
3	MSc/PhD	Ocean processes	**University of Manitoba Centre for Earth Observation Science**
	PhD	Paleoecology & northern ecosystems	**University of Montreal**
	PhD	Glacier modelling	**Memorial University Physics & Physical Oceanography**
	PhD	Fluvial geomorphology & bioecology	**Western Illinois University**
	PhD	Soil biogeochemistry	**University of Waterloo**
	PhD	Remote sensing & snow hydrology	**Université Sherbrooke**
	PhD	Oil & gas remote sensing	**Memorial University and LOOKNorth.** Contact **bsalehi@mun.ca**
	PhD	Managing urban stormwater	**INRS**

POST-GRADUATE POSITIONS

Position	Research area	Location and link
1 Postdoc and 1 Technician	Remote sensing & environmental monitoring	**University of Lethbridge**
2 Postdocs	Arctic snow hydrology	**Wilfrid Laurier University**
Postdoc	Water quality modelling	**University of California – Irvine**
Postdoc	Stream temperature modelling	**Oregon State University**
Postdoc Pilot Program		**Government of Canada**
Postdoc	Arctic climate modelling	**INRS**
Postdoc	Ecohydrological modelling	**University of Waterloo**
Lab Manager	Limnology Research Lab	**University of Regina**
Research Associate	Hydrologic modelling and data assimilation	**University of Saskatchewan**
Research Officer	Hydrology	**University of Saskatchewan**, based in Whitehorse
College Instructor	Environmental Science	**Okanagan College**
Term Instructor	Physical Geography	**Brandon University**
Term Instructor	Physical Hydrogeology	**University of Calgary**
Assistant Professor	Environmental Management	**University of New Brunswick**
Assistant Professor	Soil & Water Conservation	**University of Guelph**
Assistant Professor	Applied Biology	**University of British Columbia**
CAIP Chair	Watershed Science	**University of Alberta**



Other Related News

- **NSERC Contact newsletter**, Spring 2015
- Winter newsletter from the **University of Waterloo Water Institute**
- Wilfrid Laurier University **hosted a World Water Day event** on 23 March with CGU members in attendance.
- **Using geophysics to map groundwater** in BC's northeast region with Geoscience BC
- University of Waterloo Earth & Environmental Science professor Chris Yakymchuk **wins the 2014 Young Author of the Year Award** from the Geological Society of London
- See NSERC's **2020 Strategic Plan**
- Canada's ice core archive, originally housed at the Geological Survey of Canada in Ottawa, **to be housed at the University of Alberta**
- Queen's University Geology team **wins American Association of Petroleum Geologist's (AAPG) Regional Imperial Barrel Award (IBA) competition**
- The University of Waterloo Water Institute hosted a **Research Symposium on 30 April**
- **New blog from The Association of Polar Early Career Researchers (APECS)**: excellent Canadian research outlined in plain language
- Brock University Earth Science student Matthew Nikitczuk **wins Three-Minute Thesis competition**
- **10 geological forms we've studied for years but still don't understand**, by Vancouver science writer Mika McKinnon
- McMaster's Altaf Arain chaired the **Ontario Climate Consortium's 2015 Symposium on 11 May**
- New report from the Western Grains Research Foundation on the **future of agronomic research in western Canada**
- New newsletter from **Sustaining Arctic Observing Networks (SAON) Canada**
- Brock University professor gets **ANSI designation for the Lochlin Esker**
- Click **here** to see e-posters from the 2015 Joint Assembly in Montreal
- Check out **IAPG geoethics blog**, including a summary of their session at the Joint Assembly in Montreal.
- The Canadian Science Policy Centre **needs volunteers for their November conference** in Ottawa

Conferences

- **4th International Conference on Forests and Water in a Changing Environment**, 6-9 July 2015, Kelowna, BC
- **Joint scientific conference of the Canadian Society of Soil Science (CSSS), the Association Québécoise de Spécialistes en Sciences du Sol (AQSSS), and the International Symposium of Interactions of Soil Minerals with Organic Components and Microorganisms (ISMOM)**, 5-10 July, Montreal, QC.
- **Canadian Quaternary Association (CANQUA)** Biennial Meeting, 16-19 August 2015, St. John's, NF
- **46th Annual Binghamton Geomorphology Symposium**, 18-20 September 2015, University at Buffalo, Buffalo, New York
- **Digital Earth 2015,** 5-9 October 2015, Halifax, NS
- **Earth Science Week**, 11-16 October 2015
- Northwest Glaciologists Meeting, 16-17 October 2015 at Portland State University, Oregon
- **Polar Data Forum**, 27-29 October 2015, University of Waterloo, ON
- **Geological Society of America Annual Meeting**, 1-4 November 2015, Baltimore, Maryland
- **Association of Canadian Universities for Northern Studies (ACUNS) 11th Student Conference**, 5-8 November 2015. Hosted by the Arctic Institute of North America at University of Calgary, AB
- **Canadian Water Resources Association – BC Branch Conference**, 18-19 November, Vancouver, BC
- **Canadian Science Policy Conference**, 25-27 November, Ottawa, ON
- **The American Geophysical Union Fall Meeting**, 14-18 December, San Francisco, California
- **International Arctic Science Committee (IASC) Network on Arctic Glaciology Meeting**, 25-27 January 2016, Benasque, Spain
- **River Restoration Northwest 15th Annual River Restoration Symposium**, 2-4 February 2016, Skamania Lodge in Stevenson, Washington
- **European Geosciences Union General Assembly 2016**, 17-22 April 2016, Vienna, Austria
- Calendar of geoscience-related events available from the **American Geosciences Institute**

Message from the Executive Director

The last year has witnessed a marked increase in activities within the CGU. At the meeting of the CGU Executive in May 2014 it was decided to invest in the expertise of a communications company to advise on how to better promote CGU activities. As a result, Sarah Boon and Dave Lewis of Creekside Communication have been contracted to upgrade the outreach of CGU within the Canadian and international geoscience communities. They have embarked on an ambitious set of actions to upgrade our website and develop more modern means of engaging particularly younger geoscientists through Twitter and Facebook accounts.

A social media policy has been developed to facilitate and develop connections with CGU members on social media and to expand the CGU network through them. Since early 2015 the Twitter account has become highly active – as many members may have noticed during the recent Joint Assembly in Montreal. More than 500 legitimate followers have become engaged in the five months since inauguration of the account, and small but growing Facebook following has been initiated.

Connections have been made with Canadian and international earth science organizations, publishers, universities, media, and individual scientists, helping to raise the profile of CGU both nationally and internationally.

The website is being radically overhauled with a more modern design and layout. It has been moved to a new host with increased capabilities, and now includes social media links. The information architecture is being streamlined and dead links and outdated information removed.

As you will have noticed in this issue of *Elements*, the newsletter has been revamped to include more relevant and timely content in a more appealing style. It will be issued more frequently and be complemented by information that will be distributed by newly formed listservs both for the entire CGU membership and for the five individual Sections within the Union.

While Creekside Communication is greatly improving our outreach capabilities, it is up to individual CGU members to provide inputs to the website and to the newsletters. Here is your chance to promote yourselves: let Creekside Communication have news of your events, activities, successes, publications and awards at **cgu.outreach@gmail.com**.

Gordon Young

CGU Executives

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STAY CONNECTED!

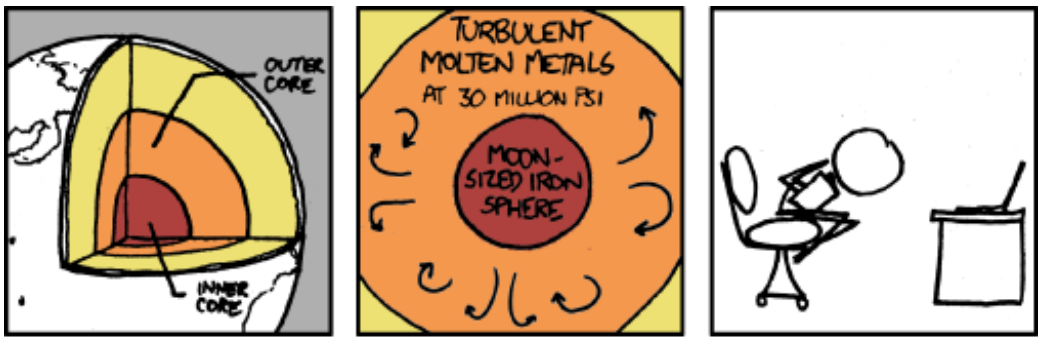
ELEMENTS, the newsletter for the Canadian Geophysical Union, is published and distributed to CGU members four times a year: summer, fall, winter and spring. Contact us at **cgu.outreach@gmail.com** with meeting announcements, news about your Section, you in the news, community outreach, new publications, field stories, awards, and more.

Ads for employment opportunities in geophysics can be advertised for a nominal charge (contact **cgu@ucalgary.ca**). Student and post-doctoral fellowship positions will be advertised free of charge.

Thanks for reading the newsletter! Let us know if there are things you like, dislike, or would like to see added or removed. This newsletter is about CGU members for CGU members, and should reflect what you're most interested in.

We welcome any and all of YOUR submissions. Have you published a paper or poster, or done a radio or TV interview? Found something funny? Got some great photographs? Send them to us at cgu.outreach@gmail.com and we can include it in the next newsletter, post it on the website, and send it out on Twitter and Facebook.

Your Outreach Team



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