ELEMENTS

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LE BULLETIN DE L'UNION GÉOPHYSIQUE CANADIENNE

Message from the Executive Director & President

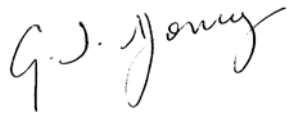
It is at about this time of the year when the CGU Secretary sends out a reminder for individuals to renew their membership with the Union. The funds so raised are essential for the financial viability of the Union. A considerable portion of the funds is distributed to our five thematic Sections according to their proportion of the total membership. Most of the funds are then used for Section activities, in particular to promote student research endeavours.

Thus, for the effectiveness of the Union it is very important that individuals do renew their memberships. It follows that it is important also for faculty to encourage their students to join the Union for them to benefit from **the many advantages to be derived from membership**.

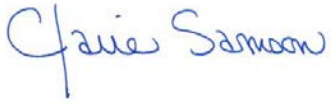
Students in particular have a great deal to gain from CGU membership. Major attractions include the opportunity to take part in the Canadian scientific community of geophysical peers, to meet, discuss research, advance careers and celebrate accomplishments through a number of prestigious **awards**. The Sections are also developing committees for early career scientists - of particular benefit to students looking to advance their careers.

Joining the Union or renewing membership is easy **through the secure online portal** on the CGU website.

The CGU Executive and members of the Section Executives will be undertaking a drive to increase membership in the next months. We hope that all current members will also encourage their colleagues to join CGU to celebrate and promote Canadian geophysics.



Gordon Young



Claire Samson

A strong CGU is a strong voice for Canadian geoscientists.

The CGU represents the interests of Canadian geoscientists in many ways, such as in organized scientific meetings, interactions with funding agencies, and in advocacy of the role of science in society and policy-making.

2016 Joint Scientific Congress of the CMOS and CGU

The 2016 Joint Scientific Congress of the CMOS (Canadian Meteorological and Oceanographic Society) and CGU (Canadian Geophysical Union) will be held in Fredericton, NB from 29 May – 2 June, 2016.

The theme of this congress is '*Monitoring of and Adapting to Extreme Events and Long-Term Variations*.' The motivation for this theme is the major impact that Atlantic Canada has suffered from extreme events—e.g., flooding, storm surges, hurricanes—and their impacts across spatial and temporal scales.

Abstract submissions are now open!

STUDENTS!

Now is the time to start thinking about submitting your extended abstracts for student paper awards at the Joint Congress in Fredericton. **See the CGU website** for details.

CGU Announcements

The CGU's 2016 Eastern Student Conference will be held at the University of Waterloo. For more information, contact Catherine Brown (**c5brown@waterloo.ca**) or Colin McCarter (**cmccarter@uwaterloo.ca**).

CGU Recognitions and Award Winners

- Congratulations to Barrett Kurylyk on his **2014-2016 Killam Postdoctoral Fellowship award** at the University of Calgary.
- Congratulations to Jeff McDonnell, recipient of the University of Saskatchewan's **JW George Ivany-Internationalization Award.**
- Congratulations to Dan Moore, recipient of the **Meritorious Achievement Award from APEGBC**.
- Congratulations to David Eaton, awarded a **Chevron-NSERC Industrial Research Chair in Microseismic System Dynamics** at the University of Calgary.
- Congratulations to Jill Rajewicz (2015 winner of the CGU's Stan Paterson Scholarship in Glaciology), on her **W Garfield Weston Award for Northern Research** from the Association of Canadian Universities for Northern Studies.

CGU Member Jill Rajewicz, W. Garfield Weston Award Winner. Photo: Kevin Xu

CGU Member Profiles

Student Member:

SARAH PEIRCE, WESTERN UNIVERSITY

Where is home?

Aurora, Ontario, Canada

What is your current position?

I am a PhD Candidate at the University of Western Ontario. I just started the fourth, and hopefully final, year of my program. I am just finishing up my experiments and am excited to dive into my analysis and writing.

What is your current research project?

My research aims to develop a method for estimating sediment transport rates in gravel-bed braided rivers. Braided rivers have multiple river channels and as a result, traditional approaches for estimating sediment transport rates generally perform poorly on these complex rivers. The method I am using, known as the morphological method, quantifies volumes of erosion and deposition from digital elevation models (DEMs) taken over time and then links those changes in morphology to sediment transport processes. The best part of my research is that I get to use a large (20 x 3m) physical model of a gravel bed river and create high-resolution DEMs from digital photographs.

What degree did you complete prior to starting this one, and where?

Before moving to London to start my PhD at the University of Western Ontario, I completed my Masters of Science at the University of Guelph. At Guelph, I worked with Dr. John Lindsay to complete field-based research on ephemeral streams.

What led you to join the CGU?

I first joined the CGU in 2014 to get updates about research and conferences happening in Canada.

What do you enjoy most about being a CGU student member? Is there anything more you'd like to see CGU do for student members?

I am very thankful to have so many opportunities to share my research and connect with other members of the CGU. For example, this summer I began live tweeting my PhD experiments and through the support of the CGU, who would often share my tweets and photos, I was able to connect with new people from around the world who were interested in my research!

What's your ultimate career goal?

I am still working on my career goals. I love doing field work as well as teaching at the undergraduate level so I am trying to get as much experience as possible. The rest will depend on what opportunities are available when I graduate.

What's your favourite activity outside of school/work?

Most of my time outside of school/work is spent rotating through my extensive list of hobbies including drawing, painting, and knitting. I am also a retired varsity track and field athlete so I do my best to stay fit through running, rock climbing, and weight lifting.

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

I used to work at my local cemetery as a summer labourer and gravedigger.

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

I'm in the middle of *The Count of Monte Cristo* by Alexandre Dumas.

Chateau d'If *Yann Droneaud*

Regular Member:

MARIA STRACK, UNIVERSITY OF WATERLOO

Maria is an Associate Professor and Canada Research Chair in Ecosystem and Climate in the Department of Geography and Environmental Management at University of Waterloo. She's been in this position for just over a year – prior to that she was an Assistant Professor at the University of Calgary.

How did you get to your current position?

I followed a fairly straight academic path. I knew early into graduate school that I wanted an academic career, so when I had the opportunity to upgrade my ongoing MSc project to a PhD I took the chance. When finishing up my doctoral degree, I applied for jobs across the country, but also NSERC postdoctoral funding. After thinking I hadn't been successful on the job hunt, I took up a postdoc (actually at University of Waterloo) and then got a job offer from University of Calgary. So after just 5 months of postdoc, I started my first academic position in Calgary where I worked for seven years before coming back to Waterloo.

What's your favourite part of your job?

I love the mix of tasks. It is incredible to run a largely field-based research program where you get to immerse yourself in the systems that you're studying and try to figure out how they work. But having the ability to bring those questions back to the lab and interacting with students – training them and seeing them get excited about research – that's one of my favourite parts too.

Briefly describe your research program.

I'm interested in greenhouse gas (GHG) exchange in peatlands (wetlands with organic soils - bogs, fens) and how this responds to disturbance. Since the soil in peatlands is formed from the decaying plants that live there, I'm interested in what drives plant distribution and productivity and what drives decomposition. This includes things like local hydrology, temperature and chemistry. Since peatlands are massive stores of carbon and release globally significant amounts of methane, understanding how management activities affect these stocks and fluxes is important in a climate change context so that we can understand how to minimize the GHG release from these systems. So my work seeks to quantify how disturbance increases GHG flux

and what strategies (conservation, restoration, rewetting) can reduce emissions. This data can form the basis of policy to encourage better peatland management.

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

I joined as a student member during the first year of graduate school when attending the Eastern student meeting of the Hydrology Section, and I've been a member ever since. Between 2010 and 2015 I served the Union as its Secretary.

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

I love the annual meeting. I work on study sites and with researchers across the country and the annual meeting is a place I know that I will get a chance to see many of these colleagues, get caught up on what they and their students are doing, and meet new collaborators. I love that the meetings are small enough that a lot of students get a chance to present their results and that there is time to see a lot of the presentations that are going on.

Where do you see CGU going in the future?

It would be great to see CGU as a powerful voice for Canadian geophysical science, able to engage with people outside of the discipline from youth to government. There are a lot of amazing geophysical scientists in Canada that are involved in globally significantly, innovative research and that are each engaging in their own outreach activities. If CGU could find a way to bring these efforts together it would really showcase Canadian geophysics.

What's your favourite activity outside of work?

I love spending time with my husband and kids, especially if it means getting outside to play around and see how the world works. In the summer this is hiking and throwing rocks into streams (and we bought a canoe this summer, so definitely more paddling in our future) and in the winter we're often out cross-country skiing.

What's something most people don't know about you?

I like to play with Lego… even after the kids go to bed.

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

I grabbed a book at the airport this summer called *The Truth About the Harry Quebert Affair* by Joel Dicker and it was a great murder mystery. I also visit **www.longreads.com** a few times a week to pick a story.

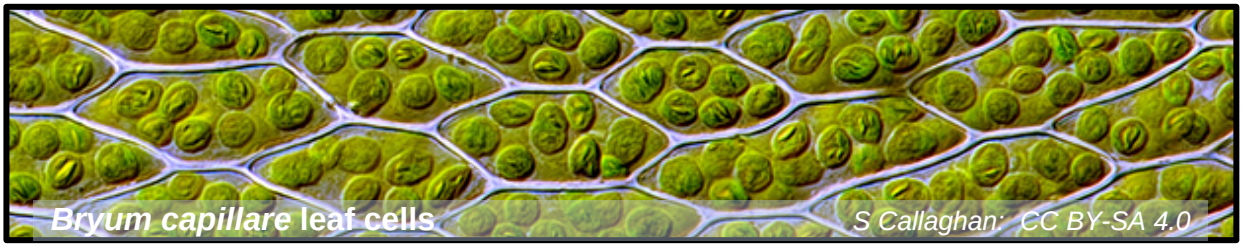
CGU Members in the News

- Brian Branfireun and Carl Mitchell's research on sulphur and mercury movement in peatlands featured in **AGU's Eos newsletter**.
- Brian Branfireun **featured in an Ottawa Citizen article**, talking to science journalist Tom Spears about climate change science and politics.
- John Clague and colleagues **featured in various media outlets** for their latest paper in the Canadian Journal of Earth Sciences, which suggests woolly mammoths once roamed BC's Haida Gwaii islands.
- Stephen Déry interviewed by CKPG News on **development of new Nechako Watershed Roundtable group**.
- Stephen Déry interviewed by CKPG about **above-average temperatures in northern BC**
- Masaki Hayashi participated in a panel discussion on "**Is Our Drinking Water At Risk,** " hosted by the Royal Canadian Institute for Science, the David Suzuki Foundation & RBC Blue Water Project.
- Brian Menounos, Stephen Déry and colleagues **featured in a CBC *The National* segment** on the impact of this summer's hot, dry conditions on BC's glaciers.
- Rich Petrone's **research on mining reclamation** and climate change featured in UWaterloo news.
- John Pomeroy adds a scientific perspective to a Globe & Mail article on **the history of the Bow River**.
- John Pomeroy on the **decline of Peyto Glacier** in the Canadian Rockies.
- John Pomeroy and colleagues call for a **National Water Agency**.
- **Inaugural meeting of the International Network for Alpine Research Catchment Hydrology (INARCH) research group** held in Kananaskis, co-hosted by John Pomeroy and including many CGU members.
- Bill Quinton's research at Scotty Creek, NWT, featured in a four part **Energy & Environment series on boreal and permafrost regions and climate change**.
- Nigel Roulet **featured in Ottawa Citizen article** about the resilience of Ottawa's Mer Bleue bog to climate change.
- U. of Waterloo PhD student Olena Volik was **featured in AGU's EOS magazine**.

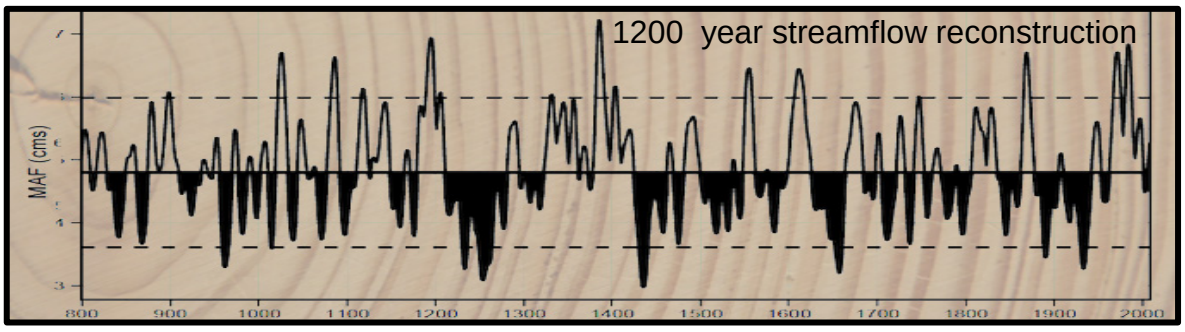
Salinity in Alberta peatlands — Olena Volik

Recent Papers from CGU Members

- **Ashmore P.** 2015. **Towards a sociogeomorphology of rivers**. *Geomorphology* 251:149–156.
- Beaud F, **Flowers GE, Venditti JG**. 2015. **Efficacy of bedrock erosion by subglacial water flow.** *Earth Surface Dynamics Discussion* 3: 849-908.
- Chaput, M, **Gajewski K**. 2014. **Analysis of daily air temperatures across a topographically complex alpine region of southwestern Yukon, Canada**. *Arctic* 67: 537-553.
- **Cockburn JMH**, Villard PV, Hutton C. 2015. **Assessing instream habitat suitability and hydraulic signatures of geomorphic units in a reconstructed single thread meandering channel.** *Ecohydrology*. DOI: 10.1002/eco.1705.
- Coleman Wasik JK, Engstrom DR, **Mitchell CPJ**, Swain EB, Monson BA, Balogh SJ, Jeremiason JD, **Branfireun BA**, Kolka RK, Almendiinger JE. 2015. **The effects of hydrologic fluctuation and sulfate regeneration on mercury cycling in an experimental peatland.** *Journal of Geophysical Research Biogeosciences*. DOI: 10.1002/2015JG002993.
- Crompton JW**, Flowers GE**, Kirste D, Hagedorn B, Sharp MJ. 2015. **Clay mineral precipitation and low silica in glacier meltwaters explored through reaction-path modelling.** *Journal of Glaciology.* DOI:10.3189/2015JoG15J051.
- Cunnings A, **Johnson E**, Martin Y. 2015. **Fluvial seed dispersal of riparian trees: transport and depositional processes.** *Earth Surface Processes & Landforms*. DOI:10.1002/esp.3850.
- **Gajewski, K**. 2015. **Impact of Holocene climate variability on Arctic vegetation**. *Global and Planetary Change* 133: 272-287.
- **Gajewski, K**. 2015. **Quantitative reconstruction of Holocene temperatures across the Canadian Arctic and Greenland.** *Global and Planetary Change* 128: 14-23.
- **Gajewski, K**, Bunbury J, Vetter M, Ayotte N, Khan A. 2014. **Paleoenvironmental studies in the southwest Yukon**. *Arctic* 67(Suppl 1): 58-70.
- Hugue F, Lapointe M, **Eaton B,** Lepoutre A. 2015. **Satellite-based remote sensing of running water habitats at large riverscape scales: Tools to analyze habitat heterogeneity for river ecosystem management.** *Geomorphology*. DOI:10.1016/ j.geomorph.2015.10.025
- Kettridge N, Tilak AS, **Devito KJ, Petrone RM**, Mendoza CA, **Waddington JM**. 2015. **Moss and peat hydraulic properties are optimized to maximise peatland water use efficiency.** *Ecohydrology*. DOI:10.1002/eco.1708.



- Khadka B, Munir TM, **Strack M**. 2015. **Effect of environmental factors on production and bioavailability of dissolved organic carbon from substrates available in a constructed and reference fens in the Athabasca oil sands development region**. *Ecological Engineering* 84: 596–606.
- **Kurylyk BL, Hayashi M**. 2015. **Improved Stefan equation correction factors to accommodate sensible heat storage during soil freezing or thawing**. *Permafrost and Periglacial Processes*. DOI: 10.1002/ppp.1865.
- **Kurylyk BL, Moore RD,** MacQuarrie KTB. 2015. **Scientific Briefing: Quantifying streambed heat advection due to groundwater-surface water interactions.** *Hydrological Processes*. DOI:10.1002/hyp.10709.
- Lukenbach MC, **Devito KJ**, Kettridge N, **Petrone RM, Waddington JM**. 2015. **Hydrogeological controls on post-fire moss recovery in peatlands**. *Journal of Hydrology* 530: 405-418.
- Mathewes RW, Lian OB, **Clague JJ**, Huntley MJW. 2015. **Early Wisconsinan (MIS 4) glaciation on Haida Gwaii, British Columbia, and implications for biological refugia.** *Canadian Journal of Earth Sciences.* DOI: 10.1139/cjes-2015-0041.
- Neudorf CM, Lian OB, **Walker IJ,** Shugar DH, Eamer JBR, Griffin LCM. 2015. **Toward a luminescence chronology for coastal dune and beach deposits on Calvert Island, British Columbia central coast, Canada**. *Quaternary Geochronology* 30B: 275-281.
- Normandeau A, Joyal G, **Lajeunesse P**, Francus P, **Lamoureux S**, Lapointe F. 2015. **Late-Holocene mass movements in High Arctic East Lake, Melville Island (Western Canadian Arctic Archipelago).** In *Submarine Mass Movements and their Consequences*, Volume 41 of the series Advances in Natural and Technological Hazards Research. Springer International Publishing: 311-320.
- Painter KJ, **Westbrook CJ**, Hall BD, O'Driscoll NJ, Jardin TD. 2015. **Effects of in-channel beaver impoundments on mercury bioaccumulation in Rocky Mountain stream food webs**. *Ecosphere.* DOI: 10.1890/ES15-00167.1.
- Pratola MT, Harari O, Bingham D, **Flowers GE.** 2015. **Design and analysis of experiments on non-convex regions.** *Technometrics.* DOI:10.1080/00401706.2015.1115674.
- Razavi S, Elshorbagy A, **Wheater H**, Sauchyn D. 2015. **Time scale effect and uncertainty in reconstruction of paleo-hydrology**. *Hydrological Processes*. DOI:10.1002/hyp.10754.



- Rooney RC, Robinson DT, **Petrone R**. 2015. **Megaproject reclamation and climate change**. *Nature Climate Change* 5: 963–966.
- Sadeghian A, **de Boer D**, Hudson J, **Wheater H**, Lindenschmidt K-E. 2015. **Lake Diefenbaker temperature model**. *Journal of Great Lakes Research*. DOI:10.1016/j.jglr.2015.10.002.
- Stockinger MP, Lücke A, **McDonnell JJ**, Diekkrüger B, Vereecken H, Bogena HR. 2015. **Interception effects on stable isotope driven streamwater transit time estimates.** *Geophysical Research Letters*. DOI: 10.1002/2015GL064622.
- Sundqvist E, Perssona A, Kljun N, Vestin P, **Chasmer L, Hopkinson C**, Lindroth A. 2015. **Upscaling of methane exchange in a boreal forest using soil chamber measurements and high-resolution LiDAR elevation data.** *Agricultural and Forest Meteorology* 214–215: 393–401.
- Torres E, Couture RM, Shafei B, Nardi A, Ayora C, **Van Cappellen P**. 2015. **Reactive transport modeling of early diagenesis in a reservoir lake affected by acid mine drainage: Trace metals, lake overturn, benthic fluxes and remediation.** *Chemical Geology* 419: 75-91.
- Van Wychen W, **Copland L,** Burgess DO, Gray L, Schaffer N. 2015. **Glacier velocities and dynamic discharge from the ice masses of Baffin and Bylot Islands, Nunavut, Canada**. *Canadian Journal of Earth Sciences.* DOI:10.1139/cjes-2015-0087.
- Waechter A, **Copland L,** Herdes E. 2015. **Modern glacier velocities across the Icefield Ranges, St Elias Mountains, and variability at selected glaciers from 1959 to 2012**. *Journal of Glaciology* 61: 624-634.

Mt St. Elias Bryan Petrtyl (CC BY-SA 2.0)

Opportunities

Graduate Positions

Positions	Program	Topic	Location and link
1	MSc/PhD	Cryosphere modelling	**McGill University**
1	PhD	Sea ice remote sensing	**University of Victoria**
1	MSc/PhD	Permafrost hydrology/water quality	**Queens' University**
Multiple	MSc/PhD	Hydrology	**Trent University**
Multiple	MSc/PhD	Resources, Environment & Sustainability	**University of British Columbia**
Multiple	MSc/PhD	Water security	**University of Saskatchewan**
Multiple	MSc/PhD	Geography	**University of Guelph**
Multiple	MSc/PhD	Geography	**Memorial University**
Multiple	MSc/PhD	Forest watershed management	**University of Alberta**
1	PhD	Peat & wildfire	**Université de Montreal**
1	PhD	Water quality research	**University of Waterloo**
1	PhD	Iceberg calving & ice sheet dynamics	**University of British Columbia**
1	PhD	Arctic ecotoxicology	**University of Manitoba**

Post-graduate Positions

Position	Research area	Location and link
Outreach coordinator	Canadian Cryospheric Info Ntwk	**University of Waterloo**
Provincial Inspector	Flood Safety	**BC Government**
Postdoc	Groundwater recharge	**University of Calgary**
Postdoc	Snow-climate modelling	**University of Waterloo**
Postdoc	Earth science	**University of Toronto**
Postdoc	Biological impacts of Arctic shipping	**University of Victoria**
Postdoc	Ecohydrological modelling	**University of Waterloo**
Lecturer (Teaching)	Physical Geography	**Simon Fraser University**
Assistant Professor	Geology	**University of Victoria**
Assistant Professor	Geodesy/Remote Sensing	**University of Colorado Boulder**
Assistant Professor	Hydrology	**Simon Fraser University**
Tier 2 CRC	Geophysics	**University of Victoria**
Endowed Chair	Geology	**Tulane University**

Conferences

- **CMOS-CGU Joint Congress**, May 29 -Jun 2 in Fredericton, New Brunswick.
- **GAC-MAC Annual Meeting**, Jun 1-3 in Whitehorse, Yukon.
- Canadian Society of Soil Science (CSSS) & Pacific Regional Society of Soil Science (PRSSS) **Joint Scientific Conference**, May 15-18 in Kamloops, BC. Abstracts due Feb 15, 2016.
- **European Geosciences Union General Assembly 2016**, Apr 17-22 in Vienna, Austria. Abstracts due Jan 13, 2016.
- **Western Snow Conference**, Apr 18-21 in Seattle, WA. Abstracts due Jan 31, 2016.
- **CWRA National Conference**, May 25-27 in Montréal. Abstracts due Jan 15, 2016.

Other News

- Masaki Hayashi will present to Canadian Society of Petroleum Geologists on January 20, 2016 on: **Getting a GRIP on groundwater recharge in the prairies: How much water is available?**
- University of Waterloo Faculty of Environment **launches a weekly podcast**.
- **Girls on Ice expeditions** for high school girls in Alaska (Jun 17-28) and the North Cascades (Jul 10-21). Applications due Jan 29, 2016.

Girls On Ice

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Editor's Note:

ELEMENTS, the newsletter for the Canadian Geophysical Union, is published and distributed to all CGU members twice each year; one Summer issue and one Winter issue. We welcome submissions from members regarding meeting announcements or summaries, awards, division news, etc.

Advertisements for employment opportunities in geophysics will be included for a nominal charge (contact the Editor). Notices of post-doctoral fellowship positions available will be included free of charge.

Submissions should be sent to the Editor:

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34 Vincent Av., PO Box 878, Niagara on the Lake, Ont, L0S1J0;
Telephone: 905-468- 5896;
Email: **gordonyoung_wwap@yahoo.com**

Electronic submission is encouraged

CGU WEB SITE ADDRESS: http://www.cgu-ugc.ca