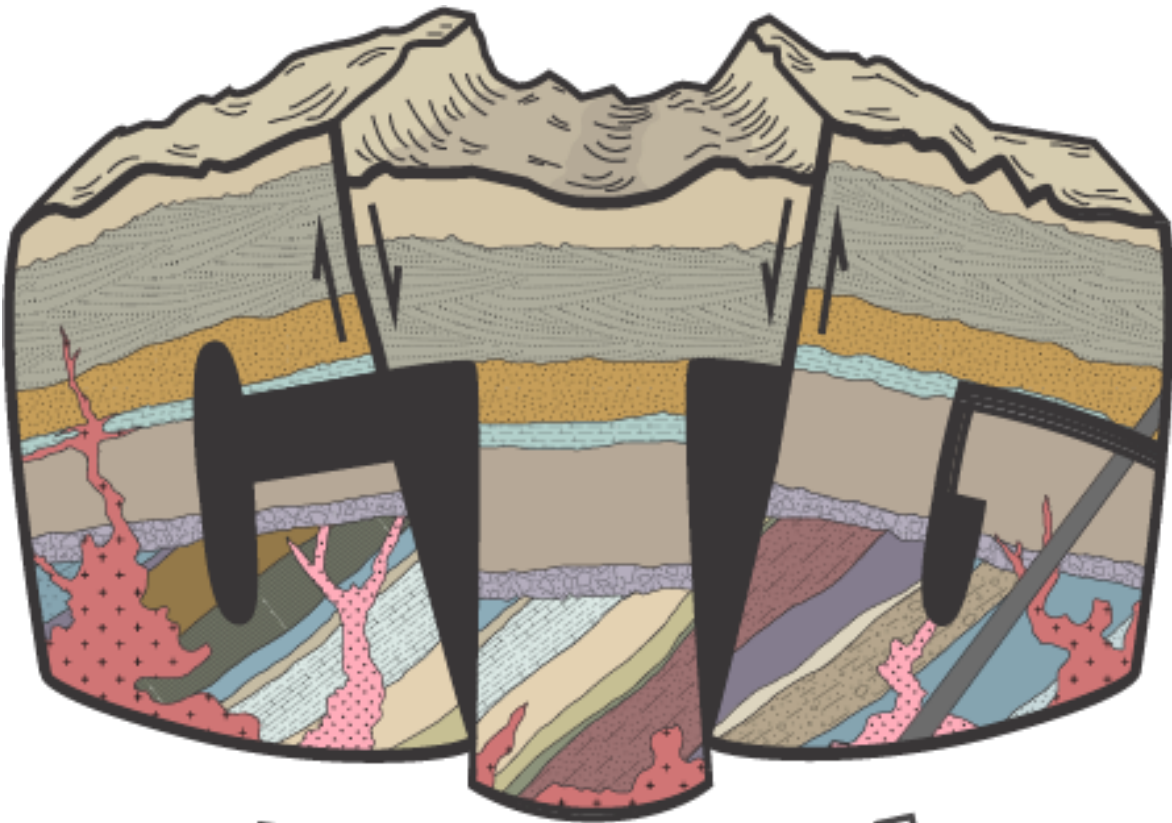




GEOLOGICAL
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THE MAIN THRUST

NEWSLETTER OF THE CANADIAN TECTONICS GROUP DIVISION OF THE GEOLOGICAL
ASSOCIATION OF CANADA



1981  2021

www.canadiantectonicsgroup.ca

The Canadian Tectonics Group – Highlights from 2022-2023

The CTG has been very active this past year! We finally saw the return to full in-person conferences, with many of our members participating in and having presented at the annual GACMAC, which took place in Halifax this past Spring. We also had a successful annual field trip, combined with a virtual workshop component. Our regular seminars are continuing, now organized by Noah Phillips and information with how to tune in can be found below. We'd like to extend a huge thank you to Gabe Sombini Dos Santos and Alan Cardenas for organizing the seminar series over the past couple years! We have also made some adjustments to the CTG executive, voted in at our last AGM in June 2022. Chris Yakymchuk, University of Waterloo, was voted in as Vice Chair, Luke Beranek from Memorial University of Newfoundland is now Treasurer, and Shawna White, Saint Mary's University, has taken over as Chair. We'd also like to extend immense gratitude to Dawn Kellett, who was Chair of CTG for many years (two full terms), and recognize her incredible leadership and dedication to the CTG, with an Excellence in the Canadian Tectonics Community Recognition (see details below)!

Thank you to all those who volunteer and continue to participate in our communities' events. We appreciate all the support and hope to keep growing the tectonics community in Canada into 2023.

CTG Seminar Series

We'd like to thank Noah Phillips, Lakehead University, who has taken over as organizer of our fall/winter seminar series, with the help of Jordan Peterzon, Lakehead University. You can find all upcoming talks are listed on our website here:

<https://www.canadiantectonicsgroup.ca/2021-2022-seminar-series.html>

Our next speaker will be Shawna White, Saint Mary's University, giving her Atlantic Geoscience Society speaker tour talk entitled: *"The role of structural inheritance within the Northern Appalachians."*

If you missed any of our past speakers, you can still catch them on our YouTube channel:

<https://www.youtube.com/channel/UCuCh-8Mx7dwh8cuxiWcieKQ>

Thank you again to Gabe Sombini Dos Santos and Alan Cardenas for their efforts in organizing the seminar series these past couple years!

2022 Canadian Tectonics Group Annual Workshop

Field Trip: This year's fall workshop and field trip was organized by Mo Snyder, Acadia University (workshop coordinator), Dave Pattison, University of Calgary (trip leader), and Benjamin Neil, University of Alberta (logistics coordinator).

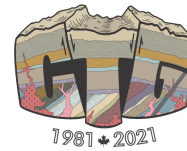
The field trip, entitled *Geology and tectonics of the Foreland and Omineca belts of the southern Canadian Cordillera, SW Alberta and SE British Columbia*, took place in the Southern Canadian Cordillera from September 23 – 25. There were 26 attendees in total (13 students, 13 professionals) spanning country from Nova Scotia to British Columbia. The weather was spectacular, as were the discussions during the field trip amongst the diverse group of attendees. Participants travelled in luxury in a motor coach with an expert driver who handled difficult outcrop pull-offs with assurance. Accommodations and all meals were expertly accommodated at the Prestige Inn in Cranbrook, BC.



The field trip gave participants an overview of some of the key geological/tectonic elements of the southeastern portion of the Canadian Cordillera: stratigraphic, structural, metamorphic and tectonic. The field trip started in Calgary and went as far west as Castlegar, BC via Banff, Radium, Cranbrook, Creston and Salmo. Geologically, the field trip started in the Interior Platform, just east of the Cordilleran deformation belt, and traversed the Foreland belt and part of the Omineca belt. Day 1 featured stops in: the Interior Platform; Foothills; Rocky Mountain fold-thrust belt (Front Ranges, Main Ranges); Kicking Horse Rim facies break; Rocky Mountain Trench; Purcell anticlinorium; Belt-Purcell turbidites; Moyie sills. Day 2 featured stops in: Purcell Trench normal fault; northern lobe of Priest River complex; Cryogenian Toby conglomerate; ductile deformed strata of the Kootenay arc; volcanic rocks of Quesnellia; Valhalla core complex



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and its eastern margin, the Valkyr shear zone and Slocan Lake fault. Day 3 was largely a return drive to Calgary with geo-scenic breaks at Eager Hill viewpoint of the southern Rocky Mountain Trench and at the Columbia Lake overview.

A detailed field guide to the area covered by the field trip – entitled [“Field guide to the geology, metamorphism and tectonics of the Foreland and Omineca belts of SW Alberta and SE British Columbia”](#) - is available for download and includes descriptions of all stops on the field trip.

Workshop: This year’s workshop was organized by Mo Snyder, Acadia University. There were a total of 16 presentations from students and professionals, 11 of which were oral and 5 were poster presentations.

More information and a link to the abstract volume can be found on our website: [CTG workshops \(canadiantectonicsgroup.ca\)](#)

Student Grants GACMAC 2023

Students can now apply for a grant to attend GACMAC in Sudbury, May 24-27, 2023!

CTG will once again provide support to enable students to attend the annual GACMAC Meeting. This year’s meeting is hosted in Sudbury, from May 24th - 27th, 2023.

Priority will be given to a student or students who are presenting talks or posters on a structural geology and tectonics-related topic. These students may choose to use the funds to attend a structural geology and tectonics-related field trip.

Students should apply to the CTG Chair (Shawna.White@smu.ca), attaching a copy of a submitted abstract, together with:

- A copy of the submitted abstract;
- A budget of the costs associated with attending the meeting including, e.g., abstract submission fee, travel and accommodation (if applicable), registration, childcare (even for online attendance) etc., as well as any other sources of funding available;
- A statement indicating why they wish to participate in the meeting, and how they expect to benefit from attending;
- A transcript or transcripts of their academic record.

Deadline: Mar 31, 2023

Tectonics and structural geology (and related) programming: 2023 GACMAC, Halifax, NS, May 15-18: Sudbury 2023 GAC-MAC- SGA

The Joint Annual Meeting of the Geological Association of Canada, Mineralogical Association of Canada, and Society for Geology Applied to Mineral Deposits will be held in Sudbury, Ontario, 24-27 May 2023, with pre- and post-meeting field trips, workshops, and short courses.

Important dates to keep in mind:

March 1st 2023: Deadline for late submission of abstracts (\$60)

April 1st 2023: Deadline for early registration, Deadline for field trip, workshops, and short course registrations

The following is a list of sessions that may be of interest to members of the CTG. For the full program at the conference website: [Sudbury 2023 GAC-MAC-SGA \(fourwaves.com\)](http://fourwaves.com)

Symposia Session:

SY02 - Crustal Architecture and Metal Endowment, Chairs: Ross Sherlock (rsherlock@laurentian.ca), Bruno Lafrance (blafrance@laurentian.ca), Stéphane Perrouty (sperrouty@laurentian.ca)

Special Sessions:

SS03 - Advances in Marine Geology and Geodynamics and their Application to Understanding Ancient Metallogenic Terranes, Chairs: Erin Bethell (ebethel2@uottawa.ca), Chris Galley (gchrist2@uottawa.ca), Alan Baxter (abaxter2@uottawa.ca), Mark Hannington (mark.hannington@uottawa.ca)

SS04 - Advances in the Study of Accretionary Tectonics in the Paleozoic: From the Appalachians to Zagros, Chairs: Deanne van Rooyen et al. (deanne.vanrooyen@acadiiau.ca)

SS07 - Anything but Boring: the Grenville Orogeny a Key into Mesoproterozoic Geodynamics, Chairs: Aphrodite Indares (aindares@mun.ca), Caroline Lotout (clotout@mun.ca)

SS08 - Archean Craton Assembly, Chairs: Antoine Godet (antoine.godet.1@ulaval.ca), Carl Guilmette (carl.guilmette@ggl.ulaval.ca), Doug Tinkham (dtinkham@laurentian.ca)

SS09 - Canadian Journal of Earth Sciences at 60: Celebrating Canadian Geoscience and Geoscientists, Chairs: Sally Pehrsson (sally.pehrsson@NRCan-RNCan.gc.ca), Brendan Murphy (bmurphy@stfx.ca)



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SS14 - Geophysics for Minerals and Mineral Systems, Chairs: Richard Smith (rsmith@laurentian.ca), Callum Walter (11caw13@queensu.ca), Hema Sharma (hsharm3@uwo.ca), Rajesh Vayavur (rvayavur@laurentian.ca)

SS17 - Integrated Studies in Paleozoic Basins: Life, Environments, Resources, Chairs: Nikole Bingham-Koslowski (nikole.bingham-koslowski@nrcan-rncan.gc.ca), Michelle Coyne (michelle.coyne@nrcan-rncan.gc.ca)

SS21 - Mineral Exploration Footprints, Chairs: Stéphane Perrouty (sperrouty@laurentian.ca), Kevin Ansdell (kevin.ansdell@usask.ca), Robert Lee (rglee17@gmail.com)

SS22 - New Insights on Cordilleran Magmatism and Tectonics: from Rifted Margin to Continental Arc Systems, Chairs: Rosie Cobbett (rosie.cobbett@yukon.ca), Luke Beranek (lberanek@mun.ca), Justin Strauss (justin.v.strauss@dartmouth.edu), David Moynihan (david.moynihan@yukon.ca)

Relevant field trips:

FT02 - Discovering the Abitibi Gold Belt, Leaders: Stéphane Perrouty (sperrouty@laurentian.ca), Ross Sherlock (rsherlock@laurentian.ca), Jack Simmons (jsimmons@laurentian.ca), Sponsor: MERC, Duration: **4 days, pre-meeting, May 20-21-22-23**

Registration: \$1220, Minimum: 12 participants, Maximum: 29 participants (meals not included, accommodation included, double occupancy)

With over 300 Moz Au, the Abitibi is the world most endowed Precambrian greenstone belt. This 4-day field trip aims to introduce the regional litho-stratigraphy, major deformation zones and key mineral deposits between Timmins (ON) and Val d'Or (QC), including the world class metakomatiite-hosted Kerr Addison gold camp (~15 Moz) and metasedimentary-hosted Canadian Malartic gold camp (~26 Moz). Day 1 in Timmins, Day 2 in Larder Lake, Day 3 in Rouyn-Noranda, Day 4 in Val d'Or.

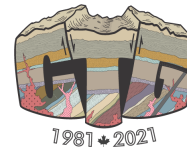
FT06 - Multiscale and Polyphase Deformation Structures in the Grenville Front Tectonic Zone near Sudbury, Leaders: Dazhi Jiang (djiang3@uwo.ca), Changcheng Li (changcheng.li@uwaterloo.ca), Sponsor: Western U, Duration: *1 day, post-meeting, May 28*

Registration: \$290, Minimum: 13 participants, Maximum: 20 participants (snacks and lunches included, accommodation in Sudbury not included)

This 1-day field trip will focus on the geology of deformation structures developed in Grenvillian Orogeny. Outcrops (in Sudbury or nearby areas) in the Grenville Front Tectonic Zone and potentially in the Britt domain will be visited to unveil the geometry and the kinematics of the deformation structures. These geological structures record middle/lower crust deformation in the Ottawa phase of the Grenvillian Orogeny, extension during the mountain collapse, and folding and thrusting in the continuing convergence in the Rigolet phase of the Grenvillian Orogeny. A mylonite zone (a textbook example) produced in the thrusting at the Grenville Front may be visited in the trip.



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FT07 - Exploring Differential Metal Endowment: A comparison of the Eastern (Noranda) and Western (Swayze) Abitibi Greenstone Belt, Leaders: Harold Gibson (hgibson@laurentian.ca), Thomas Gemmel (thomas.gemmel@ontario.ca), Taus Jørgensen (tjoergensen@laurentian.ca), Evan Hastie (evan.hastie@ontario.ca), Marina Schofield (mschofield@laurentian.ca), Rasmus Haugaard (mielsen@laurentian.ca), Alan Smith (alan_smith@iamgold.com), Brad McKinley (brad_mckinley@iamgold.com), Bruno Lafrance (blafrance@laurentian.ca), Ross Sherlock (rsherlock@laurentian.ca), Sponsor: MERC, Duration: 4 days, post-meeting, May 28-29-30-31

*Registration: \$1470, Minimum: 14 participants, Maximum: 20 participants
(all meals included, accommodation included, simple occupancy for 2 nights, double occupancy for 2 nights)*

Growing societal needs and the green economy depends on a secure source of critical metals. Canada's success in securing these metals is tied to our understanding of ore systems and the controls on differential metal endowment at District- to Craton-scales. Only then can the metal potential of remote and underexplored areas of Canada, most of which are undercover, be unlocked. This field trip explores the processes responsible for the differential base and precious metal endowment of greenstone belts through a comparison of the geology and crustal architecture of the Swayze (Ontario) and Rouyn-Noranda (Quebec) areas in the western and eastern Abitibi greenstone belt. Crustal-scale processes and features affecting metal endowment, as defined through Metal Earth's seismic, MT and gravity surveys, will be linked to surface geological features and crustal-scale faults. In the Swayze and Rouyn-Noranda areas the trip will focus on key outcrops, tied to a new stratigraphy, that provides insights into the differences in the magmatic and structural evolution of the ca. 2704-2695 Ma Blake River Group in both areas, their base and precious metal metallogeny, and evolution of crustal-scale faults. The trip will include a half-day visit to IAMGOLD's Côté Gold and Gosselin deposits (>19 Moz) and explore key differences in the setting and styles of ore deposits between the western and eastern Abitibi.

FT10 - Orogenic and Intrusion-Related Gold Deposits of the Michipicoten and Mishibishu Greenstone Belts in the Wawa Region, with an Emphasis on the Structural Framework, Leaders: Chong Ma (cma@laurentian.ca), Lianna Vice (lianna.vice@ontario.ca), Carl Nagy (carl.nagy@alamosgold.com), Zachary Adam (zvadam@uwaterloo.ca), Danielle Shirriff (danielle.shirriff@alamosgold.com), Bruno Lafrance (blafrance@laurentian.ca), Lise Robichaud (lise.robichaud@ontario.ca), Sponsor: MERC, Duration: 3 days, pre-meeting, May 22-23-24

*Registration: \$760, Minimum: 14 participants, Maximum: 24 participants
(snacks and lunches included, accommodation included, double occupancy)*

This 3-day trip will highlight the geologic and structural framework of orogenic and intrusion-related gold deposits in the easternmost Wawa subprovince. Day 1: Renabie mine in the northeastern Michipicoten greenstone belt. Day 2: Shear zone-hosted gold mineralization around the Jubilee stock in the southern Michipicoten greenstone belt in the morning and Eagle River mine of the Mishibishu greenstone belt in the afternoon. Day 3: Island Gold mine in the Goudreau deformation zone of the northern Michipicoten greenstone belt

Award Winners and Grant Recipients

We are very proud of the recipients of the Jack Henderson awards for best PhD and MSc thesis, completed during the 2021 calendar year:

Best MSc thesis

Gabrielle Jones, with the thesis *“Implications of in situ zircon U-Pb, Lu-Hf, oxygen-isotope, and trace element geochemistry on the petrogenetic history of the northern Hogem batholith in the Quesnel terrane, north-central British Columbia, Canadian Cordillera”*, supervised by Graham Pearson at University of Alberta.

J. Henderson Best PhD thesis

Dr. Renelle Dubosq, with the thesis *“Micro- to nanoscale investigations of structures and chemical heterogeneities in geomaterials: impacts on rheology”*, supervised by David Schneider at University of Ottawa.

Congratulations to both winners and their supervisors, and thanks to all our readers!

Winner of the D. Elliott Best Paper award

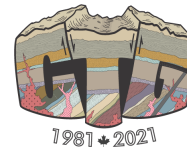
The D. Elliott award for best paper in Canadian structural geology and tectonics, with publication year 2021, was awarded to:

Jeremy M. Rimando (UToronto), and their coauthors, Lindsay M. Schoenbohm (UToronto), Gustavo Ortiz (National U San Juan), Patricia Alvarado (National U San Juan), Agostina Venerdini (National U San Juan), Lewis A. Owen (NC StateU), Erin G. Seagren (UToronto), Paula Marques Figueiredo (NC StateU), Sarah J. Hammer (UCincinnati) for their paper, *Late Quaternary Intraplate Deformation Defined by the Las Chacras Fault Zone, West-Central Argentina*, published in **Tectonics**. <https://doi.org/10.1029/2020TC006509>.

Shortlist committee citation: The Rimando et al paper presents a robust integration of structure, GPS data and dating techniques across the width of the flat slab segment of the subducting Nazca plate from the western Precordillera to the eastern Sierra Pampeanas in West-Central Argentina. Geomorphically-derived shortening rates show an interesting relationship with the flat and steeply dipping segments of the downgoing slab; lower shortening rates were determined where the flat segment changed to a more steeply dipping slab beneath the Las Chacras Fault, whereas uplift rates remain similar, likely due to the steeper dips of the faults east of the flat slab segment. An additional conclusion with important societal relevance for this part of Argentina, lies in calculating the risk and magnitude of earthquakes that may be generated due to movements accommodated by the Las Chacras Fault. Using the relationships between earthquake magnitude, fault slip rate and fault length scaling, the authors indicate the potential to generate relatively high magnitude earthquakes (M: 6.5-7.1).



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Honourable Mentions

Phillips, N.J. and Ji, S., 2021. *Constraining the ductile deformation mechanisms of garnet across pressure-temperature space*. *Journal of Structural Geology*, 148, p.104356, <https://doi.org/10.1016/j.jsg.2021.104356>.

Godet, A., Guilmette, C., Labrousse, L., Smit, M.A., Cutts, J.A., Davis, D.W. and Vanier, M.A., 2021. *Lu–Hf garnet dating and the timing of collisions: Palaeoproterozoic accretionary tectonics revealed in the Southeastern Churchill Province, Trans-Hudson Orogen, Canada*. *Journal of Metamorphic Geology*, 39(8), pp.977-1007, <https://doi.org/10.1111/jmg.12599>.

Congratulations to all the authors! Many thanks to all those who nominated papers (including all our councillors) and a particular thank you to the short list committee. Without their time and dedication to CTG, these awards would not be possible. We encourage everyone to take the time to read these excellent contributions!

Forthcoming D. Elliott Best Paper Award

The call is still open for David Elliott Best Paper Award. Your councillors are preparing a shortlist of papers written *by authors based in Canada or dealing with Canadian topics and with a final publication date in the 2020 calendar year*. Priority will be given to peer-reviewed publications. Submissions from the membership and self-nominations are also welcome. The call closes on **28 Feb, 2023**. We will appoint a small committee of individuals not involved with any of the shortlisted papers to review the papers and select a winner, to be announced at the CTG annual general meeting in May, 2023.

Excellence in the Canadian Tectonics Community Recognitions

We are pleased to announce our most recent recipient of the Excellence in the Canadian Tectonics Community recognitions last month:

Dawn Kellett GSC-Atlantic, Dartmouth: Service to Canadian Tectonics Community

Dawn has received an Excellence in the Canadian Tectonics Community Recognition for her excellence in building and maintaining the CTG community through her services in the leadership team. Particularly, managing to keep the community united and engaged through the pandemic.

We invite ongoing nominations for members of the community that merit special recognition for short or long term efforts/initiatives that have contributed positively to the field of structural geology and tectonics in Canada, including anyone demonstrating leadership, dedication, or vision in their research, teaching, outreach, diversity, equity and inclusion initiatives, mentoring, etc.

Recognition is open to all members of CTG as well as students who are not members (if nominated by members or by other students). Nominations will be evaluated, and recipients announced on a biannual basis ahead of our fall and spring meetings (CTG fall workshop and GAC annual meeting). Please find the nomination form here:

<https://forms.gle/Sf3fon6tzMH21gtLA>

GAC Student Support

The CTG provided funding to support four students attendance to the 2022 GACMAC in Halifax, 2022. Four awards of \$300 each were awarded to:

Meghomita Das – PhD - McGill University

Dana Silerova – MSc - SFU

Sarah Speight – PhD - UNB

Alix Osinchuk – PhD - SFU

CTG Business Meetings

The last business meeting of the CTG was held online via the Zoom platform June 2021. Minutes can be found on the CTG website.

The next CTG business meeting will be held via Zoom in 2023 around the time of the GACMAC annual meeting.

Current CTG Executive and Councillors

Chair: *Shawna White*, Saint Mary's University

Vice Chair: *Chris Yakymchuk*, University of Waterloo, Waterloo

Secretary: *Alexander Peace*, McMaster University, Hamilton

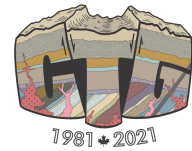
Treasurer: *Luke Beranek*, Memorial University of Newfoundland, St. John's

Councillors:

Kathryn Bethune, University of Regina, Regina



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Normand Goulet, Université Québec à Montreal

Lyal Harris, Institut national de la recherche scientifique, Québec

Mary Louise Hill, Lakehead University, Thunder Bay

John Waldron, University of Alberta, Edmonton

Joseph C. White, University of New Brunswick, Fredericton

Laurent Godin, Queen's University, Kingston

Dan Gibson, Simon Fraser University, Burnaby

Deanne van Rooyen, Cape Breton University, Sydney

Camille Partin, University of Saskatchewan, Saskatoon

Shoufa Lin, University of Waterloo, Waterloo

Dazhi Jiang, University of Western Ontario, London