



Winter 2016

<http://gac.esd.mun.ca/sgttd>

THE MAIN THRUST

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



Cape Breton 2015 CTG Workshop

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1. 2015 Canadian Tectonics Group Annual Workshop

The 35th meeting of the Canadian Tectonics Group was held in Sydney, Nova Scotia, on Unama'ki (Cape Breton in Mi'kmaq) on October 3rd and 4th, 2015 with 20 participants. Deanne van Rooyen (Cape Breton University) ably organized the meeting. The two-day meeting was divided into a day of geological field excursion along the spectacular Cabot Trail to look at various terranes and bounding faults making up the Cape Breton Highlands (Oct. 3rd). We visited plutonic rocks, shear zones, and metamorphic and sedimentary units in the Bras D'Or and Aspy terranes of the Island, covering Neoproterozoic to Carboniferous geology. Sandra Barr (Acadia University), Chris White (Nova Scotia Department of Natural Resources), and Deanne van Rooyen enthusiastically led the field trip under typical Maritime Fall weather. The following day (Oct. 4th) focused on talks and poster presentations, and an extra field trip to the Louisburg Lighthouse to visit deformed Neoproterozoic volcanic rocks of the Mira terrane. On behalf of the CTG community, thank you Deanne for making this happen, and to Sandra and Chris for leading the excellent field trip and providing guide book material!

2. Students: apply for a grant of up to \$600 to attend the Margins Through Time GAC-MAC Meeting in Whitehorse, Yukon

CTG will once again provide support to enable two students to attend the GAC-MAC Meeting. Priority will be given to a student or students who are presenting talks or posters, and who wish to attend either of the sponsored field trips (see Section 3 below). Students should contact the CTG Chair (godinl@queensu.ca), attaching a copy of a submitted abstract, together with a short cover letter including:

- A budget of the costs associated with attendance, including travel, and other sources of funding available;
- A statement indicating why you wish to attend the meeting and field trip, and how you expect to benefit from them;
- A transcript or transcripts of your academic record.

Deadline: March 14, 2016

3. Tectonics and structural geology at the 2016 Whitehorse GAC-MAC Meeting

The 2016 GAC-MAC Meeting will take place in Whitehorse from June 1 to 3, preceded and followed by field trips. Here are Special Sessions of interest for the CTG community:

Northwest Laurentia's neighbors in Proterozoic supercontinents: Cratonic identifications and their geodynamic implications (SS2), Bruce Eglington, University of Saskatchewan (bruce.eglington@usask.ca), David Evans, Yale University (david.evans@yale.edu), Zheng-Xiang Li, Curtin University of Technology (z.li@exchange.curtin.edu.au).

Tectonics of accretionary and collisional orogens (SS3), Maurice Colpron, Yukon Geological Survey (maurice.colpron@gov.yk.ca), Steve Israel, Yukon Geological Survey (steve.israel@gov.yk.ca), and Luke Beranek, Memorial University (lberanek@mun.ca).

Structure, magmatism and metallogeny of the evolving North American Cordilleran margin: In honour of the career of Jim Mortensen, Murray Allan, University of British Columbia (mallan@eos.ubc.ca), Craig Hart, University of British Columbia (chart@eos.ubc.ca), and Sarah Gleeson, University of Alberta (sgleeson@ualberta.ca).

Investigating crustal neotectonics on the western margin of North America (SS8), Lucinda Leonard, University of Victoria (lleonard@uvic.ca), Kristin Morell, University of Victoria (kmorell@uvic.ca), Lisa Nykolaishen, Geological Survey of Canada (lisa.nykolaishen@nrcan-rncan.gc.ca), and Michael Schmidt, Arctic Institute of North America (Michael.Schmidt@ucalgary.ca).

Tectonic controls on northern Canada's mineral and petroleum resources (SS9), Suzanne Paradis, Geological Survey of Canada (suzanne.paradis@nrcan-rncan.gc.ca) and Peter Hannigan, Geological Survey of Canada (peter.hannigan@nrcan-rncan.gc.ca).

Geophysical constraints on geological structures and processes (SS18), Ian Ferguson, University of Manitoba (Ij.Ferguson@umanitoba.ca) and Phil McCausland, Western University (pmccausl@uwo.ca).

IMPORTANT: The following field trips will be sponsored by the CTG:

- VMS and Orogenic Gold deposits of the Chatham Strait, southeast Alaska (June 4 to June 8).
- Tectonics of the Intermontane and Insular terranes, and development of Mesozoic synorogenic basins in southern Yukon; Carmacks to Kluane Lake (June 4 to June 6).

For further details, see the Conference website at: <http://whitehorse2016.ca/>

4. 36th CTG Fall Workshop in 2016

We are pleased to announce that Fried Schwertner, Toby Rivers, and Denis Waddington will host the 36th Annual Canadian Tectonics Group workshop in the Muskoka region north of Toronto most likely the weekend of October 22-23, 2016. Stay tuned for details.

According to the CTG historical geographical rotation, the 2017 meeting should be held in western Canada – we are currently accepting suggestions, nominations, and volunteers! Rumours are circulating that Kathy Bathune, Paul Kramer, and Claude Resources might be planning to host the 2017 workshop in the Seabee mine area (situated in the Glennie domain), Saskatchewan. To be continued...



5. Winners of Jack Henderson awards for best theses

The following awards were made for theses defended in 2013 or 2014.

PhD thesis prize:

Reid Staples of Simon Fraser University for his thesis “*Diachronous Deformation, Metamorphism and Exhumation in the Northern Canadian Cordillera: Revealed from Pressure-Temperature-Time-Deformation Paths of Former Mid-Crustal Rocks*”.

Co-supervised by Dan Gibson, Maurice Colpron, Jim Ryan and Rob Berman

MSc thesis prize:

Tyler Ambrose, University of British Columbia – Okanagan for his thesis “*Ductile extrusion, underplating, and out-of-sequence thrusting within the Himalayan Metamorphic core, Kanchenjunga, Nepal*”.

Co-supervised by Kyle Larson and Carl Guilmette



Carl Guilmette receiving the Best MSc Thesis award from CTG Chair Laurent Godin on behalf of Tyler Ambrose.

Congratulations to both winners and their supervisors!

6. Call for Submissions for the Jack Henderson Best MSc Thesis Award and Best PhD Thesis Award.

We are calling for submissions for the **Best MSc Thesis Award** and the **Best PhD Thesis Award**. Theses submitted to a Canadian university and successfully defended in the 2015 calendar year are eligible. **Submissions must be received by February 19th, 2016**. The thesis supervisor, the student, or any member of the division can make a submission. It should include a “statement of nomination” letter from the supervisor or a thesis examiner, stating that the thesis was successfully defended in 2015, outlining the key contributions that it makes to structural geology and/or tectonics, and identifying a chapter or chapters in the thesis that are of particular excellence. We also ask that the duration for completion of the thesis be included, and if necessary, a statement of any extenuating circumstances that may have delayed completion. In the case that the student submits a copy of the thesis, the onus is on the student to make sure that the supervisor (or a member of the examination committee in the case that the supervisor is not available) submits the nomination letter. Theses for which we receive no nomination letters will not be considered for an award.

We prefer to receive theses as PDF documents by email (if 25 MB or less), a secure download site, or by mail on a CD or DVD. Please send the theses to:

Dan Gibson (SGTD Vice-Chair) Department of Earth Sciences, Simon Fraser University, 8888 University Drive, Burnaby, B.C. Canada V5A 1S6

E-mail: hdgibson@sfu.ca

Deadline: submissions must be received at the above address by Feb 19th, 2016

7. Winner of the David Elliott Best Paper award

The Dave Elliott award for best paper in Canadian structural geology and tectonics, with publication year 2014, was awarded to:

John Waldron, David Schofield, Brendan Murphy, & Chris Thomas, for their paper entitled: "How was the Iapetus Ocean infected with subduction?" which appeared in *Geology*, volume 42(12), 1095-1098.

Congratulations and well done! Here are some comments from the Committee:

"This is a fascinating paper that really packs a punch and is highly deserving of the Dave Elliott Award for Best Paper. It should be on your must read list. In short-order this paper addresses outstanding problems dealing with everything from how subduction initiates, to the very complex evolution of the Appalachian-Caledonian-Iapetan system. Waldron et al. cleverly propose a mechanism where subduction initiation involves a non-cylindrical evolution, which developed from a single proliferating subduction system that "infects" the Iapetus Ocean. This model helps to explain the early transition of the Iapetus Ocean from opening to closing within a 30 Myr span of time; simultaneous deformation on the Laurentian and Gondwanan margins; and the complex collage of terranes in the central Appalachian-Caledonide orogen, many of which were deformed well before Silurian closure."



Brendan Murphy receiving the David Elliott Award (on behalf of John Waldron and co-authors) from CTG Chair Laurent Godin.

The Committee wishes to highlight two other papers that deserve honourable mentions:

Geometry and kinematics of the Main Himalayan Thrust and Neogene crustal exhumation in the Bhutanese Himalaya derived from inversion of multithermochronologic data, by **Isabelle Coutand, David M. Whipp Jr., Djordje Grujic, Matthias Bernet, Maria Giuditta Fellin, Bodo Bookhagen, Kyle R. Landry, S. K. Ghalley, and Chris Duncan**, published in *Journal of Geophysical Research: Solid Earth*, 119(2), 1446-1481 (2014).

Midcrustal discontinuities and the assembly of the Himalayan midcrust, by **Kyle Larson and John Cottle**. *Tectonics*, 33(5), 718-740 (2014).

Many thanks to those who read papers and submitted nominations. Without your work this award would not be possible.

Forthcoming Dave Elliott Best Paper Award

We are also calling for submissions for the **Best Paper Award**. Your councillors will prepare a shortlist of papers written *by authors based in Canada or dealing with Canadian topics* and *with a publication date in the 2015 calendar year*. Priority will

be given to peer-reviewed publications. Submissions from the membership are also welcome and should include a PDF file of the paper in PDF format. Submissions by the authors will also be considered. We will appoint a small committee of individuals not involved with any of the shortlisted papers to review the shortlisted papers and select a winner. These submissions should be sent before **February 19, 2016** to: Laurent Godin (CTG Chair): godinl@queensu.ca

8. CTG Business Meetings

Business meetings of the CTG were held at the GAC-MAC meeting in Montreal, Quebec, and at the CTG workshop in Sydney, Nova Scotia. Minutes are included below.

The next business meeting will be held at the GAC-MAC annual meeting 2016 in Whitehorse, Yukon.

CTG business meeting Montreal QC; May 4 2015

(Minutes remain unofficial until approved at a following business meeting.)

Date & Time: May 4, 2015 at 16:00 pm

Location: Room 511E

Present: 10 members (+8 non-members)

Meeting chaired by: Laurent Godin

Minutes taken by: Mary Louise Hill

1. Approval of Minutes of last meeting at CTG Workshop in Sudbury

Minutes were circulated by email.

MOVED by Fried Schwerdtner

SECONDED by Deanne van Rooyen

Motion CARRIED.

2. Matters arising, not covered below

There were no matters arising from the minutes not covered elsewhere on the agenda.

2b. Approval of agenda

MOVED by Deanne van Rooyen

SECONDED by Camille Partin

Motion CARRIED.

3. Treasurer's report (Submitted by A.V. Okulitch)

<i>Balance, 31 Dec 2013:</i>	<i>\$ 5949.50</i>
<i>Bank charges:</i>	<i>- 25.00</i>
<i>Interest:</i>	<i>+ 5.70</i>
<i>Membership dues 2012:</i>	<i>+ 1170.00</i>
<i>Membership dues 2013:</i>	<i>+ 1160.00</i>
<i>PhD thesis award:</i>	<i>- 500.00</i>
<i>Student travel to CTG:</i>	<i>- 1500.00</i>
<i>MSc thesis award:</i>	<i>- 400.00</i>
<i>Best paper prize:</i>	<i>- 200.00</i>

Balance, 31 Dec 2014: **\$ 5658.19**

4. Awards

a. GAC Student support:

The following two students were awarded \$600 to subsidize their participation at GAC and Field trips:

- **Christine Shiels** Department of Earth Sciences, University of Saskatchewan (Field trip: **Northeastern Composite Arc Belt, Grenville Orogen**)
- **Xiaohui Zhou**, University of Waterloo (Field trip: Appalachians of SE Quebec)

Laurent Godin presented cheques to both students.

b. Dave Elliott award for best paper: Laurent Godin was happy to announce that the paper by **John Waldron, David Schofield, Brendan Murphy, & Chris Thomas**, entitled "How was the Iapetus Ocean infected with subduction?" which was published in *Geology*, volume 42(12), 1095-1098, was selected as the winner of the Dave Elliott award for best paper, the annual award of the Canadian Tectonics Group of the Geological Association of Canada. Congratulations to John and co-authors.

The Committee wishes to highlight two other papers that deserve honorable mentions:

Geometry and kinematics of the Main Himalayan Thrust and Neogene crustal exhumation in the Bhutanese Himalaya derived from inversion of multithermochronologic data, by **Isabelle Coutand, David M. Whipp Jr., Djordje Grujic, Matthias Bernet, Maria Giuditta Fellin, Bodo Bookhagen, Kyle R. Landry, S. K. Ghalley, and Chris Duncan**, published in *Journal of Geophysical Research: Solid Earth*, 119(2), 1446-1481 (2014).

Midcrustal discontinuities and the assembly of the Himalayan midcrust, by **Kyle Larson and John Cottle**. *Tectonics*, 33(5), 718-740 (2014).

Many thanks to those who read papers and submitted nominations. Without your work this award would not be possible.

Laurent Godin congratulated the authors. Brendan Murphy accepted the award.

c. Jack Henderson prizes for best theses:

The PhD thesis prize goes to: **Reid Staples**, Simon Fraser University for the thesis: *Diachronous Deformation, Metamorphism and Exhumation in the Northern Canadian Cordillera: Revealed from Pressure-Temperature-Time-Deformation Paths of Former Mid-Crustal Rocks*, co-supervised by Dan Gibson, Maurice Colpron, Jim Ryan and Rob Berman.

The MSc thesis prize goes to: **Tyler Ambrose**, University of British Columbia (Okanagan) for the thesis: *Ductile extrusion, underplating, and out-of-sequence thrusting within the Himalayan Metamorphic core, Kanchenjunga, Nepal*, co-supervised by Kyle Larson and Carl Guilmette.

Thank you to all those who submitted theses to the competition, it was an impressive selection to evaluate. It is heartening to see the excellence of research involving structural geology and tectonics in Canada and that it is alive and strong!

Laurent Godin also took the opportunity to thank all those who assisted in the review and evaluation process. Without your hard work we would not be able to make these awards.

Laurent Godin congratulated the students. Carl Guilmette accepted the award on behalf of Tyler Ambrose. Tyler requested that his \$200 award be donated to the Nepal Earthquake Relief Fund.

5. CTG fall meeting 2015 announcement

Deanne van Rooyen of the University of Cape Breton in Sydney, N.S. will organize the 35th CTG workshop in 2015. Details below:

For the first time ever, the CTG workshop will visit Cape Breton Island. This year's workshop will be held on October 2 – 4, 2015.

The workshop will be based out of Sydney and include our customary day of presentations and posters, and a field trip around the Cabot Trail. Since the field trip day is likely to be a long day, we may run the field trip on Saturday, with talks scheduled for Sunday to be finished mid-afternoon. On Friday evening there will be an informal gathering and a few scheduled talks about the geology of Cape Breton Island. On Saturday night there will be a conference dinner.

Both Air Canada and WestJet have flights into Sydney. Flying into Halifax and driving to Sydney (~5 hours) is also an option. If a number of people want to do this it would be possible to arrange a carpool from Halifax. We will be based at the Holiday Inn in downtown Sydney.

At this stage Deanne would be grateful for an estimate of how many people we are likely to have. Please email her (deanne_vanrooyen@cbu.ca) if you are planning on attending this meeting, and indicate your preferred travel method (Halifax, Sydney, something else?). This will not be set in stone of course, but it would be very helpful for initial planning.

We're looking forward to welcoming the CTG to this corner of the Appalachians!

According to the CTG pattern, the 2016 workshop will be held in central Canada. We will need volunteers to organize this.

6. GAC 2016 – Whitehorse, YK. CTG sponsorship of Special Sessions

Please think ahead to propose special sessions and field trips that CTG could sponsor.

7. Membership fees update – Motion to accept membership fees increase

At the Sudbury 2014 workshop, the membership overwhelmingly supported increasing the annual CTG membership fee from \$10 to \$15 (still free for students). With our current membership numbers (118 paying members and 140 non-paying student members), this will raise our annual income to \$1700, allowing us to sustain the adjusted award level as such:

The CTG's new annual expenses (for 2014) are therefore projected to be \$1800:

Award for best M.Sc. thesis: \$200

Award for best Ph.D. thesis: \$200

Award for best journal paper: \$200

Support for 2 students attending GAC/MAC field trips: \$1,200 [\$600 each]

We currently have approx. \$5,000 in the CTG account, which will be used to offset the awards/revenue difference, until we hopefully can raise our membership numbers (or have to increase our fees, or decrease our awards level in the future).

MOVED by Normand Goulet that membership fees be increased from \$10 to \$15 for 2016

SECONDED by Stephen Johnston

Motion CARRIED.

8. Possible merger with “Precambrian Division”? (D. van Rooyen)

Deanne van Rooyen led a discussion about common interests and overlap between CTG and the Precambrian Division, and proposed merging the two divisions. Toby Rivers suggested we might bring Friends of Grenville (FOG) under the umbrella of CTG. No action was taken on either proposal.

9. Call for new councillors – Two positions available

Current CTG Executive and Councillors

Chair: *Laurent Godin*, Queen's University, Kingston

Vice Chair: *Dan Gibson*, Simon Fraser University, Burnaby
Secretary: *Jürgen Kraus*, Franconia Geoscience Ltd., Calgary
Treasurer: *Andy Okulitch*, Geological Survey of Canada, Vancouver
Current Councilors (Ideally need one from west and one from east):

Kathryn Bethune, University of Regina

Normand Goulet, Université Québec à Montréal

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

Councilors that recently stepped down:

Lori Kennedy, University of British Columbia

Bruno Lafrance, Laurentian University

Deanne Van Rooyen (University of Cape Breton) and *Camille Partin* (University of Saskatchewan) agreed to serve as Councilors to fill the two vacancies.

10. Other business

There being no other business, the meeting was adjourned on a motion from Normand Goulet at 4:50 p.m.

CTG business meeting Sydney NS; October 3 2015

(Minutes remain unofficial until approved at a following business meeting.)

Date & Time: October 3, 2015 at 20:00 pm

Present: 10 members (+8 non-members)

Meeting chaired by: Laurent Godin

Minutes taken by: Dawn Kellett

1. Approval of Agenda

John Waldron moved, Deanne van Rooyen seconded. All were in favour.

2. Approval of Minutes of last meeting at GAC in Fredericton

John Waldron moved, Deanne van Rooyen seconded. All were in favour.

3. Matters arising not covered below.

No such other matters arose.

4. Financial matters: Annual fees (income) and awards level (expenditure)

Treasurer's report, 31 December 2015 (Submitted by A.V. Okulitch)

Balance, 31 Dec 2014: \$ 5658.19

Bank charges: - 19.50

Interest: + .88

PhD thesis award: - 500.00

Student travel to CTG: - 1200 .00

MSc thesis award (donated to Nepal): - 200.00

Best paper prize: - 200.00

Interim balance 04 Sep 15 \$3539.57

No membership dues have yet been received for 2014.

CTG members for 2014: 259.

118 paying members (99 Full Members, 18 Senior members, and 1 Unemployed member).

141 Students and these are free membership.

Current annual fees are: \$15 per member (as of 2015)

The CTG's new annual expenses (for 2014) are therefore projected to be \$1800:

Award for best M.Sc. thesis: \$200

Award for best Ph.D. thesis: \$200

Award for best journal paper: \$200

Support for 2 students attending GAC/MAC field trips: \$1,200 [\$600 each]

We currently have approx. \$3600 in the CTG account, which will be used to offset the awards/revenue difference, until we hopefully can raise our membership numbers (or have to increase our fees, or decrease our awards level in the future).

Discussion on how to increase membership and exposure followed. It was suggested to broaden advertisement of future workshops to GSA and AGU divisions, as well as the British GeoTectonics mailing list to increase international presence. This will be done for future workshops.

5. CTG and Social media

Jürgen Kraus discussed our Social Media presence. The CTG has web presence on LinkedIn, Facebook, as well as its own regularly updated web page. It was deemed sufficient at this point.

6. GAC 2016 – Whitehorse / GAC2017 - Kingston. CTG sponsorship of Special Sessions

Sessions with tectonics focus – special sessions 2, 3, 4, 8, 9 are relevant. Sponsorship will involve contacting conveners and selecting a student to sponsor.

CTG will sponsor the field trip on accreted terranes and Whitehorse trough, and any other structural/tectonics related trips.

7. CTG fall meeting 2016 announcement (central); possibilities for 2017 (west)

CTG Workshop (2016) in the Muskoka Lakes region, hosted by Fried Schwerdtner, Toby Rivers and Dennis Waddington – agreed to this location

CTG Workshop (2017) in Seabee mine area (situated in the Glennie domain), Saskatchewan, hosted by Kathy Bathune, Paul Kramer, and Claude Resources - would involve flight from Saskatoon to mine site.

8. Other business

The participants thanked the workshop organizer Deanne van Rooyen for bringing us all together and for the successful field trip. Thanks to Sandra and Chris for organizing field trip and guide book. There being no other business, the meeting was adjourned on a motion from John Waldron at 9 p.m.

9. Current CTG Executive and Councillors

Chair: *Laurent Godin*, Queen's University, Kingston

Vice Chair: *Dan Gibson*, Simon Fraser University, Burnaby

Secretary: *Jürgen Kraus*, Franconia Geoscience Ltd., Calgary

Treasurer: *Andy Okulitch*, Geological Survey of Canada, Vancouver

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Camille Partin, University of Saskatchewan, Saskatoon
Deanne van Rooyen, University of Cape Breton, Sydney
John Waldron, University of Alberta, Edmonton
Joseph C. White, University of New Brunswick, Fredericton