# GEOLOG

Volume 50 Number / Numéro 2 Summer / Été 2021



# **Medals and Awards**

# **National Awards**

## Logan Medal Kurt Konhauser

The Logan Medal, the highest award of the Geological Association of Canada is presented to an individual for sustained distinguished achievement in Canadian earth science. The 2021 Logan Medal is awarded to **Dr. Kurt Konhauser**, University of Alberta.

*Citation:* Kurt Konhauser has added substantially to our knowledge of Geobiology (i.e., integrated microbiology and sedimentary geology research), and is one of the founding workers for the growing field of Geobiology. He has authored the popular textbook "Introduction



to Geomicrobiology", and he co-edited the very important volume "Fundamentals of Geobiology". Konhauser also founded the international journal *Geobiology*, and he is the Editor and Chief for the journal. Konhauser's efforts have helped to develop the field of Geobiology in surprisingly rapid fashion. In Canada, Konhauser is the undisputed leader of the new Geobiology movement and he has singlehandedly placed Canada at the forefront of Geobiology research and learning.

# J. Willis Ambrose Medal Robert Raeside

The Ambrose medal, named after the first GAC<sup>®</sup> President, J. Willis Ambrose, is awarded to an individual for sustained dedicated service to the Canadian earth science community. The 2021 J. Willis Ambrose Medal is awarded to **Dr. Robert Raeside**, Acadia University.

*Citation:* The J. Willis Ambrose Medal is awarded to Dr. Rob Raeside in recognition of his remarkable work in the Canadian geoscience community. Rob's contributions have been felt across multiple sectors of our communities for four decades and a great deal of the success of several organizations is



due to his vision and effort. These include organizations like Geological Association of Canada, Mineralogical Association of Canada, the Atlantic Geoscience Society, his academic home at Acadia, Science Atlantic, and earth science departments and organizations across Canada. Dr. Raeside is the kind of colleague, teacher, and scientist we should all aspire to be. He works tirelessly on behalf of our geological community, his students, and his community outside of academics, and he does it all with unparalleled kindness, humour, grace, and integrity. We are extremely lucky to have someone like Rob in our community!

## **GEOLOGICAL ASSOCIATION OF CANADA**

The MISSION of the Geological Association of Canada is to facilitate the scientific well-being and professional development of its members, the learned discussion of geoscience in Canada, and the advancement, dissemination and wise use of geoscience in public, professional and academic life. The VISION of the GAC<sup>®</sup> is to be a multidisciplinary scientific society supportive of the entire scope of the geosciences in Canada. The GAC<sup>®</sup> aims to be a geoscience community that is knowledgeable, professionally competent and respected, whose input and advice is relevant, widely sought and utilized, and whose vital contribution to the economic prosperity and social well-being of the nation is widely acknowledged.

La MISSION de l'Association géologique du Canada est d'aider au développement scientifique et professionnel de ses membres, de favoriser les échanges géoscientifiques au Canada ainsi que de promouvoir et de diffuser l'utilisation éclairée des géosciences dans un contexte public, professionnel et académique. La VISION de l'AGC® est de faire connaître une communauté géoscientifique de grand savoir, dont les compétences professionnelles sont respectées, dont les suggestions et les avis sont pertinents, recherchés et utiles, et dont la contribution largement reconnue est considérée comme vitale pour la prospérité économique et le bien-être de la nation.

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National Awards / Prix nationaux Logan Medal W. W. Hutchison Medal E. R. Ward Neale Medal J. Willis Ambrose Medal Eric Mountjoy Exchange Award

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#### GEOLOG

Vol. 50, No. 2 Spring / Printemps 2021

Publisher / Publié par GEOLOGICAL ASSOCIATION OF CANADA c/o Dept. of Earth Sciences, Memorial University of Newfoundland St. John's, NL A1B 3X5 Tel: 709-737-7660 Fax: 709-737-2532 E-mail: gac@mun.ca Web: www.gac.ca Editor / Éditeur ALWYNNE B. BEAUDOIN c/o Royal Alberta Museum 9810-103A Avenue Edmonton, AB T5J 0G2 E-mail: Alwynne.Beaudoin@gov.ab.ca

GEOLOG (ISSN 0227-3713; 1712-3747) is the quarterly newsmagazine of the Geological Association of Canada, St. John's, Newfoundland and Labrador. *GEOLOG* is published for the benefit of GAC<sup>®</sup> members and its content reflects the diversity of the organization. News items and short articles on topics of potential interest to the membership including public geoscience awareness are encouraged. Also encouraged are communications promoting interaction among academic, industry and government sectors. *GEOLOG* accepts and publishes contributions in both of Canada's official languages. Opinions expressed herein are those of the writers and do not necessarily represent the official positions of the GAC<sup>®</sup>. *GEOLOG* is one of several forums provided by the GAC<sup>®</sup> for scientists worldwide.

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GEOLOG (ISSN 0227-3713; 1712-3747) est le bulletin trimestriel de l'Association Géologique du Canada, à St. Jean, Terre-Neuve-et-Labrador. GEOLOG s'adresse aux members de l'AGC® et son contenu reflète le caractère polyvalent de cette organisation. Nous invitons la soumission de nouvelles et articles courts pouvant intéresser les membres, incluant les thèmes de sensibilisation du public aux sciences de la Terre. Les articles suscitant des échanges d'opinions et d'informations entre les secteurs académique, industriel et ouvernementaux sont également la bienvenue. GEOLOG accepte et publie les articles dans les deux langues officielles du Canada. Les idées sont celles des auteurs et ne représentent pas nécessairement la position officielle de l' AGC®. GEOLOG n'est qu'un des nombreux forums offerts par l' AGC® aux scientifiques à travers le monde.

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#### Acknowledgements and Thanks

This *GEOLOG* benefits from the contributions and assistance of / Nous voulons souligner la contribution et l'assistance de: Karen Dawe, Tim Fedak, Rebecca Hunter, Deanne van Rooyen, and Jim Walker. Apologies to any contributors that have been missed. This *GEOLOG* was produced with support from the Royal Alberta Museum. Your contributions for future editions are welcome / Désolé pour ceux qui auraient été involontairement oubliés. Cette copie de *GEOLOG* a été produite grâce à l'assistance du Royal Alberta Museum. Nous sollicitons vos contributions pour les publications à venir.

#### **Contributions for next issue**

Please send items for the next issue of *GEOLOG* by e-mail to Alwynne.Beaudoin@gov.ab.ca on or before **September 1 2021**.



A children's book about geology, making extensive use of data from the LITHOPROBE program, this has one of the best geoscience book titles!

As Director of LITHOPROBE for many years, the work of Dr. Ron Clowes underpins this story. Dr. Clowes was recently honoured by University of Alberta with a Distinguished Alumni Award. For full story, please see page 15.

The book, published in 2003, is still available through GAC<sup>®</sup>'s publications website. See https://gac.ca/product/dancing-elephants-and-floating-continents-the-story-of-canada-beneath-your-feet/

#### Cont'd from p. 1

# W. W. Hutchison Medal Vincent van Hinsberger

The W. W. Hutchison Medal is named after Dr. William W. Hutchison in recognition of his many contributions to the Geological Association of Canada and to Canadian and international geoscience. The medal is awarded to a young individual for recent exceptional advances in Canadian earth science research. The 2021 Hutchison Medal is awarded to **Dr. Vincent van Hinsberger**, McGill University

*Citation:* Vincent van Hinsberg is an extraordinarily talented and productive young scientist with broad interests who is one of the leaders of a new generation of earth scientists using mineral chemistry and petrology to address fundamental geological questions. He is widely recognized for



extending the application of Lattice Strain theory to hydrothermal processes, and has used it to great effect in determining the compositions of deep fluids as a means of interpreting aspects of Earth's early history. This was a fundamental breakthrough, because it allowed for fluid compositions to be quantitatively reconstructed from minerals, in any geological environment, something that had not previously been possible. Vincent is also an internationally recognized expert on the physical controls of element uptake by minerals, and through experiments and with ab initio calculations, he has greatly expanded the range of pressure-temperature conditions for which Lattice Strain Theory is applicable. Thus, he has applied the theory to successfully predict the behaviour of rare metals in REE mineralized alkaline intrusions from the compositions of sodic pyroxenes and amphiboles, and determined the compositions of fluids released from a subducting slab by modelling the dependence of phengite-fluid partition coefficients on pressure and temperature. In addition to his work with Lattice Strain Theory, Vincent is also having a major impact on the debate over whether plate tectonics in early Earth history involved vertical or horizontal accretion. His research on the Tartoq greenstone belt in Greenland provides evidence of a tectonic style at 3 Ga consistent with subduction, but with plate motion at a much shallower angle than at present. The latter resulted in a hot slab that started melting at shallow depth. As a result, the slab was buoyant and weak, and not able to generate a significant slab pull force nor transmit it to the up-dip oceanic plate. This is a fundamental discovery, because it means that horizontal tectonics was already operating three billion years ago, although it would have needed a different driving force. It also suggests that plate tectonics can operate under a variety of planetary states. In conclusion, Vincent van Hinsberg is an outstanding young scientist who has made major contributions to geology and has all the qualities expected of a recipient of the W. W. Hutchison Medal.

# E. R. Ward Neale Medal Kylie Williams

The Neale Medal is named after the legendary E. R. Ward Neale. The award recognizes outstanding efforts to communicate and explain geoscience to the public through one or more of the following vehicles: public lectures, print or electronic media articles, school visits, elementary and secondary school educational materials, field trips, science fairs, and other public communications. The 2021 Ward Neale Medal is awarded to **Kylie Williams**, freelance writer.

*Citation:* Kylie Williams awarded the E. R. Ward Neale Medal for her sustained outstanding efforts in sharing earth science with Canadians. Kylie has spent over 20 years in the mineral exploration industry, gaining knowledge and experiences in the field and in offices around the world. It is this experience that gives Kylie



the ability to relate to so many people, gaining their trust and ultimately being given permission to share their stories. As an award-winning freelance writer, Kylie has perfected the art taking complex earth science issues and translating them into stories that resonate with various audiences, both technical and non-technical. Her interest in stories related to mineral exploration have helped to shape public opinion, often touching on environment, social and governance aspects of projects sites intertwined with a human element that people can relate to. She has taken the time to build partnerships with photojournalists, educational non-profits and multiple publications, all which give her the range to reach new audiences, and sometime directly interact with her audience. Taking the time to listen to concerns or gaps in understanding of earth sciences often sparks a new idea that needs to be explored. Always tracking down knowledgeable sources and people making a real difference, Kylie helps each individual she interviews tell their unique story.

Kylie is a passionate science communicator, who has created a niche market communicating earth science and mineral exploration stories to various audiences around the world.

# **Eric Mountjoy Exchange Award**

The Eric Mountjoy Award is intended to encourage the exchange of young geoscientists between Québec and other parts of Canada. The award is named after Eric Mountjoy, a distinguished Canadian professor of geology at McGill University, explorer, Fellow of the Royal Society of Canada, and recipient of the Douglas Medal of the Canadian Society of Petroleum Geologists and the Pettijohn Medal of the Society for Sedimentary Geology. He was renowned for his contributions to the understanding of sedimentary carbonate rocks, particularly those of Devonian age, in his pioneering geological explorations and geological maps and crosssections of the Canadian Rockies, particularly in the region of Jasper National Park and Mount Robson Provincial Park.

The 2021 recipient of the Eric Mountjoy Exchange Award is **Collin Burelle**, University of Saskatchewan. Collin will participate in an exchange with the Université du Québec en Abitibi-Témiscamingue (UQAT).

Collin's thesis project at the University of Saskatchewan is focused on studying permeable reactive barrier



technologies applied to neutral mine drainage sites, and leach testing of waste rock. The exchange will allow Collin to learn about other techniques and technologies used to remediate and monitor mine sites across Canada by participating in a mine reclamation field school. Over the course of four weeks, he will visit a dozen active, closed, and abandoned mine sites, learn about mine site remediation and reclamation techniques and performance evaluation, and obtain training in field techniques. This exchange will provide insights into research approaches that can be translated into the experimental design of his M.Sc. research as well as allow him to obtain hands-on experience with field skills in remediation.

# **Sections and Divisions Awards**

# Canadian Tectonics Group Dave Elliott Best Paper Award

The award is given by the Canadian Tectonics Group to recognize papers written by authors based in Canada or dealing with Canadian topics, and with a publication date in the previous calendar year. The 2021 award is given to **Michael Duvall**, University of Alberta.

Duvall, M. J., J. W. F. Waldron, L. Godin and Y. Najman, 2020. Active strike-slip faults and an outer frontal thrust in the Himalayan foreland basin. *Proceedings of the National Academy of Sciences of the United States of America* 117: 17615-17621.

*Citation:* This study by Duvall *et al.* is a short, well written, and well-illustrated paper with very high potential impact. Based on previously unpublished seismic data from the Ganges Basin, the authors argue for the presence of several strike-slip faults and a blind thrust fault, all with relatively small displacements, but with huge implications for seismic hazard assessment in the Himalayan foreland region. The work also has major implications for thrust belt kinematics in general,



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particularly in how thrust salients develop, and how thrust faults propagate into their neighbouring foreland regions. The paper can be found here: https://doi.org/10.1029/2019GL082406

#### 2021 Honourable Mentions

Mottram, C. M., D. A. Kellett, T. Barresi, H. Zwingmann, M. Friend, A. Todd and J. B. Percival, 2020. Syncing fault rock clocks: Direct comparison of U-Pb carbonate and K -Ar illite fault dating methods. *Geology* 48: 1179-1183. https://doi.org/10.1130/G46701

Grujic, D., K. T. Ashley, M. A. Coble, I. Coutand, D. A. Kellett, K. P. Larson, D. M. Whipp Jr., M. Gao, and N, Whynot, 2020. Deformation temperatures across the Lesser Himalayan Sequence in Eastern Bhutan and their implications for the deformation history of the Main Central Thrust. *Tectonics* 39. https://doi.org/10.1016/ j.epsl.2019.04.033

## Jack Henderson Prize for Best Ph.D. thesis

Estève, Clément (2020) *Evolution and Tectonics of the Lithosphere in Northwestern Canada*. Ph.D. thesis, Department of Earth and Environmental Sciences, University of Ottawa, Ottawa, Ontario. xix + 166 pages. Supervisor: Pascal Audet.



#### Jack Henderson Prize for Best M.Sc. thesis

McKay, Ryan D. (2020) *Cenozoic exhumation history of the northern Richardson Mountains: Results from apatite and zircon (U-Th-Sm)/He analysis.* M.Sc. Thesis. Department of Geology and Geophysics, University of Calgary, Calgary, Alberta. x + 96 pages. Supervisor: Eva Enkelmann.

GeoFact: *Apr 14 1798*: Sir William Logan appointed first director of the Geological Survey of Canada. April 14 is celebrated as Logan Day by geologists in Canada.

## Mineral Deposits Division Duncan Derry Medallist

The Duncan R. Derry Medal is the highest award bestowed by the Mineral Deposits Division (MDD). It is awarded annually to an outstanding economic geologist who has made significant contributions to the science of economic geology in Canada. The 2021 award is given to **lain Samson**, University of Windsor.

*Citation:* Dr. Iain Samson is recognized and highly respected internationally as an authority on critical metallic mineral deposits. Beginning with his seminal work on the Silvermines SEDEX deposit in Ireland, Dr. Samson has developed and advanced geochemical and mineralogical models



in ore genesis, ranging widely from seafloor and basinal ore systems (SEDEX, VMS, U) to magmatichydrothermal environments (porphyry Sn-W, skarns, IOCG, carbonatites, REE pegmatites, and Ni-Cu-PGE sulfides). His research contributions are as numerous as they are diverse, with over 75 articles in leading journals, book chapters, and short-course volumes, and a staggering list of conference abstracts and workshop presentations, to name only some of these. His modus operandi sets a gold standard for mineral deposits geoscientists – meticulous attention to detail, rigorous application of the scientific method, pioneering the development and integration of novel field, theoretical, analytical and experimental approaches, selflessly building and supporting collaborative opportunities with fellow researchers, and finally, but perhaps most importantly, mentoring students - many of whom are now deeply entrenched as leaders in the Canadian exploration industry - to construct and vigorously test their hypotheses. Beyond research, Dr. Samson has stepped up to lead many successful editorial roles for popular short courses and special issues, and has held critical leadership roles as President of the Mineralogical Association of Canada, and currently as President of the Canadian Federation of Earth Sciences, in addition to coordinating and promoting activities of the UNESCO Geoparks Program, the IGCP and IUGS. There is no doubt that Jain's commitment to his craft has advanced Canada's mineral deposit research profile on the global stage.

Acceptance: It is always gratifying when you are told that someone enjoyed a class, a presentation, or a paper that you have written. On a grander scale, when your peers deem you worthy of an award such as the Derry Medal, it validates the contributions you have made to your field of endeavour. I am therefore extremely grateful, honoured, and humbled by being awarded the Derry Medal, not least of all because of the many outstanding geoscientists who have previously been awarded the medal.

My development as a geoscientist has been shaped by a large number of people, and hopefully some are not offended if not mentioned in what follows. My education started at the University of Strathclyde, where I received a B.Sc. in applied geology, and where I was taught by some outstanding people. My experience in that department showed me how university departments can operate as a community. I stayed at Strathclyde for my Ph.D., when I had the opportunity to work with Mike Russell on the Irish Pb-Zn deposits.

Mike showed me what it is to be passionate about science and to not be afraid of tackling difficult and controversial questions. It was at Strathclyde where I first delved into the strange (at the time) world of fluid inclusions and stable isotopes and benefitted from the tutelage of Allan Hall, Richard Pattrick, and Tony Fallick, and the interactions with my Ph.D. peers, most notably Adrian Boyce, David Banks, and Stuart Hazeldine.

My Canadian advent began when I saw an advert in *Nature* for a post-doctoral position at McGill University. That was the beginning of what is now a 38-year collaboration with Willy Williams-Jones. I will be eternally grateful to Willy for his mentorship, generosity, rigour, and passion for science. My three years at McGill had an immense influence on my development as a scientist, not least of all because of what I learned from Willy, but also because of the other scientists I was able to interact with, including Bob Linnen, Scott Wood, Bob Martin, Alex Brown, and Wally McLean. Working with Willy involved a significant switch of environment, from sediment-hosted deposits to magmatic-hydrothermal systems, but continued to utilize fluid inclusion and stable isotope techniques. My collaborations with Willy facilitated expansion into thermodynamic modelling and it was at McGill that I first used Raman spectroscopy to study the composition of fluid inclusions.

In 1986 I obtained a faculty position at the University of Windsor, and started to develop my own research program that has involved a wide array of ore-forming environments. Since arriving at Windsor, I have had the opportunity to mentor many first-rate undergraduate and graduate students and post-docs, who have provided many rewarding experiences and collaborations. Over the years I have also been fortunate to work with a cadre of excellent scientists, who have expanded my perspectives and introduced me to new ore systems and approaches. These include Scott Wood, Brian Fryer, Joel Gagnon, Bob Linnen, Dan Kontak, and Sarah Gleeson.

My experiences as a department head and in various roles with MDD, MAC, and CFES, have also allowed my to grow as a person in many ways. As a young researcher, I would never have dreamed that I would have the abilities to play these leadership roles, but you don't know what you are capable of until you try. Canada has been an ideal place to develop a career as a university economic geologist, and I hope that I have been able to contribute to the reputation of Canadian geoscience. Canada has one of the strongest economic geology communities in the world and MDD plays an important role in binding that community together and facilitating knowledge transfer and excellence in our science. I would, of course, like to thank those who put my name forward and supported my nomination for the Derry Medal: Jacob Hanley, Willy Williams-Jones, Dan Kontak, and Joel Gagnon, as well as the MDD awards committee. Having sat on such committees, I know that these decisions are often hard to make. Finally, I would like to thank my wife Alison, and my children, Fiona and Andrew, for their love and support over the span of my career.

### **William Harvey Gross Award**

The William Harvey Gross Award is bestowed annually by the Mineral Deposits Division to a geoscientist less than 40 years of age who has made a significant contribution to the field of economic geology in a Canadian context. The contribution may relate to studies that include all aspects of what is generally referred to as economic geology, and which represents the broad spectrum of fields to which Bill Gross contributed. The 2021 award is given to **Dr. Pilar Lecumberri-Sanchez**, University of Alberta, in recognition of her contributions, nationally and internationally, to understanding the geochemistry of ore-forming fluids and fluid-rock reactions that form gold and tungsten deposits. *Citation:* Dr. Lecumberri-Sanchez completed her B.Sc. in geology at Complutense University (Spain) in 2009, and her Ph.D. at Virginia Tech in 2013. Her Ph.D. research focused on the hydrothermal fluid evolution of porphyry copper deposits, but also included major



forays into experimental petrology applied to understanding the effects of ferrous chloride on hydrothermal fluid properties, and studies of the role of halite saturation in magmatic-hydrothermal ore formation.

After her Ph.D., she moved to ETH Zurich, Switzerland, for a prestigious Marie Curie Postdoctoral Fellowship. Here, she embarked on her first study of tungsten ore formation, a theme that has come to define much of her recent and ongoing research in Canada and elsewhere. Through her postdoctoral research, she showed convincingly that the chemical interaction between hydrothermal fluids and their host rocks are decisive to the deposition of wolframite, with major implications for regional controls on endowment, prospectivity and exploration.

Dr. Lecumberri-Sanchez joined the Department of Earth and Atmospheric Sciences at the University of Alberta in 2017. She immediately set about establishing a major research program focused on the genesis of tungsten skarn deposits in Canada's North, especially the giant Cantung and Mactung deposits. Already, she has made significant contributions to unravelling the factors that give rise to these deposits, with implications for exploration in this district and beyond. She has also developed a new research program on the genesis of and exploration strategies for gold deposits in the Yellowknife Greenstone Belt in collaboration with the Northwest Territories Geological Survey and industry partners.

Dr. Lecumberri-Sanchez's contributions to our community also go beyond her published papers, and include serving on editorial boards, organizing conferences and also serving on the Board of Directors of the MDD. For her research achievements, her service, and more, we commend Dr. Lecumberri-Sanchez and present to her the William Harvey Gross award. Acceptance: It is an honor and privilege to receive the W. H. Gross medal. The strength of Canada in mineral exploration and research has been built on the efforts of geologists among which William H. Gross was an outstanding contributor and example. As such, I am humbled and grateful to receive this award.

The work I do in mineral deposits would not have been possible without the mentorship, support, and collaboration of my peers. So, this award belongs first and foremost to them. I have to start by acknowledging my most recent collaborators: my students. Thank you, Lauren Langlois and Baykan Aksu for your fearless tackling of gold mineralization in the Yellowknife Gold Belt. Thank you, Vanessa Elongo, Kirsten Rasmussen, and Helene Legros for your commitment to the Mackenzie Mountains and to advancing our understanding of tungsten in Canada. Thank you, Pascal Voegeli, for braving the waters of alteration zonation in alkalic-related systems. Thank you also to all the outstanding undergraduate students at University of Alberta: for the in-class questions that keep triggering research questions, and for keeping me grounded with the knowledge that you will have to find ways to apply what we teach you. Thank you especially to those of you that jumped into honors research with me: Karys, Jordan, Cole, Chase and Patrice. It is a pleasure to see you move forward in your professional careers.

None of the research we do would be possible without the support of our collaborators. Upon arriving to Canada, Hendrik Falck was one of my first research contacts, and the NTGS one of the first groups I had the honor to work with. Hendrik is tireless, committed, and fun to work with. He is a geologist at heart who must have read everything ever published on the geology of the Territories. It is also thanks to him that I met the crews at North American Tungsten and Gold Terra, who have been invaluable in providing access, introducing our group to their local geology, and making sure that we always want to come back (thank you Al Sexton, Ryan Bachinsky, Adam Findley and Steve Sherwood). Special thanks also go to Benchmark Metals and Apex Geoscience (Rob L'Heureux and Emily Laycock), for always being supportive of my students, teaching, and research program, and for bringing me questions that I still don't have very good answers to.

None of the research would be as fun or productive without our university collaborators. I am particularly thankful to Erin Adlakha, Ken Hickey, David Lentz, Simone Runyon, Marta Codeço and their groups for welcoming us in their turf and being always willing participants in discussions and/or collaborative projects. Thank you to Benoit Rivard, Graham Pearson, and Robert Creaser for your scientific insight and for your support as I establish my research program at University of Alberta. Thank you to the fluid inclusion community for always being available for late night discussions and for having been a great place to grow up as a scientist.

Ultimately, none of this work would have ever happened without the people that gave me the chance to start my career as a scientist. I learnt the ways of science, academia, and fluid chemistry from Bob Bodnar. I learnt of fluid-rock interaction from Chris Heinrich. I learnt from both of them the deep commitment to understanding the world, the joy of looking for answers, and, hopefully, the curiosity to keep questioning the things I think I know. I will never say it enough: thank you. None of this would have ever happened either, or been half as fun without the unconditional support and never ending discussions with my husband, Matthew Steele-MacInnis.

Thank you to Dan Marshall, Jake Hanley and Hendrik Falck for sponsoring me for this award and to Al Sexton, Bob Bodnar and Dan Kontak for writing letters of support. But thank you, even more so, for being friends and colleagues that I look forward to keep working with over many years to come.

# Volcanology and Igneous Petrology Division Career Achievement Award

The Career Achievement Award is made by the Volcanology and Igneous Petrology Division of the Geological Association of Canada in recognition of career achievements in the field of volcanology and/or igneous petrology. The 2021 award is given to **Dr. Brendan Murphy**, St. Francis Xavier University.

*Citation:* Dr. Murphy's research focused on relationships between tectonism and magma compositions, using them to unravel the evolution of mountain belts and reconstruct the development of Earth and the continents. Dr. Murphy has had an exceptional career with extensive contributions to our understanding of igneous petrology and igneous relationships to tectonism. His impressive career spans 40 years and



has yielded more than 325 refereed publications and numerous Canadian and international awards and research grants. His knowledge and expertise have been transmitted to thousands of students in dozens of mineralogy and petrology course deliveries, the writing of two textbooks and the supervision of research students. His many editorships/associate editorships/ guest editorships, memberships on dozens of national and international scholarly organizations, and hundreds of reviews for journals, books and grant committees demonstrate he is an international scientific ambassador for igneous petrology and Canadian geoscience.

Acceptance: I thank the Volcanology and Igneous Petrology Division of the GAC for this recognition. I am honoured (and a little embarrassed) to be added to a list of recipients that includes many of Canada's petrological icons. I thank my nominators, John Greenough and Jarda Dostal for their efforts and exaggerations!

I suppose a career award means that I have graduated from "young turk" to "old turkey" status. There are many that have guided (and maybe pushed and kicked) me along this random walk and so this honour really belongs to my mentors, friends, colleagues and students who guided me along this amble that began nearly 50 years ago. That random walk started as a first year student (1971) when I learned that geology labs at my university (University College, Dublin) were in the mornings, thereby allowing more time for indulging in my ability to back horse race winners! Having embarked on this truly random walk, fate took over. My love for petrology was seeded by the wonderful lectures of Padraig Kennan, who turned every class into a mystery tour. The combination of Padraig's lectures and a reasonable return for my "investments" got me through my undergraduate degree. Two friends urged me to go to graduate school, we selected Canada in a heartbeat, applied to Canadian universities in alphabetical order, and we all arrived at Acadia in October of 1975. Without realizing it, I had picked the place that suited me best. In my first year as a graduate student, my interest in igneous petrology was nurtured by Harold Nathan, whose lectures and labs were really exercises in mental gymnastics using petrology as catalyst. I am not sure whether my mind ever recovered.

Then Harold introduced me to Duncan Keppie. At the time, I had never heard of Yogi Berra, but that moment was a fork in the road. For all I knew, it could have been a spoon! Duncan provided career-long opportunities, guidance, mentorship, and friendship and introduced me to Andrew Hynes who must have seen something through his mental telescopic lens. He tried his best to instill some academic rigour. I was a slow learner! In the late 1970s, I met Damian Nance under a table in a bar (you had to be there!), and in the early 1980's Duncan introduced me to Jarda Dostal. Damian's influence nudged me towards tectonic implications of petrology and broadened my horizons, while Jarda nudged me from the crust into the mantle and patiently tutored me in the role of trace elements in understanding magmatic systems. All have been profound and long-lasting influences onmy career.

I have also been the beneficiary of the wonderful geoscience culture in Atlantic Canada. Other than the annual GAC-MAC, my two favourite conferences are the Atlantic Geoscience Society Colloquium (where the genuine interest in some of my bizarre presentations give me an annual injection of adrenalin) and the Atlantic Universities Geological Conference (where undergraduate students inspire us all with passionate presentations of their research). Our department at StFX also has a strong research culture. In my early days, I learned so much from the late Randy Cormier and for the past 30 years from the many tea/ coffee/bevvy breaks with Alan Anderson (a real petrologist!), and latterly with Jamie Braid and Donnelly Archibald. Mike Melchin (a venerable paleontologist) is a long-suffering, but patient listener who could instantly recognize if we were going off the rails. Generations of undergraduate and graduate students have also been a major ongoing stimulus and inspiration. Among many things, they taught me that learning is a two-way street. I would not be receiving

this, or any other award, without them. To see many of them have successful careers after graduation is something that gives me the greatest satisfaction as I begin to navigate through my dotage.

One of the few indulgences of finally graduating to "old turkey" status is being able to delude oneself that emerging scientists are grasping for advice. I have two themes. First, add an international dimension to your research. In the 1980s, Duncan and Damian convinced me to participate in UNESCO-IGCP projects, and that stimulation has seeded many research collaborations and firm friendships across the globe, including (to name a few) with Josep Casas, Bill Collins, David Evans, Gabi Gutièrrez-Alonso, Zheng-Xiang Li, Ross Mitchell, Sergei Pisarevsky, Cecilio Quesada, Chris Spencer, and Rob Strachan. If I have forgotten any names, apologies, it just proves that the aforementioned navigation has begun! Second, if opportunities arise to review or to edit manuscripts, take them. It is the best way to learn, not only the science, but what it takes to write good papers.

Two Canadian organizations have been instrumental in nurturing my career; the Geological Association of Canada through its annual meetings, field trips, publications, and many other activities, and NSERC, for continuously funding my curiosities since 1983. Having seen the hoops my international colleagues must jump through to obtain their funding, I am convinced we have the best granting system.

Finally, a career in research means a lot of time away from home, and a lot of inspiration from those with whom you most closely share your life. I thank my wife Cindy, and (now grown-up) kids Orla and Declan for their love and support. Without those pillars, you wouldn't have had to read any of the preceding paragraphs.

[*Editor's Note:* Acceptance letter originally published in *Ashfall*, No. 82, February 28 2022, pp. 4-5. Please excuse the chronologic dissonance!]

## Leopold Gélinas Medal

The Volcanology and Igneous Petrology Division of the Geological Association of Canada annually presents three medals for the most outstanding theses, written by Canadians or submitted to Canadian universities, which comprise material at least 50% related to volcanology and igneous petrology. A gold (plated) medal is awarded for the best Ph.D. thesis, a silver medal for the best M.Sc. thesis and an antique copper medal for the best B.Sc. thesis. Theses are evaluated on the basis of originality, validity of concepts, organization and presentation of data, understanding of volcanology, and depth of research.

# Gélinas Award (Gold, Best Ph.D. Thesis)

For 2020, awarded to **Amy Ryan**, University of British Columbia, for *The timescales and consequences of solid-state sintering in volcanic systems*, supervised by Dr. Kelly Russell.



## Gélinas Award (Silver, Best M.Sc. Thesis)

For 2020, awarded to **Anastasia Ogloff**, Simon Fraser University, for *The Murray dyke swarm and its bearing on Cretaceous magmatism and tectonics in the Canadian Cordillera*, supervised by Dr. Derek J. Thorkelson.



# Gélinas Award (Bronze, Best B.Sc. Thesis)

For 2020, awarded to **Sofia Panasluk**, University of Toronto, for *Remote predictive mapping of the Reykjanes Ridge: Implications for the volcanic and structural evolution of a slow spreading midocean ridge*, supervised by Dr. Melissa O. Anderson.



GeoFact: Apr 14 1935: The "Black Sunday" dust storm swept across the American interior, particularly affecting Oklahoma and northern Texas, removing massive amounts of topsoil. It is estimated to have moved 300 million tons of topsoil.

# Precambrian Division Howard Street Robinson Medal

The Howard Street Robinson Medal recognizes a respected and well-spoken geoscientist who will further the scientific study of Precambrian Geology or Metal Mining through presentation of a distinguished lecture across Canada. The medal is named in honour of Howard Street Robinson, a founding member of the GAC<sup>®</sup>, whose bequest to GAC<sup>®</sup> in 1977 of approximately \$100,000 makes the lecture tour possible. The bequest was "for the furtherance of scientific study of Precambrian Geology and Metal Mining". The GAC<sup>®</sup>'s Mineral Deposits Division and Precambrian Division award the medal in alternate years. In 2021, the Medal is presented by the Precambrian Division to **Dr. James Mungall**, Carleton University.

*Citation:* Dr. James Mungall received his B.Sc. in Geology from the University of Waterloo in 1987. He did his M.Sc. and Ph.D. in igneous petrology at McGill University, finishing in 1993. He did two years of post-doctoral research at the Bayerisches Geoinstitut followed by nearly three years of consulting in



Quebec before joining the University of Toronto in 1999. He has worked as a consultant specializing in magmatic sulfide and chromite deposits since 1996 and spent one year as a Chief Geologist for Noront Resources during the discovery and definition of their Ring of Fire deposit group. In 2017, he joined Carleton University, where he now teaches mineral deposits. His research topics range from transport properties and thermodynamics of magmas to description and interpretation of mineral deposits.

# Student Awards Mary-Claire Ward Geoscience Award

The award is given annually and honours the memory of Mary-Claire Ward who died in 2004. At the time of her death, Mrs. Ward was the chair of the PDAC's geoscience committee, chairman of Watts Griffis McOuat Ltd., and a past president of the Geological Association of Canada. She was a passionate advocate for the geosciences in Canada. The intent of the award is to encourage and support a graduate student in Canada whose thesis contributes to our knowledge about the geological history of Canada. Mapping is a significant component of the winning thesis. The award is administered by the Geological Association of Canada (GAC<sup>®</sup>), the Prospectors & Developers Association of Canada (PDAC), the National Geological Surveys Committee, the Canadian Geological Foundation, and Watts, Griffis and McOuat Ltd.

The 2021 award is given to **Rebecca Canam**, Simon Fraser University. Rebecca's M.Sc. thesis investigates the Paleoproterozoic structural evolution of the western margin of the Rae craton exposed in the Nonacho Lake area of the south-eastern Northwest Territories. This work integrates regional and detailed bedrock mapping, microstructural analyses, U-Pb geochronology and 40Ar/39Ar thermochronology. Her results will be used to constrain the cooling history of the region and the timing and kinematics of major domain-bounding structures.



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# **Events and Happenings**

# 50 Years of Atlantic Geoscience Society

Next year the **Atlantic Geoscience Society** (AGS) will celebrate **50 years of accomplishments** and community engagement – when it hosts *Halifax 2022*, the annual conference involving GAC and its partners from May 15 -18, 2022.

The AGS was officially established at a meeting at the Bedford Institute of Oceanography on April 11<sup>th</sup> 1972, and became an official affiliate of GAC in 1973. Today, as it prepares for its 50<sup>th</sup> anniversary there are over two hundred members (160 Professional, 90 Student, and 20 Retired members), and the AGS continues to play a central role in bringing together the geoscience community in the Atlantic Provinces.



Distribution of AGS members across Atlantic Canada Image from Google Maps

It is hard to choose just a few major accomplishments the AGS has achieved in its first fifty years, because there are many. For a more detailed overview the AGS has recently updated the design of its website, which includes an updated history of accomplishments of the Society. <u>https://atlanticgeosciencesociety.ca/about/</u> <u>history</u>

In January 1973, the first **Atlantic Geoscience Society Colloquium** was held in Fredericton and included two days of conference talks and events – during a blazing Maritimes blizzard. Even with the weather, the Colloquium was very successful and attracted over 150 people. The annual Colloquium remains the most important annual event that brings geoscientists together from across the region, and more often than not - it happens amid a major snow storm. In February 2021, the pandemic forced the 47<sup>th</sup> Colloquium to move online, but everyone quickly adapted, and it was a great success. As it turned out, in the year of the pandemic – the weather that weekend would have been perfect for travelling.



Council Members of the Atlantic Geoscience Society at the 1978 Colloquium (left to right): Bob Grantham, Howard Donohoe, Laing Ferguson, Sandra Barr, Graham Williams, Jonathan Bujak, Roger MacQueen (then GAC<sup>®</sup> President) and Bill MacMillan Photo provided to Graham Williams from Sandra Barr

The Atlantic Geosciences Society hosted Halifax '80, its first **GAC/MAC conference** from May 18-22, 1980. This conference was also a resounding success with over 1100 attendees. During the conference the AGS also publicly released the first edition of the **Nova Scotia Geological Highway Map** (see image on page 12). Then, at the 1985 GAC-MAC in Fredericton, the **New Brunswick and PEI Geological Highway Map** was released. As part of the celebrations next year, both maps are being updated and will be re-released during the Halifax 2022 conference.

In 1978-79, Sandra Barr was the first of eight women who have filled the role of AGS President over the past fifty years. At the 10th Anniversary Colloquium in January 1981, Nean Allman, the first female President of the GAC<sup>®</sup>, gave the Banquet lecture titled "The Role of Women in the Mining Industry Throughout History". The AGS continues to support **equity**, **inclusion and diversity**. In 2020, a special session of the Colloquium focused on "*Being a woman in the field*" and in this past year hosted a workshop "*Looking to the Future; Equity, Diversity, and Inclusion as a way of being in our discipline*."

The AGS developed a four-part video series *The Geology of Atlantic Canada* narrated by Jay Ingram, a nationally recognized science host of the CBC Radio Show, Quirks and Quarks. The four videos, *Mineral Wealth of Atlantic Canada* (1987), *The Appalachian Story* (1988), *The Recent Ice Age* (1990), and *Offshore Oil and Gas* (1992), had a wide audience – with reproduction rights requested from Departments of Education across the Maritime Provinces. Educational guides were also published by the AGS on several of these videos.

In 1986, the AGS adopted *Maritime Sediments and Atlantic Geology* as its flagship journal, known today at *Atlantic Geology*. The journal has established an excellent reputation for producing high-quality peer reviewed papers. Peer recognition for service and science has been an important part of the AGS community.

In 1989, the **Distinguished Service Award** was established and first awarded to Dr. Laing Ferguson, who is now the namesake for that award. The **AGS Gesner Medal**, the Distinguished Scientist Award, was established in 1993 – recognizing advancement of geoscience in the region and abroad. The recipients of these awards and others are listed on the AGS website. <u>https://atlanticgeosciencesociety.ca/colloquium/</u> <u>awards</u>

The AGS Education Committee has maintained a long history of public engagement and education, hosting their first Teachers Workshop in 1989 and the first EdGEO workshop in 1994. Since then, the AGS has hosted twenty-five EdGEO workshops in locations across Nova Scotia, and more recently the New Brunswick Teachers Workshops in that province. The AGS Education Committee has also published many successful public educational publications.

**The Last Billion Years** book was first published in 2001 and is one of the most successful AGS projects. It was designed as a high-school level text to provide an overview of geology focused on the Maritime **The Last Billion Years** 

A Geological History of the Maritime Provinces of Canada



Cover of *The Last Billion Years*, published by AGS and Nimbus Publishing, 212 pages. The striking cover art is by Judi O. Pennanen

Provinces. Since its release, there have been five printings and over 8000 copies sold, making it a Canadian non-fiction best-seller. Another exciting part of next year's celebrations in Halifax will be the release of the second edition of *The Last Billion Years* book – highly updated and revised. This is expected to be another popular product for promoting geology education in the region.

There are lots of reasons to celebrate, and next year looks like it will be another successful event. Consider making plans to travel to Halifax in May 2022 and help celebrate 50 years of the Atlantic Geoscience Society.

Article contributed by Tim Fedak, Atlantic Geoscience Society, with input from many AGS members, past and present



# Announcements

# Dr. Ron Clowes receives the Alberta Distinguished Alumni Award

GAC<sup>®</sup> is pleased to announce that Dr. Ron M. Clowes is a 2020 recipient of the Alberta Distinguished Alumni Award! Dr. Clowes received this award for his contributions to geophysics. The citation reads:

Dancing Elephants and Floating Continents is a children's adventure story like no other, detailing four billion years of crashing continents, crushed islands and rising mountain ranges. The fact that the story can be told at all is thanks to the work of Ron M. Clowes, one of the world's foremost Earth scientists, whose work helped discover how the Canadian land mass and continental margins evolved over such a long period of time. As a U of A postgraduate student, Clowes was on the team that proved seismic reflection (in which sound waves are bounced off deep geological structures so the subsurface can be visualized) was possible to a depth of 50 kilometres. The discovery led to widespread application of the method, allowing scientists to probe, visualize and investigate the structure of the Earth's crust and mantle. Out of that came Lithoprobe, a two-decade, multidisciplinary Canadian Earth science megaproject to investigate the history of the northern North American continent right back to its beginnings. Clowes, then a UBC professor, joined as Lithoprobe's first principal investigator but quickly became its director, overseeing an undertaking that cumulatively involved 32 universities and more than 1,000 scientists. Lithoprobe is praised both for its scientific discoveries and for how it was managed. Clowes' leadership has been similarly lauded, with multiple honours — including the Order of Canada awarded to him as one of the country's most influential geophysicists.

Dr. Clowes and 24 other alumni were honoured on February 24 2021 through a series of videos on the University of Alberta's most extraordinary alumni.

[Editor's note: Sourced from https://www.ualberta.ca/ alumni/recognition/award-list.html]



# GAC-MAC London 2021 Joint Annual Meeting

November 1-5 The University of Western Ontario (Western) in London, Ontario, Canada

Exploring Geosciences through Time and Space Explorer les géosciences à travers le temps et l'espace

> Virtual program Monday Nov 1, 2021 Hybrid program Wed-Fri Nov 3-5, 2021

## Registration is open!

Options for in person or virtual meeting participation are available. GAC-MAC 2021 is a hybrid format live meeting, with a substantial, integrated virtual meeting capability.

Also check out the affiliated virtual and in person Field trips, Workshops and Short Courses that will take place before and after GAC-MAC 2021.

Meeting has been rescheduled from May owing to the on-going pandemic.

# **Howard Street Robinson Fund**

The Robinson Fund was established in 1977 by the Geological Association of Canada, using a bequest from the estate of Howard Street Robinson. The fund is dedicated to the furtherance of scientific study of Precambrian Geology and Metal Mining by:

- sponsoring an annual Distinguished Lecturer Tour whose focus alternates between Precambrian research and economic geology (lecturer alternately chosen by the GAC<sup>®</sup>'s Precambrian and Mineral Deposits divisions)
- supporting Special Projects including publications, symposia and conferences.

Proposals for special projects on Precambrian Geology or Metal Mining should be submitted to the Robinson Fund Committee. Projects should be sponsored or organized through the GAC<sup>®</sup> or one of its Divisions or Sections. Proposals that have a wide appeal or degree of accessibility to the GAC<sup>®</sup> membership are preferred.

For further information and proposal submissions, please contact: Dr. Stephen Piercey, Chair, Robinson Fund, c/o Department of Earth Sciences, Memorial University of Newfoundland, St. John's, NL A1B 3X5 Canada, E-mail: spiercey@mun.ca

Sweetgrass Hills, Montana, from Writing-On-Stone Provincial Park, June 2007



#### Information for Contributors

Contributions should be submitted by e-mail to Alwynne.Beaudoin@gov.ab.ca, with GEOLOG in the subject line. Contributions are welcome in either of Canada's two official languages. MS Word (.doc or .docx) is the preferred format for contribution but generic word processing (.rtf or .txt) files are also fine. Please do not submit PDF files. Up to four hi-res images may be submitted per contribution: preferred format is .jpg, RGB colour, with a minimum 300 dpi resolution at 5" x 3" size. Please ensure that images are cropped and colour-corrected, and provide a caption for each image, and an image credit line if needed. Contributors are responsible for securing permission to publish for any third-party images or images of living recognizable people. Diagrams (vector graphics) may also be submitted. Preferred format for graphics is Adobe Illustrator (.ai); make sure that the file is saved with "save text as lines" option enabled to ensure no font substitutions. Additional information on other file formats can be obtained from the Editor. Please do not embed images or graphics in your text document; images or graphics should be submitted as separate files. In your text, use a call-out in parentheses to indicate the approximate placement of each image and graphic. If files are larger than 10 mb, please contact the Editor for alternate delivery arrangements. Your contribution will be copy-edited to ensure consistent spelling and orthography and to correct any obvious typos or errors. Contributions may also be edited for clarity and length. If the Editor has questions about specific information in the text, she will contact contributors for clarification. Contribution deadlines are March 1, June 1, September 1 and December 1.

#### **Consignes aux auteurs**

Les contributions d'auteur doivent être soumises par courriel à Alwynne.Beaudoin@gov.ab.ca, en indiquant GEOLOG à la rubrique Objet. Les articles seront acceptés dans l'une des deux langues officielles du Canada. Les fichiers de format MS Word (.doc ou .docx) sont préférables, mais les formats génériques (.rtf ou .txt) sont aussi acceptables. Veillez ne pas soumettre de fichiers au format PDF. Par article, jusqu'à quatre images haute résolution peuvent être soumises; format préféré est .jpg, couleurs RVB, avec un minimum de 300 PPP en taille 5 po x 3 po. Veillez vous assurez que les images sont recadrées et leurs couleurs corrigées, qu'elles sont accompagnées d'une légende ainsi que des informations de référence le cas échéant. Il est de la responsabilité des auteurs d'obtenir la permission de publier toute image de tiers ou de personne reconnaissable. Des diagrammes (graphiques vectoriels) peuvent également être soumis. Le format préféré pour les diagrammes est celui d'Adobe Illustrator (.ai); assurez-vous que le fichier est sauvegardé avec l'option « Sauvegarder le texte comme ligne » activée pour éviter toute substitution de police de caractère. On peut obtenir des informations sur d'autres formats de fichiers en communicant avec l'éditrice. S'il vous plaît ne pas incorporer d'images ou de graphiques dans votre texte; ces images ou graphiques doivent être soumis sous forme de fichiers distincts. Dans votre texte, veillez utiliser des notes numérotées entre parenthèses pour indiquer l'emplacement approximatif de chaque image et graphique. Dans le cas de fichiers dépassant 10 Mo, veuillez contacter l'éditrice pour convenir des modalités de téléchargement. Vos articles seront révisés afin d'en assurer la cohérence orthographique et corriger les fautes de frappe ou erreurs évidentes. Les articles pourront aussi être corrigés pour plus de clarté et éviter des longueurs. Dans les cas où l'éditrice aurait besoin d'informations particulières concernant le texte, elle communiquera avec les auteurs. Les dates limites pour soumettre des articles sont le 1 mars, le 1 juin, le 1 septembre et le 1 décembre.