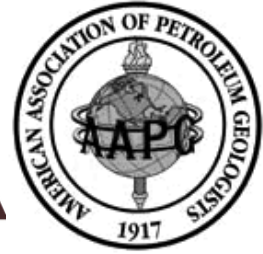




CEGA



The Atlantic Geoscience Society (AGS) La Société Géoscientifique de l'Atlantique

50th Colloquium and Annual Meeting

Special Sessions:

S1: From Ocean Crust to Mountain Peaks:

A Celebration of the Career of Sandra Barr

S2: Gold in the Northern Appalachians

S3: Sedimentary Successions Through Time

S4: Igneous-hydrothermal Systems and Critical Metals in the Northeast

S5: Educational Outreach, EdGEO, and Outreach Opportunities

S6: Environmental Geoscience and Sustainability

S7: The Energy Transition and Achieving Carbon Neutrality

General Session: Geoscience Research Developments

2-3 February, 2024

PROGRAM

**WE GRATEFULLY ACKNOWLEDGE SPONSORSHIP FROM
THE FOLLOWING COMPANIES AND ORGANIZATIONS**



*Department of Natural Resources and Energy Development
Geological Surveys Branch*



*Department of Natural Resources and Renewables
Geoscience and Mines Branch*



Welcome to Moncton, New Brunswick! This will be the 50th time that the Atlantic Geoscience Society has met for an Annual Meeting, although the first Colloquium did not begin until a few years later. We hope you will find something that interests you and generates discussion with friends and colleagues, old and new alike. The excellent program is a testament to this great conference and the attraction this annual highlight holds for all of us. AGS members are clearly pushing the boundaries of geoscience in all its branches! It is very encouraging to see that 48 of the 88 presentations are from students. We will be hosting three simultaneous sessions Friday night and all day on Saturday. Be sure to take in the science at the poster session and don't miss the awards banquet and get together on Saturday night at 7.00 p.m. Special thanks to the chairs of the Special Sessions. We hope you will be able to use the weekend to renew old acquaintances, make new ones, and support the Atlantic Geoscience Society. Full details about the conference and registration are at [Colloquium 2024 | Atlantic Geoscience Society](#).

The organizers: Denise Brushett, Aaron Bustard, Lynn Dafoe, Susan Johnson, Olivia King, David Lentz, Mike Parkhill, Rob Raeside, Steven Rossiter, Deanne van Rooyen, Jim Walker, and Chris White

ATLANTIC GEOSCIENCE SOCIETY
50th COLLOQUIUM AND ANNUAL GENERAL MEETING, 2-3 February, 2024
PROGRAM SUMMARY (All times Atlantic Standard Time)









FRIDAY, 2nd FEBRUARY, 2024

- 1.00 – 9.00 p.m. Registration – **Studio Room**
1.00 – 5.00 p.m. Poster set-up – **Kent Room**
1.00 – 5.00 p.m. Short Course: Geochemical data collection, preparation, analysis, and presentation – **Fundy Room** Sponsored by **APEGNB** and **APGNS**
3.00 – 3.10 p.m. Coffee Break – **Fundy Room**
4.00 – 5.00 p.m. *Atlantic Geoscience* Editors meeting – **Presidential Suite Room 523**
5.00 – 7.00 p.m. Poster Session– **Kent Room**
7.00 – 9.00 p.m. Special Session: From Ocean Crust to Mountain Peaks: A Celebration of the Career of Sandra Barr I – **Carleton Room**
7.00 – 9.00 p.m. Special Session: Sedimentary Successions Through Time I – **Westmorland Room**
7.00 – 9.00 p.m. Special Session: Environmental Geoscience and Sustainability – **Albert Room**
9.00 – 11.00 p.m. Poster session – **Kent Room** Sponsored by **New Brunswick and Nova Scotia Geological Surveys**

SATURDAY, 3rd FEBRUARY, 2024

- 8.30 – 12.00 noon Registration – **Studio Room**
8.30 – 5.00 p.m. Poster session – **Kent Room**– Sponsored by **New Brunswick and Nova Scotia Geological Surveys**
8.40 – 10.00 a.m. Special Session: – Igneous-hydrothermal Systems and Critical Metals in the Northeast I - **Carleton Room**
8.40 – 10.00 a.m. Special Session: Sedimentary Successions Through Time II – **Westmorland Room**
9.00 – 10.00 a.m. Special Session: From Ocean Crust to Mountain Peaks: A Celebration of the Career of Sandra Barr II – **Albert Room**
10.00 – 10.20 a.m. Coffee Break and Poster Session - **Kent Room** Sponsored by **Dillon Consulting**
10.20 – 12.00 noon Special Session: – Igneous-hydrothermal Systems and Critical Metals in the Northeast II - **Carleton Room**
10.20 – 12 noon General Session: Geoscience Research Developments – **Westmorland Room**
10.20 – 11.40 Special Session: The Energy Transition and Achieving Carbon Neutrality – **Albert Room**
12.00 – 1.30 p.m. **AGS Luncheon and Annual General Meeting – Fundy Room**
2.00 – 4.00 p.m. Special Session: – Igneous-hydrothermal Systems and Critical Metals in the Northeast III - **Carleton Room**
2.00 – 4.00 p.m. Special Session: Sedimentary Successions Through Time III – **Westmorland Room**
2.00 – 3.20 p.m. Special Session: Gold in the Northern Appalachians – **Albert Room**
3.20 – 4.00 p.m. Special Session: Educational Outreach, EdGEO, and Outreach Opportunities – **Albert Room**
4.00 – 5.00 p.m. AGS Education Committee information session. Anyone interested in finding out more about the Education Committee, or wanting to share a project/idea – **Albert Room**
4.00 – 5.00 p.m. Judges' convention – **Studio Room**
6.30 p.m. Cash bar – **Carleton/Westmorland Rooms**
7.00 p.m. **Banquet and Awards Gala – Carleton/Westmorland Rooms** – Winners of the student poster and paper awards and recipients of the Nelly Koziel Award, Laing Ferguson Distinguished Service Award and Gesner Medal will be announced.
Banquet Speaker: Brian Hebert – Citizen science in geology: past, present, and future.
Cash bar, music, and board games night to follow!

PROGRAM AT A GLANCE

	 Albert Room  DILLON CONSULTING	 Carleton Room  TERRANE GEOSCIENCE INC.	Westmorland Room   ENGINEERS GEOSCIENTISTS <i>New Brunswick</i> INGÉNIEURS GÉOSCIENTIFIQUES <i>Nouveau-Brunswick</i>
Friday 7.00–9.00	Special Session S6: Environmental Geoscience and Sustainability	Special Session S1: From Ocean Crust to Mountain Peaks: A Celebration of the Career of Sandra Barr I	Special Session S3: Sedimentary Successions Through Time I
Friday 5.00-7.00 9.00–11.00 and Saturday 8.30-5.00	POSTER SESSION sponsored by		
	 		
Saturday 8.40–10.00	Special Session S1: From Ocean Crust to Mountain Peaks: A Celebration of the Career of Sandra Barr II	Special Session S4: Igneous-hydrothermal Systems and Critical Metals in the Northeast I	Special Session S3: Sedimentary Successions Through Time II
Saturday 10.00– 10.20	Coffee Break and Poster Session – Kent Room - Sponsored by Dillon Consulting		
Saturday 10.20- 12.00	Special Session S7: The Energy Transition and Achieving Carbon Neutrality	Special Session S4: Igneous-hydrothermal Systems and Critical Metals in the Northeast II	General Session: Geoscience Research Developments
Saturday 12.00-1.30	AGS Luncheon and Annual General Meeting – Fundy Room		
Saturday 2.00-4.00	Special Session S2: Gold in the Northern Appalachians Special Session S5: Educational Outreach, EdGEO, and Outreach Opportunities	Special Session S4: Igneous-hydrothermal Systems and Critical Metals in the Northeast III	Special Session S3: Sedimentary Successions Through Time III

Dr. Sandra Barr, Ph.D.

Recognizing Dr. Sandra Barr's incredible contribution to geology is easy. Putting it into a short paragraph is very difficult! Dr. Barr is the Bancroft Chair and professor emerita of geology at Acadia University in Wolfville, where she started teaching in 1976 after completing a PhD at UBC (BSc at UNB), a post-doctoral fellowship at Dalhousie University, and two years of teaching in Thailand. Her PhD research on ocean floor rocks was groundbreaking at a time when the science of plate tectonics was new. She applied new plate tectonic paradigms to the study of subduction zone rocks in Thailand. Her work in the Appalachians began after she joined Acadia University where she built a research program of incredible reach and influence. Her work is cited in just about every paper published on Appalachian geology, in Canada and beyond. Her bibliography includes more than 200 peer-reviewed journal articles, a similar number of reports and open files, and over 50 bedrock geology maps. Her work was fundamental in developing our modern understanding of the Appalachian orogenic system. Dr. Barr's contributions to geoscience extends into publications in multiple forums. Her book series with Martha Hickman Hild include two volumes (Geology of Nova Scotia and Geology of New Brunswick and Prince Edward Island) written for the general public, these volumes are extremely popular.

Dr. Barr's research work has been recognized as outstanding by multiple organizations. Dr. Barr was awarded the Gesner Medal of the Atlantic Geoscience Society in recognition of her contributions to research in Atlantic Canada and beyond in 1995, this award is for "*lifetime contributions to geoscience*" and it is remarkable that she received this award so early in her career. In 2008 she received the Geological Association of Canada's Volcanology and Igneous Petrology Division's Career Achievement Award, again for "*lifetime scientific contributions*" at a time that we now know was nowhere near the end of her career. She was inducted into the Nova Scotia Science Hall of Fame as Distinguished Scientist in 2020. This award is given to "*internationally recognized Nova Scotians who have made outstanding lifetime contributions to society through discoveries in the fields of Science and Technology*". Most recently Dr. Barr received the 2022 Bancroft Award from the Royal Society of Canada. This biennial award recognizes her outstanding contributions to research in the Earth sciences, as well as her work in teaching and public-facing work. The award is given for "*publication, instruction, and research in the Earth sciences that have conspicuously contributed to public understanding and appreciation of the subject*". Her career is a remarkable example of all those things and more.

Dr. Barr is also a loved and respected teacher. She has supervised over 115 thesis projects (still counting!), and her former students can be found everywhere in academia, industry, government surveys, and education, and has taught thousands of students in her time at Acadia. She was awarded the Acadia University Alumni Association Award for "*Excellence in Teaching*" in 1989, and the 2021 Mentorship Medal from the Canadian Federation of Earth Sciences for "*sustained and inspirational mentorship*".

In addition to her incredibly prolific and influential research work Dr. Barr has been a cornerstone of the geological community in Canada as journal editor, book editor, conference organizer, reviewer, and president of multiple geoscience organizations. Nobody in Canadian geoscience works harder for the community than she does. Her work in the Canadian geoscience community has been recognized by every service award possible, including the Atlantic Geoscience Society's Laing Ferguson Award for "*outstanding lifetime service and contributions*", and in a different year the Nelly Koziel Award from the Atlantic Geoscience Society for "*extraordinary service above and beyond the call of duty*" in a specific year, and the Ambrose Medal from the Geological Association of Canada given for "*sustained dedicated service to the Canadian earth science community*".

On a personal level, she is incredibly supportive and generous with students and colleagues, and it is not an exaggeration to say that there are countless geoscientists working in Canada and elsewhere today who owe their careers to her. Working with her is a joy, a privilege, and an education every single day; we are incredibly fortunate to have her as a colleague and that sentiment is ubiquitous in our research community.

Dr. Sandra Barr has fundamentally changed the way we view orogenic belts, particularly the Northern Appalachians. Her work is timeless because it is always grounded in meticulous and careful field mapping, seamlessly integrating analytical techniques data from an incredible variety of scientific disciplines, from

micropalaeontology to geophysics. Dr. Barr is one of the most versatile scientists working in Earth sciences today and nobody knows Nova Scotia's and the Atlantic Provinces' geology better than she does. Her research has been fundamental to the study of the Appalachian-Caledonide orogen and has contributed immensely to our understanding of orogenic systems worldwide. She has quite literally put the Northern Appalachians on the map and it is impossible to imagine them without her!

Deanne van Rooyen, February 2024



Dr. Sandra Barr “at home” sitting on 360-million-year old basalt and rhyolite of the Taylors Island Formation in the Partridge Island block, Sheldon Point near Saint John, New Brunswick.

POSTER SESSIONS, FUNDY ROOM:

Sessions: **Friday**, 2nd February, 5.00 – 7.00 p.m. and 9.00 p.m. to 11.00 p.m.;

Saturday, 3rd February: posters will be up all day and available for viewing until 5.00 p.m.

Poster set up is Friday, February 2nd between 1.00 – 5.00 p.m. (or as soon as possible thereafter) and take down is promptly by 5.00 p.m. on Saturday. Poster boards are 4 by 8 feet and velcro and push pin friendly. Poster presenters should be available during the times dedicated to posters and when no talks are scheduled.

Student presentations: all student presenters are eligible for a best poster award. The Graham Williams Award will be awarded to the best poster by a graduate student, the Rob Raeside Award for the best poster by an undergraduate student. ** = undergraduate student; * = graduate student

Special Session S1: From Ocean Crust to Mountain Peaks: A Celebration of the Career of Sandra Barr

Sandra M. Barr, Deanne van Rooyen, Chris E. White, Michael A. Hamilton, Susan C. Johnson, Alicia P. Escribano, James L. Crowley, Sören Jensen, Teodoro. Palacios, and J. Javier Álvaro Preliminary U–Pb zircon dating results from Avalonia and Ganderia in southern New Brunswick, Canada – corroborations and surprises

***Kathleen Clark and James M. Brennan** Whole rock and biotite critical metal concentration maps of the South Mountain Batholith, Nova Scotia, Canada

***Karley L. Dixon, Donnelly B. Archibald, and James A. Braid** Tectonic and structural controls on granite pluton emplacement in the eastern Meguma terrane, Nova Scotia, Canada

****Jonathan Koulouras, Deanne van Rooyen, and Chris E. White** Mafic sills in the Meguma terrane, southwestern Nova Scotia, Canada: petrology, tectonic setting, and ages

J. Brendan Murphy, Christopher T. Spencer, William J. Collins, and Donnelly B. Archibald A mantle source for water in apinitic complexes: implications for genesis of granitoid batholiths and crustal growth

***Deepyaman Saha, Donnelly B. Archibald, and James Conliffe** Lithium-cesium-tantalum (LCT) pegmatite dykes in southern Newfoundland and Labrador, Canada

***Amanda M. Smith, Sandra M. Barr, Chris E. White, Deanne van Rooyen, and Ulf Linnemann** Stratigraphic relations, age, and tectonic implications of the Gamble Brook and Folly River formations, Cobequid Highlands, Nova Scotia, Canada

Special Session S2: Gold in the Northern Appalachians

***Farzaneh Mami khalifani, David R. Lentz, Mohammad Parsa, and James A. Walker** Integration geology and 3D inversion of aeromagnetic data for deep mineral exploration of McIntyre Brook and Moose Brook gold mineralization in northern New Brunswick

Special Session S3: Sedimentary Successions Through Time

***Margaret L. Scott and Michael J. Melchin** Phylogeny of some Aeronian (Early Silurian) monograptid graptolites

Special Session S4: Igneous-hydrothermal Systems and Critical Metals in the Northeast

Celeste M. Cunningham, Donnelly B. Archibald, and Josie Mallett Mineralogy of manganiferous metasedimentary rocks of the Goldenville Group, Nova Scotia

Basma F. E. Feteha, Abdel-Kader M. Moghazi, and David R. Lentz Extreme fractionation and magmatic–hydrothermal transition in the formation of Um Naggat rare-metal granite, Central Eastern Desert, Egypt

***Niyayesh Khorshidi, David R. Lentz, and Michael B. Parsons** Portable X-ray Fluorescence (pXRF) as a screening tool for characterizing historical tailings from the Lake George antimony mine

****Keaton M. Markham, Mo Snyder, and Masoud Aali** Using hyperspectral imaging of drill core to classify the mineralogy of the Walton barite deposit, Nova Scotia

***Gilles Nyuyki Ngoran, David R. Lentz, and Gideon Lambiv Dzemua** Application of mineral chemistry in LCT pegmatite exploration within the Yellowknife Pegmatite Province: insights from preliminary muscovite and K-feldspar analysis

****Youssef Yammine and Jacob Hanley** Developing mineralogical and geochemical discrimination methods to classify Li-barren and Li-prospective pegmatites in southwestern Nova Scotia

Special Session S5: Educational Outreach, EdGEO, and Outreach Opportunities

Jason Loxton Tales from a frozen island? Finding ways to tell the 'Ice Age' history of Cape Breton

Lilian Navarro and Katherine Boggs Canadian Federation of Earth Sciences: initiatives transforming Canada's geoscience perception

Special Session S6: Environmental Geoscience and Sustainability

Howard V. Donohoe Teaching environmental geoscience for non-scientists

***Cameron Greaves, Jordan B.R. Eamer, Vittorio Maselli, John Shaw, and Edward L. King** Toward reconstructing the relative sea-level history of Chedabucto Bay, Nova Scotia

***Rocelle Patricia B. Mendoza, Karl E. Butler, and Peter G. Lelievre** Geoelectric imaging of flood embankments in a tidal environment: studying the Shepody dykelands near Riverside Albert, New Brunswick

***Bradley Ogden and Karl E. Butler** Improved resistivity monitoring of embankment dam leakage near abutments by modelling non-conventional electrode layouts

Special Session S7: The Energy Transition and Achieving Carbon Neutrality

****Morgan Dauphinee** Nova Scotia offshore wind energy potential to assist in reaching net zero goals

****Sophia King** Tidal energy resources and development in Nova Scotia

****Tristan Leclerc, Julianne Jager, F.W.(Bill) Richards, and Grant Wach** Implications of Nova Scotian geostorage opportunities: geocellular models for carbon sequestration in the Scotian Shelf

General Session: Geoscience Research Developments

****Bailey R. Grondin, Matthew C. Drew, and John C. Gosse** Demonstrating the importance of using glaciotectonics as a glacial erosion process

****Ingrid Helmke and Richard Cox** Characterization of calcite amygdules in Devonian basalts in the McArras Brook Formation, Nova Scotia

***Mitch Maracle, Ian Spooner, and Denise Brushett** The geoscience of wine: the influence of surficial geology on viticulture in the Gaspereau Valley - Grand Pré region, Nova Scotia

ORAL PRESENTATIONS:

Time slots are 20 mins - presentations should be 15 mins, allowing 5 mins for questions and change over. Session Chairs are reminded to keep speakers on schedule to accommodate judging of the 29 student speakers. Talks should be prepared as PowerPoint presentations using 16:9 aspect ratio (wide-screen format) - we recommend you set them up in .pps or .ppsx (PowerPoint Show) format, to ensure that symbols and graphics transfer appropriately. Note that you cannot edit a .pps file. Undergraduate student presenters are eligible for the Rupert MacNeill Award for best undergraduate student oral presentation and for graduate students the Sandra Barr Award for best graduate student oral presentation. **Undergraduate Student; *Graduate Student. Speaker is the first listed unless noted with #.

FRIDAY, 2nd FEBRUARY, 2024

Friday evening, 7.00 – 9.00 p.m., Carleton Room

Special Session S1: From Ocean Crust to Mountain Peaks: A Celebration of the Career of Sandra Barr I

Chairs: Deanne van Rooyen and Chris White

7.00-7.20 **Deanne van Rooyen and Chris White** Introduction to From Ocean Crust to Mountain Peaks: A Celebration of the Career of Sandra Barr

7.20-7.40 **Andrea J. Mills, N. Gomez, Gregory R. Dunning, David G. Lowe, and Hamish A.I. Sandeman** Late Neoproterozoic glaciation and coeval extensional magmatism of the Musgravetown Group on the Bonavista Peninsula, Avalon Zone, Newfoundland, Canada

7.40-8.00 ***Jessica Beckwith, Shawna E. White, and John W.F. Waldron** Deformation history of the Appalachian orogen in Gros Morne National Park, western Newfoundland, Canada

- 8.00-8.20** ****Jack Carnochan, Sandra M. Barr, Chris E. White, and Deanne van Rooyen** Petrology, tectonic setting, and mineralization potential of late Devonian plutons in the central Cape Breton Highlands, Nova Scotia, Canada
- 8.20-8.40** ***Fazilat Yousefi, David R. Lentz, James A. Walker, and Kathleen G. Thorne** Is the genesis of porphyry Cu-related adakitic rocks in New Brunswick, Canada, a result of slab failure?
- 8.40-9.00** **David Lowe, Santiago Serna Ortiz, Grace Khattrine, and Juvani Bryce** The inception, evolution, and terrane-scale significance of a Late Ediacaran foreland basin in the eastern Avalon Zone of Newfoundland, Canada

Friday evening, 7.00 – 9.00 p.m., Westmorland Room

Special Session S3: Sedimentary Successions Through Time I

Chairs: Lynn Dafoe, Jade Atkins, Olivia King, and Luke Allen

- 7.00-7.20** **John Calder, Patrick Brunet, Matt Stimson, and Laura MacNeil** The Carboniferous-Permian tetrapod fossil record of Prince Edward Island reaches global significance
- 7.20-7.40** **Jade B. Atkins** Joggins Fossil Cliffs, an UNESCO World Heritage Site: celebrating 200 years of research
- 7.40-8.00** ****Robert N. Hussey and Tim J. Fedak** The reassembled Barnes Fossil Collection that went to Paris
- 8.00-8.20** ***Olivia King, Duncan McLean, R. Andrew MacRae, Matthew Stimson, Steven J. Hinds, Adrian Park, and Spencer Lucas** Palynological biostratigraphy of the Tournaisian Horton Bluff Formation of Nova Scotia and its implications in New Brunswick
- 8.20-8.40** ****Luke F. Allen, Matthew R. Stimson, Olivia A. King, Alexia T. Hannberg, Steven J. Hinds, Adrian F. Park, Alan J. Edwards, Martin Montplaisir, Lorenzo Marchetti, and Spencer G. Lucas** The first tetrapod ichnofaunal assemblage from the Boss Point Formation at Cape Enrage, New Brunswick
- 8.40-9.00** ***Matthew R. Stimson, Olivia A. King, Steven J. Hinds, Adrian F. Park, R. Spencer G. Lucas, Lorenzo Marchetti, Arjan Mann, Alan J. Edwards, Lynn T. Dafoe, Duncan McLean, Luke F. Allen, and R. Andrew MacRae** The discovery and interpretation of the oldest known tetrapod burrows from Viséan strata at Lepreau Falls and Viséan-Serpukhovian strata from Midland, New Brunswick

Friday evening, 7.00 – 9.00 p.m., Albert Room

Special Session S6: Environmental Geoscience and Sustainability

Chairs: Cameron Greaves and Carla Skinner

- 7.00-7.20** ***Maureen Matthew, Alexandre Normandeau, John Gosse, and Dan Utting** A fjord-head record of deglaciation and proglacial lake formation: implications for sediment transport and marine geohazards, northeastern Baffin Island
- 7.20-7.40** ****Sana Salehi, Jenacy Samways, and Lauren Somers** The impact of precipitation phase on changing groundwater recharge in mountain regions of Canada and the United States
- 7.40-8.00** **Edward L. King and Alexandre Normandeau** Anthropogenic scour of muddy seabed: assessing magnitude of sediment disturbance by fishing and shipping activities
- 8.00-8.20** **John S. Carey and Paul Durling** Evaluation of CO₂ storage potential of Carboniferous sandstones in the Maritime Provinces of Canada
- 8.20-8.40** **Ian S. Spooner** A 400-year paleolimnological record of anthropogenic activity and environmental change from Oak Island, Nova Scotia, Canada
- 8.40-9.00** **Carla Skinner** Can the energy transition be inclusive?

SATURDAY, 3rd FEBRUARY, 2024

Saturday morning, 8.40 – 10.00 a.m., Carleton Room

Special Session S4: Igneous-hydrothermal Systems and Critical Metals in the Northeast I

Chairs: Michael Powell and Pēteris Rozenbaks

- 8.40-9.00** **Yana Fedortchouk and Zhuoyuan Li** Geometry of dissolution trigons on diamonds: implications for the composition of kimberlitic fluid and magma emplacement
- 9.00-9.20** ***Lydia Fairhurst, Yana Fedortchouk, Philippe Normandeau, and Michael Powell** Kimberlite emplacement conditions as told by experimentally produced reaction coronae on ilmenite macrocrysts
- 9.20-9.40** ***Alisa Yakimenko, Yana Fedortchouk, and Anastassia Borisova** Zircon as a tracer of mantle processes and kimberlite magmatism
- 9.40-10.00** ***M.N.M. Rifkhan, Yana Fedortchouk, and Gideon Lambiv Dzemua** Occurrence of rare earth elements in kimberlite and recovery of rare earth elements from kimberlite tailings: a case study from Snap Lake diamond mine

Saturday morning, 8.40 – 10.00 a.m., Westmorland Room

Special Session S3: Sedimentary Successions Through Time II

Chairs: Lynn Dafoe, Jade Atkins, Olivia King, and Luke Allen

- 8.40-9.00** **Lynn T. Dafoe, Alexandre Normandeau, Michael Z. Li, D. Calvin Campbell, and Kimberley A. Jenner** Sedimentological and ichnological characteristics of Holocene bottom current and internal tide deposits in Logan Canyon head, offshore Nova Scotia
- 9.00-9.20** ****Josie Mallett, Donnelly B. Archibald, and Celeste M. Cunningham** Provenance and paleoenvironmental reconstruction of manganese-rich metasedimentary rocks of the Goldenville and Halifax groups, Nova Scotia
- 9.20-9.40** **Brian Jones and #Simone Booker** Temporal variations in rare earth element distributions in the Cenozoic succession and modern sediments of the Cayman Islands
- 9.40-10.00** **Graham A. Young, David M. Rudkin, Michael B. Cuggy, Joseph Moysiuk, Colin D. Sproat, and Deborah P. Thompson** Marginal conditions: the paleoenvironmental and stratigraphic setting for Manitoba's Ordovician William Lake Lagerstätte

Saturday morning, 9.00 – 10.00 a.m., Albert Room

Special Session S1: From Ocean Crust to Mountain Peaks: A Celebration of the Career of Sandra Barr II

Chairs: Deanne van Rooyen and Chris White

- 9.00-9.20** **Georgia Pe-Piper, David J.W. Piper, Nikos Skarpelis, and Angeliki Papoutsas** The formation processes of chromian minerals and talc veins during retrograde metamorphism and exhumation, Cycladic Blueschist Unit, Greece
- 9.20-9.40** **Chunzeng Wang, Lauren Madsen, Amber Whittaker, and Robert Marvinney** Silurian sequences in northern Maine, USA, and their tectonic evolution during the Salinic and post-Salinic orogenies
- 9.40-10.00** **John W.F. Waldron, Sandra M. Barr, and Chris E. White** Not the Neocadian orogeny
- 10.00-10.20** **BREAK and POSTER SESSION sponsored by Dillon Consulting**

Saturday morning, 10.20 – 12.00 noon, Carleton Room

Special Session S4: Igneous-hydrothermal Systems and Critical Metals in the Northeast II

Chairs: Michael Powell and Pēteris Rozenbaks

- 10.20-10.40** **Tânia Martins** Lithium-cesium-tantalum pegmatites: concepts and exploration techniques
- 10.40-11.00** ***James Roush, Tânia Martins, Christopher R.M. McFarlane, Mark L. Rinne, and Lee Groat** Preliminary results from the Tappy, Eagle and F.D. no.5 pegmatites, Cat Lake-Winnipeg River pegmatite field, southeastern Manitoba
- 11.00-11.20** ****Gracie Avery, Erin Adlakha, and Jeremy Powell** The source of uranium for the Lac Cinquante uranium deposit, Nunavut, Canada
- 11.20-11.40** ***Ryan Pippy, Erin Adlakha, John Shurko, and Kyle Larsson** Metasomatic iron alkali calcic alteration of the Bass River deposit and the economic potential of the Cobequid Chedabucto Fault Zone, Nova Scotia
- 11.40-12.00** **Jacob Hanley and Brandon Boucher** Evaluation of Li-(Rb-Cs) mineral host domains at the East Kemptville Sn-(Cu-Zn-Ag) deposit, Nova Scotia, Canada

Saturday morning, 10.20 – 12.00 noon, Westmorland Room

General Session: Geoscience Research Developments

Chair: Maureen Matthew and Michael Parkhill

- 10.20-10.40** ***Margaret A. Atkinson, Alexandre Normandeau, Nicolas Van Nieuwenhove, Anne de Vernal, Michelle K. Saunders, James Woollett, and Audrey Limoges** Late Holocene changes in the Labrador Coastal Current and export primary production offshore Nain, Nunatsiavut
- 10.40-11.00** ****Lauren Kew, Wilder Greenman, Liam Jasperese, Aislinn Fox, Brett Walker, and Owen Sherwood** Updated Northwest Atlantic bomb-¹⁴C reference chronology to the year 2022 from deep-water gorgonian corals
- 11.00-11.20** ***Lauren M. MacLellan and John C. Gosse** Vertical muon paleotopometry: quantifying crustal thickening and erosion history using terrestrial cosmogenic nuclides at great depths
- 11.20-11.40** **Matthew Drew, Lev Tarasov, and John Gosse** Constraint of Pliocene regolith thickness from ice sheet modelling and present day sediment
- 11.40-12.00** **Dirk Werle** Historical air photo analysis of old stone walls at Herring Cove, Nova Scotia, as vanishing cultural landscape elements

Saturday morning, 10.20 – 11.40 a.m., Albert Room

Special Session S7: The Energy Transition and Achieving Carbon Neutrality

Chair: Grant Wach and Lauren Morris

- 10.20-10.40** ****Julianne Jager, Tristan Leclerc, F.W.(Bill) Richards, and Grant Wach** Dynamic geocellular modeling of geological carbon storage in Jurassic-Cretaceous deep saline aquifers on the Scotian Shelf
- 10.40-11.00** **F.W.(Bill) Richards, Helen Cen, Natasha MacAdam, Trevor Kelly, Fraser Keppie, Adam MacDonald, Carla Skinner, and Grant Wach** Quantitative assessments of subsurface energy transition opportunities in Nova Scotia
- 11.00-11.20** **Simon R. Haynes** Perspectives on transformational energy geoscience: the evolution in western Canada
- 11.20-11.40** **Robert G. Grantham** Energy decisions today affect future generations
- 12.00 – 1.30** **LUNCHEON and ANNUAL GENERAL MEETING - FUNDY ROOM (downstairs)**

Saturday afternoon, 2.00 – 4.00 p.m., Carleton Room

Special Session S4: Igneous-hydrothermal Systems and Critical Metals in the Northeast III

Chairs: Jacob Hanley and David Lentz

- 2.00-2.20** **James Conliffe, Donnelly Archibald, Deepyaman Saha, Kiersty Malay, David Lowe, and Neil Rogers** Granite-related critical mineral potential of the Gander and Western Avalon zones, southern Newfoundland
- 2.20-2.40** **Steven L.E. Rossiter** Models for a potential volcanosedimentary-hosted critical metal resource in southwestern New Brunswick
- 2.40-3.00** ***Pēteris Rozenbaks and James M. Brennan** Redox-sensitive element partitioning between apatite, biotite, and glass in natural igneous rocks
- 3.00-3.20** ***Michael Powell and James M. Brennan** Experimental determination of partition coefficients for high field strength elements between ilmenite and felsic melts at low temperatures with applications to the enrichment of Nb and Ta in peraluminous granitoids
- 3.20-3.40** ***Saeid Baghban, David R. Lentz, Kathleen Thorne, and Douglas Hall** Rare earth elements and yttrium bearing mineral identification using μ XRF and SEM: a case study of highly-evolved granite-related Mount Pleasant W-Mo-Bi and Sn-Zn-In-Cu deposits
- 3.40-4.00** **Daniel J. Kontak, Blandine Gourcerol, and Matthieu Harlaux** A dualistic model for rare-metal mineralization in the Beauvoir Granite, France: insights and relevance for other mineralized settings

Saturday afternoon, 2.00 – 4.00 p.m., Westmorland Room

Special Session S3: Sedimentary Successions Through Time III

Chairs: Lynn Dafoe, Jade Atkins, Olivia King, and Luke Allen

- 2.00-2.20** **David J.W. Piper, Wenbin Tang, and Georgia Pe-Piper** Classic Paleozoic Nova Scotian shaly sedimentological localities revisited: Horton Bluff and the Ovens
- 2.20-2.40** ****Jessica MacIsaac, Edward J. Matheson, and Jason Loxton** Repeated soft-sediment deformation structures in the Pomquet Formation (Mabou Group) of Cape Breton: are they seismites?
- 2.40-3.00** ***Jesse Demaries-Smith, Mo Snyder, and John W.F. Waldron** Using small-scale maps to interpret large-scale geological structures in the Windsor Group, Windsor-Kennetcook subbasin, Nova Scotia
- 3.00-3.20** ***Jorge Iturralde and David Lowe** Hummocky-like stratification and links to faulting on the passive Laurentian margin
- 3.20-3.40** **Adrian F. Park, David G. Keighley, Steven J. Hinds, and Matthew R. Stimson** Evidence for seismicity, landslides, and mass-transport deposits in a Mississippian (Tournaisian) lacustrine succession: the Albert Formation, New Brunswick, Canada
- 3.40-4.00** **Steven Hinds, Matt Stimson, Olivia King, Adrian Park, and Duncan McLean** Kinematics of the Middleton Fault: implications for the fault history and regional tectonics in south-central New Brunswick

Saturday afternoon, 2.00 – 3.20 p.m., Albert Room

Special Session S2: Gold in the Northern Appalachians

Chairs: Aaron Bustard and Mitchell Kerr

- 2.00-2.20** ***Babak Ghane, David R. Lentz, and Kathleen G. Thorne** Gold metallogeny of southwestern New Brunswick
- 2.20-2.40** ***Aaron L. Bustard, David R. Lentz, James A. Walker, Guillaume Barré, Crystal LaFlamme, and Christopher R.M. McFarlane** Intrusion-related origins for gold mineralization at the Elmtree Deposit, northeastern New Brunswick
- 2.40-3.00** **Amirabbas Karbalaeiramezani, Mohammad Parsa, David R. Lentz, and Kathleen G. Thorne** Porphyry-low sulfidation epithermal systems of the Woodstock area, western New Brunswick: mineral systems approach and random forest-based mineral prospectivity mapping
- 3.00-3.20** **Mitchell Kerr, Jacob Hanley, Daniel Kontak, Preetyscha Ramlocund, and Zoltán Zajacz** Auriferous fluid evolution and the role of carbonaceous matter in a saddle-reef Au deposit: Dufferin deposit, Meguma terrane, Nova Scotia, Canada

Saturday afternoon, 3.20 – 4.00 p.m., Albert Room

Special Session S5: Educational Outreach, EdGEO, and Outreach Opportunities

Chairs: Tracy Webb and Jason Loxton

- 3.20-3.40** **Catrina E. Russell and Emma G. Gillies** New developments in education at Stonehammer UNESCO Global Geopark
- 3.40-4.00** **Howard V. Donohoe and Robert G. Grantham** Connecting teachers to geoscience through EdGeo workshops
- 4.00-5.00** AGS Education Committee information session – **Albert Room**
- 4:00-5:00** **Judges Convention – Studio Room**
- 7.00 p.m.** **Awards Banquet: – Carleton/Westmorland Room**

THANK YOU TO THE ASSOCIATION OF PROFESSIONAL GEOSCIENTISTS OF NOVA SCOTIA

GEOSCIENTISTS
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Banquet Speaker: Brian Hebert, Fundy Treasures, Main Street Joggins
Winner of the **Harrell L. Strimple Award**, from the Paleontological Society of America for his outstanding contributions to paleontology.

Citizen science in geology: past, present, and future

Since the 19th century, when the likes of Sir William E. Logan, Sir William Dawson, and Sir Charles Lyell walked the shores of Atlantic Canada, there have been locals who have offered their strong backs and expert knowledge in the pursuit of scientific understanding of our ancient past. Sir Logan learned from local Mi'kmaq how to navigate around Atlantic Canada, where to find minerals and fossils, and to enjoy local delicacies such as porcupine. Depictions of Lyell and Dawson's unearthing amphibian and reptile remains are often depicted with an assistant from the local community, while coal miners would bring important fossils to the attention of these early scientists.

For the last century and half and more, there have been citizen scientists and "Keepers of the Cliffs" who have made significant contributions from helping find and excavate fossils to recording decades of knowledge and observations that have been vital to research of the ancient past and fuel future work. From a curious amateur walking a beach and finding a fossil, to helping draft seminal works side by side with the scientists, that change our understanding of evolution. Joggins resident and recipient of the Harrel L. Strimple Award of the Paleontological Society of America, Brian Hebert will discuss the importance of Citizen Scientists as an intrinsic part of the paleontology and geological community of Atlantic Canada. Acknowledged for significant contributions to science as a citizen for his decades of work on the celebrated UNESCO World Heritage Site, the Joggins Fossil Cliffs and other sites in Nova Scotia and New Brunswick, Brian will discuss the past, present, and future of this niche and its importance to spark curiosity for future generations and the new movement towards geotourism and geoheritage.



The graphic is a vertical composition. On the left, a photograph of Brian Hebert, a man with a beard wearing a tan hat and a blue t-shirt, is shown kneeling in a rocky, outdoor setting. To the right of the photo, the Paleontological Society logo is displayed, consisting of three circular icons (a skull, a trilobite, and a leaf) above the text 'Paleontological SOCIETY'. Below the logo, the text '2023 HARRELL L. STRIMPLE AWARD RECIPIENT' is written in bold. Underneath this, a white rounded rectangle contains the name 'Brian Hebert' and 'Joggins, Nova Scotia'. At the bottom right, a dark green box contains the congratulatory message: 'Congratulations on your outstanding achievement in paleontology.'

2023-2024 ANNUAL GENERAL MEETING OF THE ATLANTIC GEOSCIENCE SOCIETY
12.30 p.m., Saturday, 3rd February, 2024, Fundy Room, Crowne Plaza Hotel, Moncton

AGENDA

- 1) Approval of Agenda
- 2) Approval of minutes of 4 February, 2023, Truro, Nova Scotia
- 3) Matters Arising from the Minutes
- 4) Presentation of the Financial Report (P Batson)
- 5) Appointment of Financial Reviewers for 2024
- 6) Annual Reports of the 2023 Executive and Committees
 - Report for the President (T Webb)
 - Report from the Education Committee (T Webb)
 - Report from the Nova Scotia EdGeo Workshop Group (J Loxton)
 - Report from New Brunswick Teachers Workshop Group (A Timmermans)
 - Report from the Video Committee (B Grantham)
 - Report from the Products Committee (R Raeside)
 - Report from the Awards Committee (D Archibald)
 - Report from the Publications Committee (S Barr)
 - Report from the Atlantic Geology editors (S Barr)
 - Report from the Membership Committee (A Miller)
 - Report from the Webmaster (L Dafoe)
 - Report from CFES representative (S Barr)
 - Report from Geoheritage Committee (J Calder)
 - Report from AGS-Science Atlantic speaker tour coordinator (D van Rooyen)
 - Report from Travelling Speakers Series (S Watters)
 - Report from AUGC 2023, Memorial University (M O'Neill)
 - Report from the Science Atlantic Earth Science Committee (D van Rooyen)
- 7) Election of Incoming Executive & Councillors (D van Rooyen)
- 8) Other Business Arising from Meeting
- 9) Adjournment

2022-2023 ANNUAL GENERAL MEETING OF THE ATLANTIC GEOSCIENCE SOCIETY

Saturday, 4 February 2023, 12.30 p.m. – 1.30 p.m.

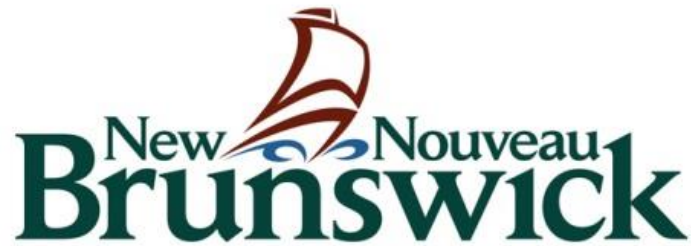
Inn on Prince, Truro, Nova Scotia

MINUTES OF MEETING

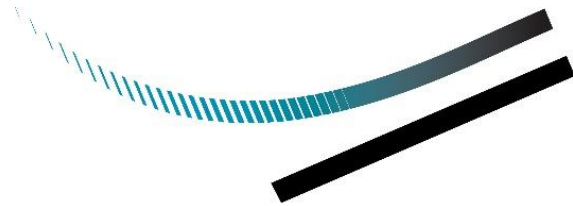
President Deanne van Rooyen called the meeting to order at 12.30 p.m. with 90 members present.

- 1) **Approval of Agenda** – C White moved, J Walker seconded, that the agenda be accepted as distributed in the Colloquium Program with Abstracts. No objections.
- 2) **Approval of minutes of Annual General Meeting, 12 February 2022, online** – D Lentz moved, C Stanley seconded, that the minutes be approved as distributed. Carried.
- 3) **Matters Arising from the Minutes** – no matters arising.
- 4) **Presentation of the Financial Report 2022**
The financial reports were distributed to members by email and are attached below. P Batson moved, L Dafoe seconded, that the Financial Report 2022 be approved. Carried. P Batson expressed his appreciation to J Gosse and I Spooner, who reviewed these reports.
- 5) **Appointment of Financial Reviewers for 2023**
J Gosse (Halifax) and Ian Spooner (Wolfville) were nominated by C White as reviewers for 2023. Both have accepted. The reviewers were approved.
- 6) **Annual Reports of the 2022 Executive and Committees**
 - Report from the President* (provided in program): D van Rooyen reviewed the activities of the society over the past year. She also announced that Council had recently approved a new category of funding, the Anne-Marie Ryan Project Grant, established in memory of Anne-Marie Ryan, former president of the Society, and with the aim to support work by AGS members in areas that Anne-Marie was passionate about, specifically community-engaged research and teaching, EDI, and outreach-related work.
 - Education Committee* (provided in program): T Webb reviewed the activities of the committee.
 - Nova Scotia EdGeo Workshop Committee* (provided in program)
 - New Brunswick Teachers Workshop Group* – A Timmermans provided a report attached below.
 - Video Committee* (G Williams) – circulated in program.
 - Products Committee* (R Raeside) – circulated in program.
 - Awards Committee*: (T Webb) – circulated in program.
 - Publications Committee* (S Barr) – circulated in program.
 - Atlantic Geology editors* (S Barr) – circulated in program.
 - Membership Committee* (A Miller) – circulated in program.
 - Webmaster* (L Dafoe) – circulated in program.
 - CFES representative* (C White) – circulated in program.
 - Halifax 2022 LOC* (S Barr) – circulated in program. With the submission of this final report, the LOC has now completed its work and is terminated.
 - Geoheritage Committee* (J Calder) – attached below.
 - Travelling Speaker series coordinator* (S Watters) – circulated in program.
 - Science Atlantic Earth Science Committee* – circulated in program.
7. **Election of Incoming Executive and Councillors**
D Lentz presented a slate of officers and councillors (circulated in program), leaving two vacant seats. G Wach nominated Jade Atkins and Ricardo Silva to Council. No further nominations were received. The full slate of officers and councillors was approved.
8. **Other Business**
C Wang gave notice that the NEIGC 2023 will be held on the first week of October 2023, in Maine and western New Brunswick and invited participation from members.
9. **Adjournment**
The meeting was adjourned on a motion from D Lentz at 1.30 p.m.

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