

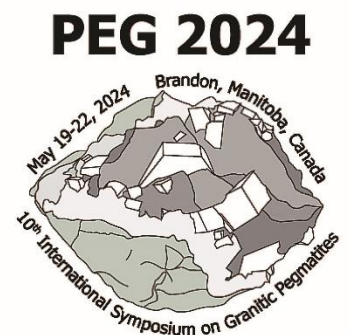
GAC-MAC-PEG 2024

AGC-AMC-PEG 2024

AT THE HEART OF THE CONTINENT  
*AU COEUR DU CONTINENT*

Brandon University, May 19-22 2024

**Preliminary Program**  
***Programme Préliminaire***



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# GAC-MAC-PEG BRANDON 2024

## Preliminary Program

### *“At the Heart of the Continent”*

**Key:**

Plenary Lectures-PL  
Symposia-SY  
Special Sessions-SS  
General Sessions-GS  
Workshops-WS  
Field Trips-FT  
Special Events-SE

#### ***PLENARY LECTURES***

##### **PL-1: Logan Medal**

*Sponsor: GAC*  
*Location: Theatre A*  
*Time: TBA*

##### **PL-2: Peacock Medal**

*Sponsor: MAC*  
*Location: Theatre A*  
*Time: TBA*

##### **PL-3: Young Scientist Medal**

*Sponsor: MAC*  
*Location: Theatre A*  
*Time: TBA*

##### **PL-4: Professor Robert F. Martin**

*Sponsor: PEG*  
*Location: Theatre A*  
*Time: TBA*

## **SYMPOSIA**

### **SY-1: 10th International Symposium on Granitic Pegmatites**

**Dedicated to Professor Robert F. Martin**

*Sponsor: PEG*

*Chairs: Tania Martins (Manitoba Geological Survey, Canada); Lee Groat (University of British Columbia, Canada); Encarnacion Roda-Robles (University of Basque County, Spain); Alexandre Lima (University of Porto, Portugal)*

*Duration: 3 days of technical talks and posters*

#### **SY-1a: 10th International Symposium on Granitic Pegmatites**

**“The Origin of Pegmatite Melts”**

*Sponsor: PEG*

*Chair(s) TBA*

#### **SY-1b: 10th International Symposium on Granitic Pegmatites**

**“Experimental Petrology”**

*Sponsor: PEG*

*Chair(s) TBA*

#### **SY-1c/SS-33: 10th International Symposium on Granitic Pegmatites**

**“Pegmatite Minerals and Gems”**

*Sponsor: PEG*

*Chair(s): Dan Marshall and Lee Groat*

Gems are generated in a variety of geological environments. The most common environment for their genesis generally involve proximity to or interaction with pegmatites. The various modes of gem formation have been studied for decades and formational models are continually being proposed and modified as new discoveries are developed. In this session we welcome presentations on geological environments, geochemistry, petrology, fluid and melt inclusion studies, as well as gem enhancement processes for gems associated with pegmatites and associated rocks.

#### **SY-1d: 10th International Symposium on Granitic Pegmatites**

**“Secondary Processes in Pegmatites”**

*Sponsor: PEG*

*Chair(s) TBA*

#### **SY-1e: 10th International Symposium on Granitic Pegmatites**

**“Host Rock-Pegmatite Interaction”**

*Sponsor: PEG*

*Organizer(s) TBA*

#### **SY-1f: 10th International Symposium on Granitic Pegmatites**

**“Recent Advances in Geochronology of Pegmatites”**

*Sponsor: PEG*

*Chair(s) TBA*

#### **SY-1g: 10th International Symposium on Granitic Pegmatites**

## **“Exploration Techniques and Use of Portable Tools in Pegmatite Deposits”**

*Sponsor: PEG*

*Chair(s) TBA*

## **SY-1h: 10th International Symposium on Granitic Pegmatites**

### **“Abyssal granitic pegmatites of northern Saskatchewan and Manitoba”**

*Sponsor: PEG*

*Chair: Irvine Annesley*

## **SY-2: Advances in the Study of Granitoids: Petrogenesis and Metallogeny**

*Sponsor: VIP Division of GAC*

*Organizer(s): Xue-ming Yang; Fazilat Yousefi; David R. Lentz*

*Duration: One day oral and posters*

Recent advances in the study of granitoids from field observations, litho-geochemistry, radiogenic and stable isotopes, chemistry and zonation of rock-forming and accessory minerals, new analytical techniques, high-T and high-P petrological experiments, and numerical modelling have greatly improved our understanding of continental growth and evolution, geodynamics of lithosphere/asthenosphere, tectonic settings, P-T-X-fO<sub>2</sub> conditions, petrogenesis, and granitoid-related mineralization. More importantly, these developments are significant to mineral exploration for some of the critical minerals, such as A-type granite-related U, REE, Nb, Y and F (including NYF pegmatites), and I-type intrusion-related Cu-Mo (Au), and S-type granite-related Sn-W and associated Li-Cs-Ta (LCT) pegmatite mineralization. This VIP session welcomes all contributions to this fundamental and practical topic.

## **SY-3: Geochemistry of Critical Mineral Deposits**

*Organizers: Yongliang Xiong; Guoxiang Chi*

*Duration: One day oral and posters*

According to the most recent USGS listing released in 2022, critical minerals include barite (BaSO<sub>4</sub>), fluorite (CaF<sub>2</sub>), graphite (C), and a wide range of minerals that contain the following elements: aluminum (Al), antimony (Sb), arsenic (As), beryllium (Be), bismuth (Bi), cesium (Cs), chromium (Cr), cobalt (Co), gallium (Ga), germanium (Ge), hafnium (Hf), indium (In), lanthanides (i.e., rare earth elements, REE), lithium (Li), magnesium (Mg), manganese (Mn), nickel (Ni), niobium (Nb), platinum group elements (PGE), scandium (Sc), tantalum (Ta), telluride (Te), tin (Sn), titanium (Ti), tungsten (W), vanadium (V), yttrium (Y), zinc (Zn), and zirconium (Zr). Accurate knowledge of geochemistry, including aqueous geochemistry, of critical minerals, play an important role across a wide range of fields from hydrometallurgical extraction of them from various sources, to elucidation of formation of critical mineral deposits.

We invite contributions advancing geochemistry, including aqueous geochemistry, of critical minerals, utilizing a variety of approaches. Contributions include geological investigations of ore deposits of critical minerals, coupled with thermodynamic modeling in natural systems, fundamental experimental and theoretical approaches such as molecular simulations, solubility measurements, and speciation and spectroscopic studies. We also welcome contributions that address the chemistry of geo-fluids and minerals that are relevant to the formation of critical mineral deposits, the partitioning of elements among phases, and the solvent/solute properties that can be applied to the evaluation of geochemical behavior of critical minerals in the geological

processes or to hydrometallurgical extraction of critical minerals. By the integration of these topics, our objective is to shed new light on the frontier research on fluid-dominated processes that control the mobilization of critical minerals and their deposition in the Earth's crust.

## **PETROLOGY**

### **SS-1 CELEBRATING CANADIAN CONTRIBUTIONS TO METAMORPHIC PETROLOGY**

Sponsor: Metamorphic Studies Group, GAC Division

*Organizer: Deanne van Rooyen; Tarryn Cawood; Jamie Cutts*

*Duration: One day oral and posters*

We welcome all Canadian contributions to the field of metamorphic petrology; historical, current and future. This session will showcase the breadth and depth of Canadian work in metamorphic petrology and related fields. We welcome all contributions from field-based studies to mathematical modelling of metamorphic processes.

### **SS-2 PRECAMBRIAN SEDIMENTARY ENVIRONMENTS: INSIGHTS INTO THE EVOLUTION OF EARTH'S SURFACE PROCESSES AND EARLY BIOSPHERE**

*Organizers: Camille Partin; Leslie J. Robbins; Michael Babechuk*

*Duration: One day oral and posters*

Precambrian sedimentary successions provide crucial insights into Earth's history by preserving a record of processes that shaped our planet starting 4 billion years ago. To this end, sedimentary rocks provide a punctuated record of depositional environments, climate fluctuations, plate tectonic processes, and the biological and geochemical evolution of Earth's surface. This session seeks submissions centered on the use of Precambrian sedimentary environments, including both physical process and geochemical studies, that contribute to our understanding of the evolution of Earth's Precambrian surface environments. We encourage submissions that use field-based and/or laboratory-based techniques, modeling approaches, or modern analogues to provide context to interpretations drawn from Precambrian sedimentary rocks globally, but especially from the vibrant Precambrian sedimentary record of Canada. Finally, we encourage submissions from presenters at all career stages, including undergraduate and graduate students, and early career to senior researchers.

### **SS-3 BEYOND THE LAYERS: INSIGHTS INTO SEDIMENTARY BASINS**

*Organizer: Nikole Bingham-Koslowski*

*Duration: One day oral and posters*

This session aims to highlight research related to sedimentary basins, both onshore and offshore, and explore the multidisciplinary nature of these depositional realms. We welcome submissions on topics relevant to the study of sedimentary basins including, but by no means limited to, sedimentology, stratigraphy, petrography, geochemistry, seismic interpretation, tectonic evolution, and resource potential.

### **GS-4 IGNEOUS PETROLOGY**

*Duration: One day oral and posters*

An open session on the nature and origin of igneous rocks.

## **GS-5 METAMORPHIC PETROLOGY**

*Duration: One day oral and posters*

An open session on recent research on the nature and origin of metamorphic rocks.

## **TECTONICS**

### **SS-6 IT'S OUR FAULT! GEOLOGICAL AND GEOPHYSICAL INSIGHTS INTO FAULT AND SHEAR ZONE PROCESSES**

*Organizers: Noah Phillips; Tarryn Cawood; Rellie Goddard; Matt Tarling; Tobias Stephan*

*Duration: One day oral and posters*

Faults and shear zones exert significant controls over the mechanical, seismological, and hydrological properties of the lithosphere. They accommodate horizontal and vertical motions within the lithosphere, and control its strength, crustal-scale fluid flow (which may create or remobilize mineral deposits), and the nucleation and propagation of earthquakes. Geophysical observations and models provide insights into the physical properties of active faults and describe the behaviour of fault slip over a vast range of spatial and temporal scales. Geological observations establish the structure, petrology, and rheology of faults and shear zones at various depths through drilling programs of active faults or field studies of exhumed examples. The timing of fault and shear zone processes can be constrained by geo- and thermochronological methods. Experimental studies and numerical modelling yield the mechanical properties of faults and shear zones. We invite contributions that provide insights into the structure, physical properties, evolution, stress conditions, and slip behaviour of active and ancient faults and shear zones. We hope to integrate a wide array of geological and geophysical observations, experiments, new methods, and models in this session to establish new research directions and multidisciplinary insights into fault and shear zone processes.

### **SS-7 PALEOPROTEROZOIC TECTONICS: FROM OUR CANADIAN BACKYARD TO THE BROADER PICTURE**

*Organizers: Cristina Accotto; Antoine Godet; Daniele Regis; Eric Thiessen*

*Duration: One day oral and posters*

The Paleoproterozoic era was a period of intense tectonic activity, with large orogenic belts having developed all around the globe and led to the amalgamation of the supercontinent Nuna. This era is also recognized to have recorded a change in the geodynamic behavior of the lithosphere expressed by contrasting/unique tectonic styles. Thus, Paleoproterozoic orogens represent a unique field laboratory for studying secular changes in tectonic and metamorphic processes, involving multi-method approaches linking tectonic, metamorphic, and magmatic evolutions, and metallogeny.

In this session, we invite contributions that interrogate the Paleoproterozoic metamorphic and tectonic record to reconstruct the links between cratonism and orogenesis, sediment production and preservation, and atmospheric and hydrospheric evolution. We encourage studies that consider a variety of approaches and techniques, both classical and new, such as field mapping, petrological phase-equilibrium modelling, geochronology, geochemistry, geophysical and/or numerical modelling, and that span a wide range of spatial and/or temporal scales.

## **GS-8 RECENT ADVANCES IN STRUCTURE AND TECTONICS**

*Sponsor: Canadian Tectonics Group*

*Organizers: Chris Yakymchuk; Alexander Peace; Shawna White*

*Duration: One day oral and posters*

This General Session welcomes research contributions, from the international geoscience community, in the broad field of structural geology and tectonics, including field studies, regional syntheses, theoretical investigations, numerical and analogue modelling, at scales from microstructures to mountain belts.

## **WHOLE EARTH GEOSCIENCE**

### **SS-9 CANADIAN JOURNAL OF EARTH SCIENCES: CELEBRATING CANADIAN GEOSCIENCE AND GEOSCIENTISTS**

*Organizer: Brendan Murphy*

*Duration: One day oral and posters*

We invite all authors of articles published in volumes 60 and 61 of CJES to present their papers in this special session.

### **SS-10 RECENT ADVANCES IN OUR UNDERSTANDING OF THE GEOLOGICAL HISTORY AND MINERAL SYSTEMS OF THE TRANS-HUDSON OROGEN**

*Organizers: Chris Couëslan; Ralf Maxeiner; Kevin Ansdell; Kathy Bethune*

*Duration: One day oral and posters*

The Trans-Hudson Orogen is a classic study area for understanding Paleoproterozoic geological processes, tectonic settings, and associated mineral systems. It extends from the subsurface of the north-central United States, through the Hudson Bay region to Baffin Island, and Labrador, with possible extensions into Greenland and northern Scandinavia. The orogen is host to many economically important mineral deposits including Cu-Zn VMS, BIF, magmatic Ni-Cu-PGE, and orogenic gold, and has excellent potential to host critical materials including graphite, Co, Li, U, and REE. Recent studies, at crustal to local scale, using 3D modelling, geophysics, geochronology, geochemistry, tectonics, structure, petrology, and metallogeny have helped to further our understanding of the orogen. The aim of this session is to bring together researchers from across disciplines to discuss these recent advancements in our understanding of the Trans-Hudson Orogen.

### **GS-11 MANTLE PETROLOGY**

*Duration: One day oral and posters*

This session will feature advances to the understanding of the composition, evolution and structure of lithospheric mantle through the application of petrology, geochemistry or experimental techniques.

### **GS-12 MARINE GEOSCIENCE AND RESOURCES**

*Duration: One day oral and posters*

This session is open for abstracts covering all aspects of the geology and geophysics of the present ocean basins and margins and their resources.

## **PLANETARY GEOSCIENCE**

### **SS-13 EARTH ANALOGUES FOR PLANETARY EXPLORATION**

*Organizer: Ed Cloutis*

*Duration: One day oral and posters*

Terrestrial analogues of other planets are an important component of planetary exploration missions. Analogues are defined here as terrestrial terrains that have some characteristics relevant to extraterrestrial bodies. They can provide a number of benefits, including (1) testing and refining operational procedures and providing training in spacecraft missions; (2) testing instruments and hardware for future missions; (3) understanding processes operating on other solar system bodies. Terrestrial analogues are present across the Earth and can provide insights into exploration of a wide variety of solar system bodies. This session will provide an opportunity to present results from activities undertaken at analogue sites that address all aspects of planetary exploration efforts.

### **SS-14 METEORITES AND IMPACT SITES**

*Organizers: Ed Cloutis; Philip McCausland*

*Duration: One day oral and posters*

Meteorites and impact sites provide both primary and indirect evidence that drives much of our understanding of the early formation and evolution of the Earth and Solar system. They effect topography and quaternary features, lakes and rivers, and form giant mineral-rich basins. They are also scientific curiosities of great interest to both scientists and the general public. In this session we invite all contributions to the advancement of our knowledge and understanding of meteorites, impact sites and their implications for Earth and Planetary evolution.

### **GS-15 PLANETARY GEOLOGY**

*Duration: One day oral and posters*

An open session dedicated to exploring all aspects of planetary geology and beyond, that are not covered in other sessions.

## **EARTH RESOURCES**

### **SS-16 MAGMATIC ORE DEPOSITS**

*Organizer: Tafa Kennedy*

*Duration: One day oral and posters*

Magmatic deposits are a major source for many critical metals, including Ti, V, Fe, Ni, Cu, Co, and platinum group elements that formed from mafic magmas and layered intrusions. They are widely distributed in deposits across all continents. In this session we invite presentations that discuss the geology, mineralogy, geochemistry, structure, geo-tectonic setting, genesis, and/or exploration of this important class of mineral resources.

### **SS-17 ENERGY RESOURCES**

*Organizer: Tafa Kennedy*

*Duration: One day oral and posters*



A healthy and prosperous society depends upon the sustained supply of energy resources in all its various forms. We invite papers that discuss topics related to the geology, origin, exploration, development and sustainability of current and future energy resources, including hydrocarbons, uranium, and renewable resources.

### **SS-18 EMERGING TRENDS IN MINERAL EXPLORATION**

Sponsor: Manitoba Prospectors and Developers Association (MPDA)

*Organizer: MaryAnn Mihychuk*

*Duration: One day oral and posters*

The availability of minerals and metals catalyzes the development of modern society. There is increased demand for the vast diversity of metals and earth materials that are used for almost all household and industrial applications. This requires innovative modern exploration techniques that facilitate the discovery of recoverable deposits. This session will bring together industry, government and academics to highlight ongoing efforts to improve mineral exploration methods, techniques and equipment. Case studies welcomed.

### **SS-19 VOLCANIC-HOSTED MASSIVE SULPHIDE DEPOSITS: MODERN AND ANCIENT**

*Organizer: Kyle Reid*

*Duration: One day oral and posters*

This session investigates all aspects of volcanic-hosted massive sulphide deposits, from ancient metamorphosed deposits preserved on land to those that are actively forming on the ocean floor. We invite papers that discuss the geology, setting, mineralogy, geochemistry, processes, origin and resources of these systems.

### **SS-20 MAGMATIC-HYDROTHERMAL ORE SYSTEMS**

*Duration: One day oral and posters*

Magmas release large volumes of fluids and volatiles and/or drive crustal fluid circulation, all of which can generate a wide variety of mineral resources, including porphyry copper, epithermal and IOCG systems, skarn, granite associated deposits, carbonate replacement deposits and many others. We invite presentations that address any aspect of the geology, mineralogy, hydrothermal alteration, geochemistry, structure and origin of these deposits.

### **SS-21 INDUSTRIAL, CHEMICAL AND FERTILIZER RESOURCES**

*Duration: One day oral and posters*

This session invites presentations that discuss the geology, origin and/or sustainable development of any of the non-metallic Earth resources that are needed to sustain healthy and prosperous societies.

### **GS-22 GOLD METALLOGENY**

*Duration: One day oral and posters*

Gold occurs in a great variety of deposit types and geological environments. In this open session we invite papers that discuss all aspects of the geology and origin of gold deposits, including lode gold, intrusion associated, epithermal, paleo-placer and other types of gold-bearing systems.

### **GS-23 ECONOMIC GEOLOGY**

*Duration: One day oral and posters*

This is an open session inviting presentations that discuss the geology, mineralogy, geochemistry, structure and/or origin of minerals resources not specifically covered in other technical sessions.

## **QUATERNARY STUDIES**

### **SS-24 DECIPHERING QUATERNARY SEDIMENTS**

*Organizers: Michelle Gauthier; Grant Hagedorn; Tyler Hodder*

*Duration: One day oral and posters*

Quaternary sedimentary records often consist of fragmented patches of sediment that are difficult to correlate to one another. Despite this challenge, characterizing these sediments is necessary to understand provenance, depositional processes, the stratigraphic record and ice-flow history. This session welcomes submissions describing recent or ongoing multi-parameter investigations of Quaternary sediments at regional, local or micro-scales that are guided by detailed fieldwork and/or lab analyses.

## **GEOCHEMISTRY**

### **SS-25 ADVANCES IN GEOCHEMICAL AND MINERALOGICAL ANALYTICAL TECHNIQUES AND EQUIPMENT**

*Duration: One day oral and posters*

This session will highlight advances in instrumentations and/or innovative strategies used to obtain geochemical or structural information of Earth materials. Applications could cover use of major, minor, trace elements and isotopes in broad areas of geoscience.

### **GS-26 GEOCHEMISTRY AND GEOCHRONOLOGY**

*Duration: One day oral and posters*

For this session we invite abstracts on environmental, isotope and trace element geochemistry, geochronology, thermochronology, organic and biogeochemistry.

## **PALEONTOLOGY**

### **SS-27 PALEO PERSPECTIVES: INSIGHTS FROM THE FOSSIL RECORD**

*Organizers: Colin Sproat; Nikole Bingham-Koslowski*

*Duration: One day oral and posters*

Welcome to the Paleo Perspectives session, where ancient worlds are brought to life. This session offers a captivating exploration of the rich tapestry of life that has evolved, and gone extinct, throughout Earth's history, and the ever-changing ecosystems that supported it. We encourage submissions on anything paleontology or paleoecology related, from microfossils to megafauna. Join us for this exciting journey through time!

## **EARTH SCIENCES AND SOCIETY**

### **SS-28 GEO-HAZARDS AND DISASTER RISK MANAGEMENT**

*Organizers: Etsuko Yasui; Balfour Spence*

*Duration: One day oral and posters*

This session focuses on research related to the intersection between geo-hazards and disaster risk management within the context of current/future social, economic, and environmental dynamics. Geo-hazards continue to generate catastrophic disasters worldwide and intersections with climate change-induced hazards aggravate the potential, severity, and magnitude of impacts. In that regard, disaster preparedness, response, recovery, and mitigation planning must be mindful, not only of changing hazard dynamics, but also intersectionality of hazards. The session welcomes diverse perspectives of geo-hazards and disasters, innovative approaches, application techniques, case studies, and research collaborations.

### **SS-29 THE PAST, PRESENT, AND FUTURE OF SCIENTIFIC DRILLING IN CANADA**

*Organizers: Ricardo L. Silva; Peter M.J. Douglas*

*Duration: One day oral and posters*

Starting from the mid-20th century, scientific drilling through international collaboration has revolutionized how we examine our planet. This collaboration has enabled us to explore the intricate history, processes, and structure of Earth, while also inspiring the creation of innovative techniques, fostering cross-disciplinary research, educating countless students, and encouraging scientists to reach out to wider audiences globally.

Canada's history in the International Continental Scientific Drilling Program (ICDP) and International Ocean Discovery Program (IODP) is long and marked by numerous achievements and successes. In this session, we welcome your experiences and initiatives, including presentations on recent research made possible by drilling projects in Canada or globally, and the examination of past, present, and future challenges of scientific drilling in Canada and for Canadian researchers.

### **SS-30 INQUIRIES, ISSUES, INSIGHTS: RESEARCHER PERSPECTIVES ON GEOSCIENCE COMMUNICATION AND EDUCATION IN CANADA**

*Sponsor: GAC-MAC – Geoscience Education & Communication Division*

*Organizer: Courtney Onstad; Glenn Dolphin*

*Duration: One day oral and posters*

This session intends to highlight the research on geoscience communication and education across Canada. From the motivations driving researchers' questions to the greater implications behind qualitative and quantitative results, this session aims to dig deeper into the research process. With diverse theoretical foundations in science communication, informal and formal education, stakeholder engagement, and much more, let's come together and see what we can learn from one another. Those doing research on geo- education, outreach, communication, tourism, museums, informal education, heritage, stakeholder engagement, policy and more are encouraged to join!

### **SS-31 THE INAUGURAL GEOSCIENCE EDUCATION AND COMMUNICATION DIVISION SPECIAL SESSION - CELEBRATING ANNE-MARIE RYAN**

*Sponsor: Mining Matters*

*Organizers: Lesley Hymers; Beth McLarty Halfkenny*

*Duration: One day oral and posters*

Anne Marie Ryan was an award-winning Professor of Geology in the Earth and Environmental Science Department at Dalhousie University and an early advocate of geoscience education research and practice. Her accolades include the Alumni Association Award of Excellence for Teaching, the top teaching award at Dalhousie University, and the 3M National Teaching Fellowship from the Society of Teaching and Learning in Higher Education, Canada's most prestigious recognition of excellence in educational leadership and teaching at the post-secondary level. Anne Marie was also

the founder and coordinator of the Science Communication and Leadership Certificate at Dalhousie University. She championed Earth science pedagogies, including connecting geoscience and society, and experiential learning in the field.

The topics that will be explored in this special session include the theory and practice of formal and informal geoscience education and communication, from K-12 through to post-secondary, including experiential learning, field-based learning, pedagogy, assessment, and more.

This special session will be of interest to geoscience education and communication researchers, and practicing informal and formal educators and communicators, including those from Academia (Faculty, Graduate Students and Graduate Teaching Assistants); the Museum Sector Government; and Industry, across Canada.

## **SS-32/SE-12 BUILDING BETTER RELATIONSHIPS BETWEEN GEOSCIENTISTS AND INDIGENOUS COMMUNITIES**

### **Special Session followed by Panel Discussions**

*Organizers: Christopher Mancuso; Colin D. Sproat*

*Duration: One day oral and posters*

There has been a lack of meaningful understanding of Indigenous relations in geosciences due to the limited inclusion of Indigenous knowledge in research and education which impedes authentic engagement. This session highlights the need to consider this disconnect through an examination of the underlying historical, ontological, and social-economic aspects, while providing a scaled understanding suitable for students and new geological professionals. Perspectives from various sectors (academic, industry, and government) relevant to engaging and building relationships with Indigenous communities in research and practice will be shared. Case studies, activities and panel discussions will offer actionable steps, best practices, and lessons learned. The ultimate goal is to raise awareness of the need for inclusive, meaningful dialogue and collaboration while equipping participants with tools and knowledge to help implement authentic and genuine partnerships. We welcome submissions from various sectors, including academia, industry, government and Indigenous groups, expressing a wide range of perspectives with relevance to engaging and building relationships with Indigenous communities in research and practice.

## **MINERALOGY**

### **SS-33/SY-1c PRECIOUS AND SEMI-PRECIOUS GEMS AND EARTH MATERIALS**

*Sponsor: MAC*

*Organizers: Lee Groat, Dan Marshall*

*Duration: One day oral and posters*

An open session discussing the occurrence, geology, mineralogy, and geochemistry of all types of precious and semi-precious minerals and earth materials including jade, turquoise, quartz varieties, diamonds, biogenic materials, and “ordinary minerals” with “extraordinary qualities”.

### **GS-34 MINERALOGY AND CRYSTALLOGRAPHY**

*Duration: One day oral and posters*

For this session we welcome abstracts describing recent advances in mineralogy, crystallography, and related fields.

## **EARTH AND ENVIRONMENT**

### **SS-36 NEW INSIGHTS INTO THE STUDY OF EPISODES OF ABRUPT ENVIRONMENTAL CHANGE IN DEEP TIME**

*Organizers: Ricardo L. Silva; Alina Shchepetkina; Muditha Goonetilleke*

*Duration: One day oral and posters*

Since life emerged, Earth witnessed several episodes of abrupt change in the surface environment and biosphere. These included the Great Oxidation Event, mass extinctions, ocean anoxic events (OAEs), rapid climate warming/cooling episodes, and multiple other “sub-lethal” biotic crises. These episodes often coincide with perturbations in biogeochemical cycles and significant changes in internal and external geodynamic processes.

The study of abrupt environmental, climatic, and biogeochemical changes is complex. Although there are still considerable areas for improvement in our understanding of these critical events, progress has been made in uncovering some of the processes and feedback between the various Earth system components during these geological intervals. By unravelling these complex relationships, we gain a better understanding of how the Earth operates as an integrated system and add valuable insights into the future evolution of our planet.

We look forward to receiving your contributions towards researching these critical events, like the Great Oxidation Event, OAEs, Paleocene–Eocene Thermal Maximum, the end Permian and K/Pg extinctions, hyperthermals, etc. Additionally, insights into environment-biological interactions during periods of rapid transformation in the Phanerozoic are appreciated.

### **SS-37 CLIMATE CHANGE IN THE GEOLOGICAL RECORD**

*Organizer: Ricardo Silva*

*Duration: One day oral and posters*

Geoscientists have systematically documented the change of climates and Earth environments from evidence preserved in the geological record, and they have been doing this for the past 250 years. The evidence is clear that climates have always changed, are changing now, and always will change. However, what does the geological record tell us about how climate change occurs, to what degree, and what forces are driving these relentless changes? How should this past record inform our current understanding of planetary change? In this Special Session we welcome all points of view and interpretations that are based on evidence from the geological record, including rocks, fossils, sediments, ice cores and other Earth materials.

### **GS-38 HYDROGEOLOGY AND GROUNDWATER RESOURCES**

*Duration: One day oral and posters*

This general session will encompass all aspects of hydrogeology including the study and management of aquifers, quantifying infiltration and recharge of aquifers, water quality monitoring, etc.

### **GS-39 ENVIRONMENTAL GEOSCIENCE**

*Duration: One day oral and posters*

Contributions addressing topics related to environmental geology including environmental monitoring, assessment and remediation are welcome.

## ***GEOPHYSICS***

### **SS-40 GEOPHYSICS APPLIED TO THE SEARCH FOR MINERAL RESOURCES: FROM THEORY TO APPLICATION**

*Sponsor: GAC Geophysics Division*

*Organizers: Jeremy S. Brett; Philip McCausland*

*Duration: One day oral and posters*

A sustainable, healthy, green and prosperous society depends heavily upon its mineral resources, which are becoming increasingly more difficult to locate. There is a growing dependence on technical advances in geophysical exploration techniques, as well as a more sophisticated understanding of their responses to the great variety of geological formations associated with economic resources. In this session we invite contributions that discuss advances in the development of all types of geophysical exploration techniques, as well as their applications to mineral exploration and case studies.

### **GS-41 GENERAL GEOPHYSICS**

*Sponsor: GAC Geophysics Division*

*Organizers: Ian Ferguson; Philip McCausland*

*Duration: One day oral and posters*

This session will feature contributions addressing the application of various geophysical techniques to understand the geology of crust, mantle and associated processes including near surface processes. We welcome papers based on all applications of geophysics including tectonic, resource, groundwater, environmental, archeological and forensic studies.

## **WORKSHOPS**

### **WS-1: Abyssal Granitic Pegmatites of Northern Saskatchewan and Manitoba**

*Sponsor: PEG*

*Organizer: Irvine Annesley*

### **WS-2: Communicating Earth Science: Skill Building with Purpose Workshop**

*Sponsor: Mining Matters*

*Organizers: Lesley Hymers; Beth McLarty Halfkenny*

Members of the Geoscience Education and Communication Division will collaborate to plan and deliver a half or full day geoscience communication workshop. The purpose of the workshop will be building skills, sharing experience and expertise, strategies, and best practices. The workshop will be team - taught by members of the Division. Topics could include communicating geoscience and geoscientific findings to non-experts, raising public awareness of and interest in geoscience, informing attitudes and behaviors about geoscience, informing geoscience public policy, engaging with diverse communities, and effective use of social media.

### **WS-3: Rates and Dates: Dating Methods and Applications**

*Organizers: Eva Enkelmann; Birk Haertel; Akeek Maitra*

*Online Workshop*

The objective of this one-day course is to introduce geoscientists to the fundamentals of radiometric dating techniques. Geo- and thermochronology techniques allow scientists to quantify the timing of geologic events and with this the duration and rates of geologic processes. These methods differ in their sensitivity to temperatures ranging from mineral crystallization at  $>800\text{ }^{\circ}\text{C}$  to upper crustal heating and cooling at  $50\text{--}100\text{ }^{\circ}\text{C}$ . This one-day short course will provide the principles of radiometric dating. Emphasize will be given to geochronology and thermochronology methods such as U-Pb, Ar-Ar, U-Th/He, and fission track dating, and the possibilities to combine multiple methods on individual samples and single grains. Focus will be given to practical aspects that will allow scientists to choose the best method, conduct sampling in the field and core storage facilities, and project budgeting for a wide range of applications.

### **WS-4: Quantifying Sediment Provenance and Basin Thermal Histories**

*Organizers: Eva Enkelmann; Akeek Maitra; Birk Haertel*

*Online Workshop*

The objective of this one-day course is to introduce geoscientists to the fundamentals of radiometric dating techniques and their use to study sediment basins. New developments in geo- and thermochronology techniques allow effectively dating large quantities of individual grains and the application of multiple methods on single grains. This offers to answer a wide range of geologic questions regarding sedimentary basins. These include: 1) sediment provenance and identify sediment recycling, 2) reconstructing the tectonic evolution of the sediment source region, 3) quantifying maximum and minimum temperature of sediment burial, 4) quantifying timing and rate of basin inversion, 5) determining sediment deposition age, 6) quantifying amount of removed sediment strata or tectonic overburden. Focus will be given to practical aspects that will allow scientists to choose the best method, conduct sampling in the field and core storage facilities, and project budgeting and time planning.

### **WS-5: How to Publish in Geoscience Journals**

*Sponsors: Canadian Journal of Earth Sciences; Canadian Science Publishing*

*Organizers: Brendan Murphy; Sally McPherson*

*Date: Sunday May 19, 2024, 4:00 PM – 6:00 PM*

*A 2-hour workshop for early career researchers including graduate students, post-doctoral fellows, and pre-tenured faculty, on how to publish your research in geoscience journals.*

### **WS-6: Fundamentals of Logging Mining and Exploration Drill Core**

*Sponsors: Brandon University Department. of Geology and the LOC*

*Organizers: Neil Richardson; Chris Couëslan, Steve Kirby-McDougal; Shuo Sun; Ayat Baig; Hamid Mumin*

*Date: May 23, 2024, one day*

*Location: Brandon University Core Lab*

This workshop introduces participants to the fundamentals of good core logging and is suitable for students, early career professionals, or professionals interested in some very interesting drill core. Participants will learn how to examine exploration and mining drill core and separate it into appropriate intervals for logging. They will learn how to systematically describe each interval, and how to recognize in drill core, host rocks, alteration, mineralization, structural features, complex intrusions, kimberlite facies, metamorphism and much more. Most of the time will be spent hands on logging drill core while working directly with the instructors. Students will examine over 700 meters of challenging drill core from actual mines and exploration projects, including the Thompson nickel deposit, Eden Lake carbonatite complex, Flin Flon (Trout Lake) Zn-Cu-Au-Ag massive sulphide deposit, and 3 of the diamond-bearing kimberlites from the Ekati mine. The best of a full term lab condensed into a one-day intensive workshop.

### **WS-7: Critical Resources Workshop**

*Organizer: Anton Chakhmouradian*

*Location: University of Manitoba*



## **FIELD TRIPS**

### **FT-1: Pegmatites of the Winnipeg River-Cat Lake pegmatite field (MB) and Separation Rapids (ON)**

*Sponsor: PEG*

*Organizer: PEG, main contact: Tania Martins*

*Date and time: Post-conference, May 23<sup>rd</sup> AM to May 26<sup>th</sup> PM*

*Departure and Destination: Round trip out of Winnipeg*

During this four-day field trip we will visit lithium pegmatites in Manitoba (Cat Lake-Winnipeg River pegmatite field) and Northwestern Ontario (Separation Rapids pegmatite field). Visits will focus on different aspects of the pegmatites including mineralogy, emplacement controls, and regional geology. Examples of pegmatites we will visit include the Eagle, FD no.5, Tanco, Big Mack, and Big Whopper. The Tanco portion of the trip is expected to include visits to the underground workings and the spodumene mill and viewing of drill core. We are also planning to view the paragenetic collection of the Tanco pegmatite organized by Petr Černý and located at the University of Manitoba.

### **FT-2: Abyssal Granitic Pegmatites of Northern Saskatchewan and Manitoba**

*Sponsor: PEG*

*Organizer: Irvine Annesley*

*Date and time: TBA*

*Departure and Destination: TBA*

### **FT-3: Volcanic stratigraphy, hydrothermal alteration and metamorphism associated with VMS deposits in the Flin Flon-Snow Lake mining camp**

*Sponsor: Manitoba Geological Survey*

*Organizer: Kyle Reid*

*Date and time: Post-conference, May 23<sup>rd</sup> AM to May 26<sup>th</sup> PM*

*Departure and destination: Departs from Brandon with final destination in Winnipeg*

The Flin Flon greenstone belt is host to one of the largest Paleoproterozoic volcanogenic massive sulphide (VMS) districts in the world. This field trip will examine both the Flin Flon and Snow Lake juvenile arc assemblages. The start of the trip will focus on the stratigraphy of the Flin Flon arc assemblage; the relatively low metamorphic grade of these rocks provides an opportunity to see well-preserved volcanic textures and structures associated with the Flin Flon ore bodies. This will be followed by a review of the volcanic stratigraphy of the Snow Lake arc assemblage and middle amphibolite facies metamorphism of syn-volcanic hydrothermal alteration associated with the Chisel-Lalor VMS ore bodies.

### **FT-4: Field Trip to PADCOM's Potash mine and Gambler First Nation "Indigenous Partnership" PADCOM & Gambler First Nation**

*Sponsors: Manitoba Prospectors and Developers Association (MPDA), Gambler First Nation and PADCOM*

*Organizers: Michelle Nicolas; MaryAnn Mihychuk*

*Date and time: Post-conference, May 23 AM to PM*

*Departure and destination: Round trip out of Brandon*

PADCOM (Potash & Agri Development Corporation of Manitoba) is the first, and so far only, potash mine in Manitoba. It is a shining example of a true business partnership with the neighboring indigenous community of Gambler First Nation. The excursion will begin with a visit to Gambler First Nation where participants will learn about the history of the first nation, as well as their businesses and partnership with PADCOM. Following a feast provided by Gambler First Nation, the field trip will continue with a tour of the PADCOM mine with a focus on their polythermic selective solution process and a discussion of their partnership with Gambler First Nation.

### **Itinerary:**

**First stop:** Gambler First Nation from 11:30 – 1:00. Brief history of Gambler First Nation and information on their businesses, and relationship/partnership with PADCOM by Chief David LeDoux, and Lunch/Feast provided by the Gambler First Nation.

**Second stop:** arrive at 1:30 PM at PADCOM Potash mine in Harrowby Manitoba (just west of Russell MB).

- Tour of the mine with focus on the Polythermic Selective Solution Process and presentation by PADCOM President Daymon Guillas and key staff.
- Discussion of the Indigenous Partnership and revenue sharing agreements.
- Q & A session.
- Leave PADCOM at ~ 3:45

Arrive back in Brandon at ~ 5:45 PM.

### **FT-5: Life in the Western Interior Seaway: A field trip to the Cretaceous escarpment in Morden, Manitoba**

*Sponsors:* Canadian Sedimentological Research Group, Paleontological Division-GAC, Canadian Society of Vertebrate Paleontology

*Organizers:* Ricardo L. Silva; Kirstin Brink; Adolfo Cuetara

*Date and time:* Post-conference; May 22<sup>nd</sup> PM to May 23<sup>rd</sup> PM

*Departure and destination:* Departs from Brandon with final destination in Winnipeg

Join us for a one-and-half-day joint Canadian Sedimentological Research Group/Paleontological Division-GAC/Canadian Society of Vertebrate Paleontology expedition that brings together scientists specializing in the Mesozoic of Canada. Our itinerary features the exploration of Late Cretaceous sedimentary successions in the Morden-Miami region of southern Manitoba, which hold immense global significance, and a visit and dining event at the Canadian Fossil Discovery Center. The Canadian Fossil Discovery Centre boasts the largest marine reptile fossil collection in Canada including Bruce, a *Tylosaurus Peminensis*, which holds the Guinness World Record as the largest publicly displayed mosasaur. In addition, we will learn about the diverse facets of the local indigenous and settler heritage and take a brief look at the Pleistocene-Holocene shoreline and lake deposits of Lake Agassiz.

**FT-6: Stratigraphy, ore deposits, and metamorphism in the Thompson Nickel Belt, Manitoba.**

*Sponsor: Manitoba Geological Survey*

*Organizer: Chris Couëslan*

*Date and time: Pre-conference; May 16<sup>th</sup> AM to May 19<sup>th</sup> PM*

*Departure and destination: Departs from Winnipeg with final destination in Brandon*

This field trip will examine the geological setting of magmatic nickel-copper deposits in the Thompson Nickel Belt. The majority of nickel sulphide-bearing ultramafic bodies in the belt are found hosted in the Ospwagan Group metasedimentary rocks, which likely acted as a source of sulphur. Participants will be introduced to the stratigraphy of the Ospwagan Group by visiting extensive outcrops at two open pit mines in the Thompson area. This will also include a discussion of the structural and stratigraphic settings of the ore bodies, along with the effects of variations in metamorphic grade. Different styles of nickel mineralization will be viewed in selected drill core from the Thompson area and from the Manibridge project in the southern part of the belt. An underground tour is being planned for the Thompson mine, which has been in continuous production since 1961.

## **SPECIAL EVENTS**

### **SE-1: PEG2024 Banquet**

*Sponsor: PEG*

*Time and Details to follow*

### **SE-2: Better Mine Haul Roads Using Environmentally Responsible Technology**

#### **“Lunch and Learn” plus optional field trip**

*Sponsor: Cypher Environmental, LOC*

*Location: Brandon University Board Room (Room 104 Clark Hall)*

*Time: 12:00 noon luncheon; 1:30 PM optional field excursion (ticketed event)*

*Guest Speakers: Todd Burns, President, Cypher Environmental, Hamid Mumin, Brandon University*

*Field trip guides: Todd Burns, TBA*

*For information about the event, please contact: Cecilia Lowe [marketing@cypherenvironmental.com](mailto:marketing@cypherenvironmental.com)*

Enjoy a catered luncheon while learning how ordinary clay-rich soils are blended with organic catalysts and ordinary aggregate to construct superior mine haulage roads that are durable and long-lasting. These roads are so durable they require almost no maintenance and provide numerous cost savings and environmental benefits. The speakers discuss how the electronic bonding of clay minerals combined with basic construction protocols is driving a revolution in sustainable haulage road construction and maintenance. We also discuss topical solutions for dust control and stabilization using purely organic materials. After the luncheon, interested participants can join an optional afternoon field excursion to a stabilized road site in the Brandon region.

### **SE-3: President’s Reception**

*Sponsor: GAC-MAC*

*Location: Bailey’s Cafe*

*Time: Sunday afternoon (by invitation)*

### **SE-4: Ice Breaker**

*Sponsor: GAC-MAC-PEG*

*Location: Harvest Hall*

*Time: May 19<sup>th</sup>, Sunday late afternoon/early evening (all welcome)*

### **SE-5: Early Career Professionals Social Evening at Black Wheat Brewing**

*Sponsor: LOC (Local Organizing Committee)*

*Location: Black Wheat Brewery, 402 10<sup>th</sup> St., Brandon MB*

*Time: TBA (ticketed event)*

### **SE-6: Graduate Students Social Evening at Black Wheat Brewing**

*Sponsor: LOC (Local Organizing Committee)*

*Location: Black Wheat Brewery, 402 10<sup>th</sup> St., Brandon MB*

*Time: TBA (ticketed event)*

***SE-7: Farewell get-together at Bailey's Café, Brandon University***

*Sponsor: LOC (Local Organizing Committee)*

*Time: Wednesday late afternoon/early evening (ticketed event)*

***SE-8: GAC-MAC Joint Executive Breakfast Meeting***

*Sponsor: MAC*

*Time: TBA*

***SE-9: GAC Awards Luncheon***

*Sponsor: GAC*

*Time: Monday May 20, 2024, 12:10 – 1:20 PM (ticketed event)*

***SE-10: MAC Awards Luncheon***

*Sponsor: MAC*

*Time: Tuesday May 21, 2024, 12:10 – 1:20 PM (ticketed event)*

***SE-11: MDD Awards Luncheon***

*Sponsor: MDD*

*Time: Wednesday May 22, 2024, 12:10 – 1:20 PM (ticketed event)*

***SS-32/SE-12: Building Better Relationships Between Geoscientists and Indigenous Communities***

***Special Session Followed by Panel Discussions***

*Organizers: Christopher Mancuso; Colin D. Sproat*

*Duration: One day oral and posters*

There has been a lack of meaningful understanding of Indigenous relations in geosciences due to the limited inclusion of Indigenous knowledge in research and education which impedes authentic engagement. This session highlights the need to consider this disconnect through an examination of the underlying historical, ontological, and social-economic aspects, while providing a scaled understanding suitable for students and new geological professionals. Perspectives from various sectors (academic, industry, and government) relevant to engaging and building relationships with Indigenous communities in research and practice will be shared. Case studies, activities and panel discussions will offer actionable steps, best practices, and lessons learned. The ultimate goal is to raise awareness of the need for inclusive, meaningful dialogue and collaboration while equipping participants with tools and knowledge to help implement authentic and genuine partnerships. We welcome submissions from various sectors, including academia, industry, government and Indigenous groups, expressing a wide range of perspectives with relevance to engaging and building relationships with Indigenous communities in research and practice.

***SE-13: Mineral Kits Outreach Event***

*Sponsors: Mineralogical Association of Canada and Saint Mary's University*

*Organizers: Jacob Hanley; Fred Ford; Dan Marshall*

*Date and Time: TBA (All Welcome)*

Families and teachers interested in the Earth Sciences are invited to bring in their own rocks and minerals to have them examined and identified by a professional geologist, and they can take home one of 75 free mineral identification kits.

***SE-14: Brandon University Geology Alumni and Friends Reception***

*Sponsors: Brandon University Department of Geology; LOC*

*Organizers: LOC (ticketed event)*

*Location: Bailey's Cafe*

*Date and Time: TBA (All Welcome)*