



Canadian Earth Science Teacher
Workshop Program



EdGEO is a Canada-wide program that encourages and funds workshops aimed at helping primary and secondary school teachers present Earth science concepts in their classrooms. It is a grassroots program, fuelled by the enthusiasm and commitment of its volunteers – from its national co-chairs to its many workshop leaders in communities across Canada.

EdGEO workshops are organized by local geoscientists who usually work with local educators. Each workshop is tailored to curriculum needs and opportunities for learning about the Earth sciences in that particular location. The goal is to introduce teachers to Earth science and provide them with the knowledge and confidence for teaching it in their classrooms. Importantly, each teacher leaves an EdGEO workshop armed with classroom resources, lesson plans, and hands-on activities for their students.

EdGEO has worked with thousands of Canadian teachers since its beginnings in the early 1970s. Given that each teacher will educate hundreds of students over his or her career, the impact and reach of EdGEO is impressive. Their students learn about the importance of the Earth sciences in their lives, gain a better awareness of our planet, and, in some cases, decide to pursue a career in Earth science.

The Gift of Time

Each EdGEO workshop requires about *200 hours of volunteer time* for its planning, promotion, preparation of activities, organizing associated field trips, building resource packages, registration, and communication with participants – all this before the workshop even begins! Add to that the time required for the workshop and follow-up, and clearly our workshop leaders have given the Earth science community a very generous gift.



NATIONAL WORKSHOP PROGRAM NEWS

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EdGEO is coordinated by the Canadian Geoscience Education Network, the outreach arm of the Canadian Federation of Earth Sciences

200 HOURS

“ It’s fantastic that there is this support for teachers. Geology Rules!!!
—Participant, Geoscience Workshop for Yukon Teachers

EdGEO Workshops 2016–2017

Joggins, Nova Scotia The Nova Scotia EdGEO Workshop Committee offered the workshop *Joggins Fossil Cliffs – A Page Out of Four Billion Years* at this UNESCO World Heritage Site. Participating teachers learned about the rock cycle, fossils, geological time, and plate tectonics, with a special focus on how they relate to the Fossil Cliffs. The workshop started with demonstrations and hands-on activities that can be used in classrooms, followed by a field trip along the Fossil Cliffs that allowed the teachers to apply what they had just learned. A key feature of the workshop was a discussion on how to use the recently published book *Four Billion Years and Counting: Canada's Geological Heritage* and its online resources in the classroom. Each teacher received a resource kit and a copy of the book. 🧑 25

Fredericton The University of New Brunswick's Quartermain Earth Science Centre hosted a workshop, *Unearthing the Earth Sciences*, which provided participating educators with ideas and inspiration for teaching Earth science. It combined instruction with hands-on activity ideas about Earth systems and geological concepts, and provided examples of how to use both indoor and outdoor environments for teaching. The workshop included a half-day of instruction and a half-day field trip. Each participant received an extensive resource kit. 🧑 24

The University of New Brunswick also offered the *Hands-On Earth Science Boot Camp* as part of the 2017 Atlantic Geoscience Society conference. It provided teachers from New Brunswick and other parts of Atlantic Canada with activities and information linked to the workshop's theme: *Where on Earth? – Education, Integration and Development of Earth Science for Social Benefit in Atlantic Canada*. 🧑 28

Ottawa The Ontario Stone, Sand, and Gravel Association and Carleton University's Earth Science Department partnered to lead a *Discovering Earth Sciences* field trip for teachers that visited local operating limestone quarries, and sand and aggregate producers. Through discussions with the operators, participants learned about the aggregate industry, what they produce, the challenges faced to supply materials for local infrastructure, and innovations in the industry. The workshop also introduced the teachers to the general geological history of the Ottawa region, and provided ideas for taking their students on field trips. 🧑 20

Northern Ontario

The Canadian Ecology Centre's annual five-day *Teachers' Mining Tour* introduces educators to many aspects of modern mining. It links the Ontario curriculum to mining technology, environmental stewardship, safety in the workplace, minerals and the consumer, and career opportunities for students. Three sessions were held in 2016, visiting Sudbury, Timmins, and Thunder Bay. Each tour included visits to open pit and underground mines, rehabilitation sites, and manufacturing facilities. 🧑 75

Metchosin, British Columbia

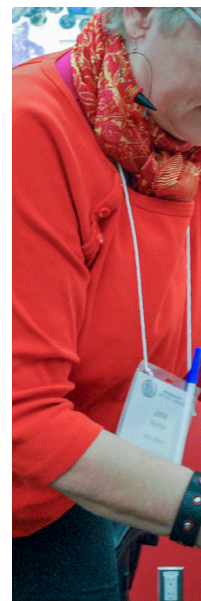
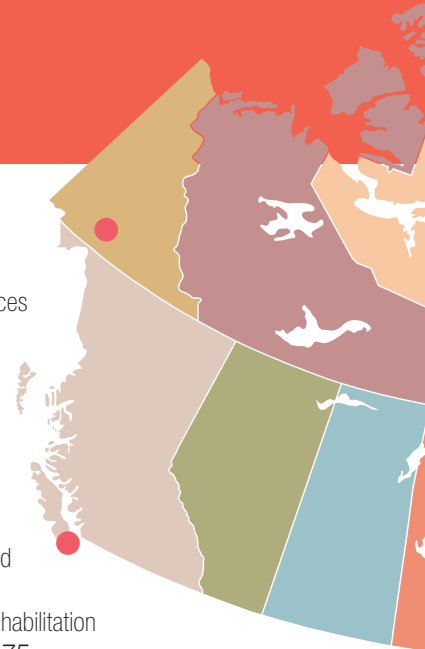
An EdGEO workshop entitled *Fossils, the Marine Environment, and Earth History* was offered as part of the Northwest Aquatic and Marine Educators' Conference. It involved a fieldtrip to Muir Creek that provided an opportunity for participating teachers to explore the connections between biology and Earth science curriculum topics. Participants examined the modern intertidal life forms and used them to understand the fossils and sedimentary environments of the 20 to 25 million-year-old Sooke Formation sandstones and conglomerates. Hands-on activities in the workshop focused on Earth history, fossils and marine life, and interpretation of sedimentary rocks. 🧑 20

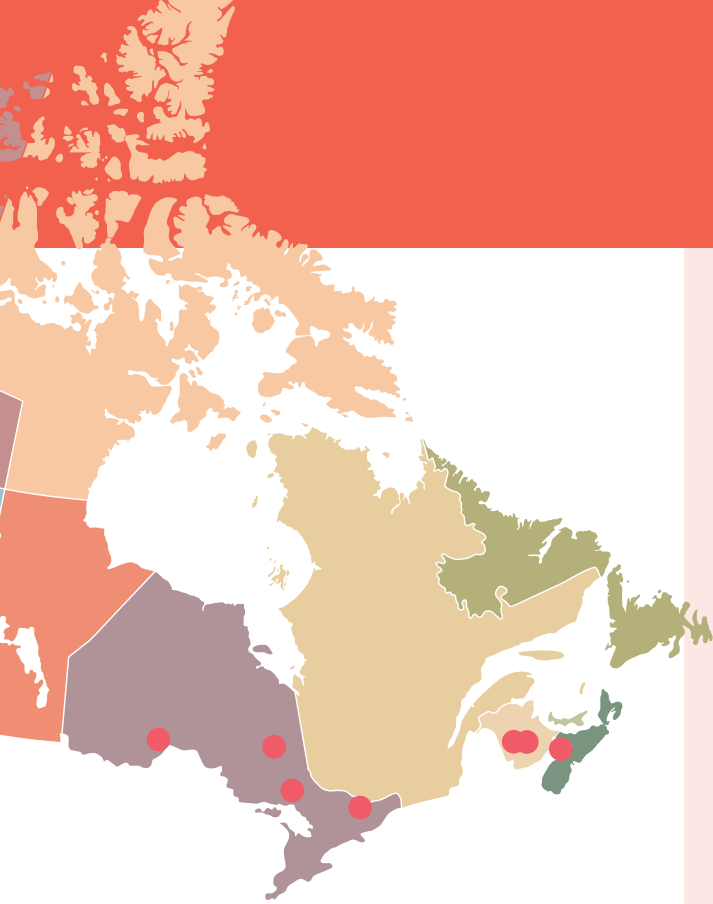
Whitehorse

The Yukon Geological Survey hosted a one-day Earth science workshop for elementary and secondary school educators as part of the 2016 joint annual conference of the geological and mineralogical associations of Canada. The workshop included a hands-on learning session and a field trip to local geological exposures. Themes explored were Earth science classroom teaching resources and activities and their link to curriculum, and the geology of the Whitehorse area. 🧑 20



Denotes Attendance





The Anatomy of a Workshop

Each EdGEO workshop is designed and organized by a local group or individual with comprehensive knowledge of the regional curriculum needs of the teacher participants. Field trips to local rock formations are a typical part of the experience, as is the participation of experts drawn from local scientists, university professors, researchers, industry professionals, and teachers/peers who come together to form a diverse, enthusiastic, experienced workshop team. An added bonus is that our participants leave the workshop with a network of individuals who can support them once they are back in their classroom.

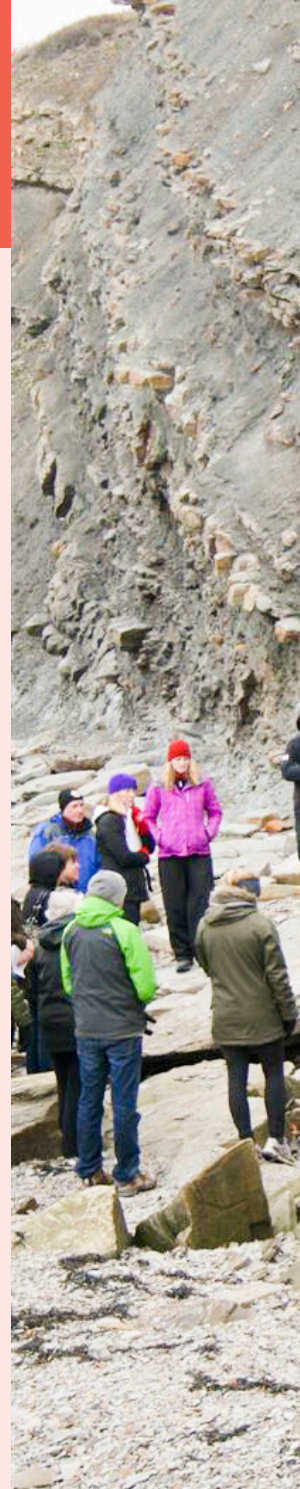
So, you want to put on a workshop!

But where to start? Well, it's all there for you on the EdGEO website. Go to www.edgeo.org and click on *Workshops*. You'll find a section with tips on how to organize a workshop and another on how to apply for funding. EdGEO will provide up to \$3,000 per workshop to cover expenses such as teaching resources, field trip transportation, and publicity.

As for content, no need to reinvent the wheel. Just click on *Resources* and check out EdGEO's two online resource manuals. They contain hundreds of classroom-ready activities that have been field-tested and fine-tuned at EdGEO workshops. The *Bringing Earth Science to Life* manual also includes templates and samples of all the supporting materials (from advertising to funding applications) needed to put on a workshop.

Try it. You'll love the experience!

“ I went on the field trip knowing very little about the aggregate industry, and it gave me an outstanding chance to learn about this key industry. —Participant, Carleton University and the Ontario Stone, Sand, Gravel, and Aggregate Association EdGEO field trip.





Spotlight On Our Sponsors

Past and Present Sponsors

EdGEO relies on funding support from organizations that share our goal of increasing the awareness and expertise of Canadian teachers about the Earth sciences.

Our longest standing sponsor is the **Canadian Geoscience Education Network**, which has provided EdGEO with annual grants and in-kind support stretching back to CGEN's founding in the early 1990s. Since 2009, EdGEO has received an annual grant from the **Canadian Society of Exploration Geophysicists Foundation**, which was set up in 2006. And since 2011, EdGEO has benefited enormously from multi-year grants from our main sponsor, the **Canadian Geological Foundation**.

Past sponsors include the Canadian Federation of Earth Sciences, Canadian Society of Petroleum Geologists, Encana Corporation, Geological Association of Canada, Geological Survey of Canada, Nexen, and the Ontario Secondary School Teachers' Federation.



CGEN RCEG



CSEG

Canadian Society of
Exploration Geophysicists



Canadian
Geological
Foundation

Fondation
Géologique
du Canada



EdGEO Highlights

During the past year, EdGEO continued to support the delivery of high quality learning opportunities for Canadian teachers seeking the knowledge, resources, and confidence to educate their students about the Earth sciences. In 2016-2017, nine EdGEO workshops were held across Canada attended by 212 teachers. Some 60 Earth scientists and educators volunteered their time to organize and lead these workshops.

French translation of our highly regarded teaching resources *Bringing the Earth Sciences to Life and Putting the Earth into Science* (www.edgeo.org, click on *Resources*) moved forward. We compiled a sampler of our most popular and most used learning activities from both collections and are having them translated. This will give us a sense of the overall cost required to do both collections, which contain hundreds of learning activities.

As this is the final year of service of current EdGEO chair Beth McLarty Halfkenny, time was spent finding successors to chair EdGEO for the next five years. We have found wonderful new co-chairs in Ann Timmermans and Janice Williams. We are also working to forge connections in Quebec so we can expand our workshop program there.

The main part of our funding this year came from a Canadian Geological Foundation multi-year grant, of which we are in the final year. As a result, we are looking at options and opportunities for new funding. We also received generous funding from our long-time sponsors, the Canadian Society of Exploration Geophysicists Foundation and the Canadian Geoscience Education Network.

As always, we thank our many volunteers, our sponsors, and the workshop participants for their commitment to excellence in Earth science education.

Resources for the Classroom

Pebbles: A Low-Cost Teaching Tool

Pebbles are everywhere, and each one tells a story about the Earth's history. That was why Eileen Van der Flier-Keller, in 2005, designed, wrote, and self published *A Field Guide to the Identification of Pebbles*. It was an instant success with teachers, who now had a handy tool to help them introduce Earth science to their students. It was also an excellent classroom resource that allowed students to identify their own treasured pebbles. Perfect for student-centred learning! The pebble guide is still a best seller, and is available in English and French from Harbour Publishing at \$7.95 a copy.

www.harbourpublishing.com/title/AFieldGuidetotheIdentificationofPebbles.

In 2014, the Edmonton Geological Society (Dixon Edwards, Dan Magee, Matthias Grobe, Willem Langenberg) developed a similar guide using pebbles from the Edmonton area. It is available for \$7.50 a copy at egs.ab.ca/page-1796319.

The latest pebble guide hails from Nova Scotia. Published in late 2016 by the Atlantic Geoscience Society, it was developed by Lynn Dafoe, Jennifer Bates, and Martha Grantham. *Nova Scotia Pebbles* was designed so people can "identify and learn more about the pebbles on Nova Scotia beaches, lakeshores, and riverbanks." It provides information on pebble types (igneous, sedimentary, or metamorphic), the distinguishing features of each, and how they formed. An accompanying map of Nova Scotia points pebble seekers to good collecting sites. Although the focus is on Nova Scotia pebbles, the general concepts can be applied elsewhere. The pebble guide is available at no cost. For paper copies (including class sets), contact Jennifer Bates at jennifer.bates@canada.ca or 902-426-4386, or download digital and smart-phone versions at ags.earthsciences.dal.ca/AGS_Pubs.php#pub50.



“ I was very impressed with the take-away box that all participants received, especially the rock collection. I plan to use many of the resources and hands-on activities in my classroom. — Participant, EdGEO workshop, Quartermain Earth Science Centre

Think Local, Teach Global

Earth science concepts are universal, but you can find wonderful teaching resources and field sites in your own neighbourhood. Here are just a few for you to check out.

- Local Earth science experts can be found in lots of places in your community. Check out any museums or interpretive centres with a natural history focus, community colleges or universities offering Earth science or geography courses, federal, provincial or municipal government agencies that assess geology or the environment, and rock and mineral clubs.
- Field trips to local sites of geological interest are a particularly vivid way to engage students in the Earth sciences. When you find a local expert, they would be a mine of information about such sites, and would, no doubt, be thrilled to lead a field trip. If your school has an outdoor education program, this would be an excellent add-on.
- The Geoscape poster series and its online teaching resources explain local geology for many communities across Canada. Produced by the Geological Survey of Canada, all the posters and resources are archived on the Canadian Geoscience Education Network website at www.cgenarchive.org (click on *Geoscape*)



Try Wedging!

Earth science concepts are an excellent jumping off point for teaching the core curriculum sciences of chemistry, biology, physics, and mathematics at the secondary school level. To help teachers do just this, EdGEO developed *Putting the Earth into Science*. This online, downloadable manual has over 100 hands-on lesson plans and activities that integrate Earth science topics into the core subjects. It is available at www.edgeo.org (click on *Resources*). Through this interdisciplinary “wedging” approach, EdGEO hopes to expand Earth science content in Canadian high schools, and increase student awareness of how Earth science impacts their daily lives. It may also open students’ eyes to the many rewarding careers to be found in the Earth sciences.

Our Team

The National EdGEO Committee

Five years ago, EdGEO moved to having co-chairs run the National EdGEO Committee rather than just a single individual. This was in recognition of the amount of work required by this volunteer position, which involves administering the grants and looking after everything that makes a granting organization run.

In early 2016, one of the co-chairs, *Amanda McCallum*, an education consultant based in St. John's, Newfoundland, stepped down. The other *Beth McLarty Halfkenny*, Outreach Coordinator for Carleton University's Department of Earth Sciences, ably carried on. She left the position on April 22, 2017 after five years of service. Beth will, however, continue to provide advice and assistance to the new co-chairs, filling the role played over the past five years by past EdGEO chair *Laura Clinton*, an educator and fundraising consultant based in Whitby, Ontario. Everyone involved in EdGEO thanks Amanda, Beth, and Laura for their effort and contribution.

We are pleased to introduce and welcome the new EdGEO co-chairs for the next five years. *Ann Timmermans* lives in Fredericton and works for the University of New Brunswick. She is an instructor with its Department of Earth Sciences and the curator of its Quartermain Earth Science Centre. Our other co-chair is *Janice Williams*, a Toronto-based science education consultant and content developer. Both have extensive experience in organizing and leading teacher and student programs in the Earth sciences. We welcome them and look forward to initiatives they will bring to EdGEO.

Members of the national committee are: *Jennifer Bates* (NS), *Toon Pronk* (NB), *Beth McLarty Halfkenny* (ON), *Laura Clinton* (ON), *Christy Vodden* (ON), *Fran Haidl* (SK), *Sheila-Dale Johnston* (BC), and *Jane Wynne* (BC). *Kevin Haidl* has been our webmaster since we went online.

“Great ideas! Good match to curricula. An amazing amount of dedication, expertise, and inspiration from the leaders. —Participant, Hands-On Earth Science Boot Camp

EdGEO Needs Your Help

EdGEO's success is built upon two elusive commodities: time and money. You can help by:

1. *Becoming a sponsor*

The dollars EdGEO raises are used almost exclusively to support workshops for Canadian teachers. New sponsors are needed to build EdGEO's funding base so we can support more workshops, as and where the need arises. To explore becoming a sponsor, contact Ann Timmermans at (506) 458-7205.

2. *Leading a workshop*

EdGEO workshops are where Earth science meets Canada's primary and secondary school teachers. This is a critical interface as most teachers have little or no background in Earth science yet have to deliver it in the curriculum. EdGEO provides funding, tips on how to organize workshops, and content. All you add is your time and enthusiasm.

3. *Prepare a resource*

Every new resource helps – from learning activities that can be used in the classroom to explanations of complex Earth science concepts in plain language. Use your knowledge to further Earth science education in Canada.

