EARTH SCIENCES DEPARTMENTAL UPDATE FALL 2017
Celebrating 64 Years of Exploration, Innovation and Discovery

Students are choosing Carleton because of the diversity and high quality of our programs, wealth of field opportunities, outstanding opportunities for original student research, and our reputation as a friendly, active department with a strong community spirit. Our enrolment is strong with 115 undergraduate and 51 graduate students, 35 minors and ~1800 students per year registered in general interest courses such as Climate Change, Dinosaurs and Natural Disasters. We are in the final stages of a multiyear expansion and renovation of department space, and are especially proud of our new teaching and research laboratories.

Two new faculty members joined the department in the summer of 2017: Isotope Geochemistry Professor Hanika Rizo and her team use the most ancient rocks preserved at the Earth’s surface to shed light on the chemical structure, composition and evolution of the young Earth. Economic Geology Professor James Mungall is an igneous petrologist with a research focus on the petrogenesis of magmatic ore deposits including magmatic Ni-Cu-PGE and chromitite.
Professor Hillary Maddin, vertebrate paleontologist and evolutionary developmental biologist, moved into her newly built, high-tech laboratory. Hillary is working primarily on questions of morphological evolution over broad time scales, using amphibians as models. In addition to research, Hillary anchors our popular B.Sc. H concentration in Vertebrate Paleontology in conjunction with Professor Claudia Schröder-Adams and Adjunct Professors Steve Cumba, Michael Ryan, Danielle Fraser and Jordan Mallon.

CONNECTING WITH ALUMNI - Alumni field trip to Iceland, Department history project

Iceland trip. Professor Brian Cousens will be leading a Carleton University Alumni Association tour of “Iceland’s Geological Marvels” from June 12-22, 2018. Based on the success of previous student field excursions to Iceland in 2009 & 2014, this trip will focus on the fantastic scenery and culture as well as the geology of this remarkable island (see www.WorldwideQuest.com/Carleton).

Myvatn, Iceland

Department History. The department will turn 65 in 2018, and in preparation for the celebration we are gathering information to feature our history. Do you have photos or tales of Alice Wilson, astronaut training in 1995 or 1991, the 1992 Mount Logan Expedition to measure the mountain’s height, a field experience, or about that one time when….. ? Please send your stories, memories and photographs to Sharon Carr (SharonCarr@cunet.carleton.ca) and Geoff Pignotta (GeoffPignotta@cunet.carleton.ca)!

We are also trying to put names to faces on our collection of class and field trip photos. For example, the first international field trips traveled to Spain in 1972 and 1973. Clint Tippett, who was on the 1972 trip, is trying to identify and contact the participants. If you went to Spain in 1972 or 1973 on one of these trips, then please contact Clint at clintontippett88@gmail.com. Please forward this request to others from these two trips with whom you may have maintained correspondence. You are welcome to visit the department and look through our photo archive!
STUDENT FIELD EXPERIENCES
France, Nova Scotia, Nunavut and San Salvador

Students from Carleton University and the Goethe University of Frankfurt/Germany participated in a field trip to the Vocontian Basin in southern France and to Nova Scotia for an international exchange. Both trips were led by Professor Claudia Schröder-Adams and her collaborator Professor Jens Herrle (Goethe University).

Braden Gregory, Scott Hutchinson and Nawaf Nasser, students of Professor Patterson and Adjunct Professor Jennifer Galloway attended a two-week traditional On-the-Land camp in a remote area near Cambridge Bay, Nunavut in August 2017. The students interacted with elders to better understand Inuit Qaujimajatuqangit (Inuit Traditional Knowledge/Technology) and how application of these cultural insights may enhance the western-based study of climate and environmental change in Canada’s North.

Ancient ocean floor covered with ammonites, Vocontian Basin, Southern France.

Qaujimajatuqangit On the Land Camp
In February of 2018, field school will travel to San Salvador Island with *Professors Tim Patterson* and André Desrocher (U of O). Students will hike, snorkel and scuba dive to study the fossils and sedimentary features associated with modern and fossil reef environments, carry out glacial-interglacial sea level reconstructions and determine ecological responses to sea level change.

**OUTREACH IN THE COMMUNITY – Teacher Education; Geoheritage Day; Summer Earth Sciences and Sports Camps for Children, and more....**

*Thanks to Ms. Beth Halfkenny and her team of student and graduate student volunteers!*

School Outreach and Teacher Education. During the 2016/17 school year we engaged over 500 students and supported local teachers in offering grades 4, 9, 11 and 12 classroom activities in Earth Materials, and Earth and Space Science units. We continue to provide ongoing support of the local home school associations. Beth participated in the Mining Matters PDAC Convention teacher education programs for 50 teachers and educators.

**Summer 2017 - Earth Sciences and Sports Camps.** Two hundred future scientists joined us last summer for fun and discovery-based investigations into rocks and minerals, dinosaurs, earthquakes and volcanoes. The camps for 8 to 12 year olds were offered in collaboration with the Athletics Department. We ended each week with a field trip to the Hog’s Back Falls where the campers could explore rocks in their natural habitat. We are told this was the most successful and popular summer camp and plan to continue this initiative.

Community Outreach. We engaged with the arts community through support of the Atayana Artists Research group, provided volunteers and materials for a Kids Mineral Exploration table at the local Gem and Mineral Show, and helped host the annual Geoheritage Day in the Ottawa Gatineau area.

**FUND RAISING TO SUPPORT STUDENT RESEARCH – Earth Sciences Undergraduate Honours Project Fund**

Every year we have a cadre of bright Honours students engaged in exciting research projects. We are raising money to set up a foundation to support direct costs of research, in perpetuity, for Earth Sciences Undergraduate Honours Student projects in the field and laboratory.
Gifts to the Earth Sciences Honours Project Fund will help fourth-year honours students gain advanced research experience. This includes field and/or lab work on such topics as: Arctic research; fossils and implications for evolution or paleogeography; resource geology; crystal growth, metamorphism and mountain building; volcanic rocks as geochemical tracers of Earth’s history; Early Earth and planetary geology; basin analysis; sea level changes; climatic and catastrophic volcanic events; natural vs. human contamination near mine sites; earthquake science, natural hazards and geodisasters; environmental studies; imaging and analysis of materials; or contaminant hydrogeology.

**Fund raising approach.** Our target is to set up a large foundation. Every year the interest generated would be paid out to support direct costs of research for Honours Student projects.

- **Future Funder.** From November 20th to December 31st, a new phase of our web-based Future Funder is available online, with a goal of $9,990. So far we have raised $30,000 in this way. Click on this link [here](http://futurefunder.carleton.ca/) or on the department website [here](www.earthsci.carleton.ca). Donations made via the web link on the morning of November 28th, Giving Tuesday, will be triple matched.
- **Individual donations.** We are reaching out to prospective donors capable of making large donations to this fund. Please contact Sharon Carr (SharonCarr@cunet.carleton.ca).
- **Matching Funding.** We have $100,000 in matching funding thanks to a generous estate donation to the Department of Earth Sciences. In addition, the university will match large donations by 100% during the 75th anniversary campaign, and the Alumni Association will match by 100%, any donations given to the Future Funder project on the morning of November 28th, Giving Tuesday.

Students will have enriched opportunities to carry out cutting-edge research during their capstone 4th year Honours research projects.

**A SPECIAL THANKS TO OUR DONORS & MENTORS - Our partnerships provide students with a great education and real-world experience**

Our endowments, the Collins, Cox and Jeletsky funds steadfastly support such annual projects as student participation in field schools, summer internships for students, and a gemology course. Our students are getting a great education and real-world experience because of tools from major donors: geoLOGIC systems’ donation of the geoSCOUT system for fourth-year students in petroleum geology, and Schlumberger Ltd. donation of their petroleum systems modelling software, PetroMod. We thank Dr. Sethu Raman for his generous donation in setting up the Sabita and Sethu Raman Graduate Scholarship. We thank our steadfast donors who are supporting funds for the department and the
Honors Project fund, and to those who are topping up existing scholarships and bursaries. Thank you to those participating in the Science mentorship program: Dr. Alan Galley formerly of the GSC, and Mr. Marc Legault of Agnico Eagle Mines Limited. Thanks to Dr. Mark O’Dea, PhD, P.Geo Chairman and Founder, Oxygen Capital for participating in the fall 2017 Great Grads: Good Deeds events.

RESEARCH EXCELLENCE & INNOVATION
Success Stories of our Researchers and Staff

Congratulations to Professor Claudia Schröder-Adams for receiving a Mercator Fellowship from the German Science Foundation for her Canadian/German collaboration on Arctic research. Claudia spent three months of this year at the University of Frankfurt where also her science documentary "Arctic Greenhouse" was premiered at the Annual Conference of the German Society for Polar Research.

Adjunct Professor Don Cummings and coauthors published their book, “The Tide Dominated Han River Delta, Korea.” He is currently spearheading the completion of the first Dispersal-Train Map of Canada, a 10-year collaborative research project that will provide exploration companies with a new, improved tool to find mineral resources in Canada.

Professor Tim Patterson and Adjunct Professor Jennifer Galloway have a project on risk assessment of mining in the central Northwest Territories and Nunavut. They have received $750,000 from Polar Knowledge Canada and ~4 million dollars of in-kind support to provide baseline geochemical, permafrost, ecological and climate information. The research, carried out in collaboration with federal and territorial government agencies, First Nations and Inuit partners, national and international academy, and industry, supports the research of 7 graduate students.

In the spring of 2017, Mr. Tim Mount, Sample Prep Lab Technician participated in an intensive 11-day hands-on workshop on Archaeological thin sections and the importance of provenance and technology in ceramic identification. The course was offered by Dr. Sean Patrick Quinn at University College London, London England and was attended by scientists from around the world.

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