SUMMER 2019

TO EARTH AND BEYOND

Alumni Newsletter

Western

EARTH SCIENCES

A MESSAGE FROM THE CHAIR

DR. PATRICIA CORCORAN

Welcome to the Summer 2019 Western Earth Sciences newsletter. The department continues to be a successful, dynamic place with continued research, outreach, laboratory and field activities. Our International Geoscience Field Experience to Ecuador took place in April-May, and our 2nd year (Introductory Field Mapping) and 3rd year (Advanced Field Mapping Techniques) field courses were taught from May 1-11. We have three more field courses taking place in the Fall: International Geoscience Field Experience to South Africa, Regional Field Geology (Nova Scotia) and Geophysical Field Techniques. During the last three years, we've trained 189 undergraduate students and numerous graduate students through field schools! The Earth Sciences museum committee continues to prepare for the Richard W. Hutchinson Geoscience Collaborative Suite grand opening, which will take place on September 30, 2019 (see Alumni Relations and Development Update). The department has also been busy preparing for our upcoming external graduate and undergraduate reviews. Many thanks to Associate Chairs Dazhi Jiang, Robert Shcherbakov, and Liz Webb, as well as Academic Program Coordinator Amy Wickham for preparing the very lengthy review documents. The external reviews provide us with an opportunity to closely examine our course offerings and to align them with the current needs of the industrial, government, academic, and not-for-profit sectors. As an example, we recently streamlined our modules to continue to meet the academic requirements for professional registration while making them more simple for students and counselors to follow.

Lastly, I'd like to wish all of you a geo-excellent rest of the summer. If you're like me and sift through the sand at the beach, explain the rocks to your hiking partners, and admire the same amazing fold every time you boat by it (see below), you're in the right line of work!






Field School Season!






ES 2250Y: Introduction to Field Techniques

We had another successful year at second year field camp, ES2250Y, this past May! Twenty-six students had the opportunity to stay in Whitefish Falls and experience the joy of geological mapping. This field course has a focus on sedimentary geology, but also touches on other aspects of geology, such as identifying different lithologies of the Sudbury Igneous Complex. For many students, this is one of the most memorable learning experiences throughout their undergraduate career, and the rocks of the Paleoproterozoic Huronian Supergroup never fail to leave a lasting impression! This year's group was very enthusiastic to be in the field and learn new skills. Although the course may be initially nerve-wracking, particularly for students who have not spent much time in the bush, any hesitations are quickly set aside and a passion for geology is sparked, which cannot be taught in the classroom. In addition to mapping, we had three day trips to Manitoulin Island and the Elliot Lake and Sudbury areas. On Manitoulin Island, Teaching Assistant's Jordan Siewnarine and Jacob Walker gave us wonderful overviews of the Paleozoic and Quaternary history of the area. In Elliot Lake, students learned about the history of the uranium mining industry and saw exceptional evidence of ancient glaciations, including dropstones. Unfortunately, our day trip to Sudbury was cold and wet, but the opportunity to see an impact structure and shattercones were good motivators for the students. The group also started a new tradition this year – a potluck dinner at camp! For me, it has been a special experience helping to introduce students to geological field work and seeing them put the concepts they learn in class into perspective. I have many great memories from my time as a student in ES2250Y and as a Teaching Assistant these past few years, and will look back fondly on all of my time spent north of Lake Huron!

- Carolyn Hill, Ph.D. Geology (now a Research Scientist at Surface Science Western)

ES 3350Y: Advanced Field Mapping Techniques

Earth Sciences 3350Y: Advanced Field Mapping Techniques ran successfully again this year. We started on a rainy day near London, which got cloudy on the way and eventually snowy as we approached the field site near Sudbury. We had reasonable weather for the rest of the field activities. As in the past, the field school began with 3 days of field excursions for students to learn the regional geology and techniques related to field observation, documentation, and mapping. The students were then divided into small mapping groups and were assigned an area to map for 5 days. Every student was required to write a field report to present their mapping results.

While the geology written in stone never changes, every year we have new surprises! This year's surprises were mostly in our favour. Recently excavated outcrops along highway 400 enabled us to see new spectacular structures, which allowed us to refine the Grenville deformation. The Beaver pond on route to the Grenville Front Zone is now drained, making the Grenville Front, south of Coniston, more accessible. The black bear family at the Grenville front, which was spotted only at a far distance in past years, became more active and adventurous this year. They greeted one of our groups a few meters away! All students completed their mapping safely and successfully and had a good time learning in the field.

- Dazhi Jiang, Professor ES 3350Y

GEOL 9600Y: International Field School

This year's International Geoscience Field Experience took place between April 23rd and May 7th in Ecuador. The group of students, instructors and industry participants traversed the mountainous country from the very north to the south, crossing over the Western and Eastern Cordillera and back. Mineral exploration and mining is still in its infancy in Ecuador and thus we facilitated Ecuador's first ever Responsible Mining Summit in Quito to bridge communication between new industry and local communities. Presenters at the Summit included the students, industry and academic representatives, and indigenous leaders. We had the opportunity to visit 4 mineral deposits in different regions of the country to learn about their unique geology, production plans and responsible mining practices. We also had the honour of being included in the opening ceremony of the new medical facility for the indigenous Shuar nation. Between visits to mineral deposits, we climbed to the refuge of the famous Cotopaxi Volcano, hiked down into the crater lake of Quilotoa Volcano, and stood in the clouds atop Chimborazo Volcano at 5100m elevation. We connected with geology students from the Universidad Central Del Ecuador who attended the Summit and joined us at some site visits and hikes. Our travel was halted multiple times by landslides blocking our way or by cross-bedding that couldn't be ignored. Every turn presented a new striking vista, enriching cultural experience or exciting llama sighting. This field experience was educational in so many aspects that complemented our geoscience studies. The only thing missing was a meal of Chonta worms.

- Meredith Fyfe, M.Sc. Geophysics Candidate

International Geoscience Field Experience
Kaapvaal Craton, South Africa
November, 2019


GEOLOGICAL OVERVIEW: The Kaapvaal craton in southern Africa has a protracted history involving development of a cratonic nucleus between ~3.6-3.1 Ga, accretion of composite terranes until ~2.7 Ga, followed by eruption of flood basalts at ~2.7 Ga and ~2.05 Ga. The variety of geological processes that occurred over a period of roughly 1.6 b.y. has resulted in the Kaapvaal craton being a global leader in gold, PGE, and diamond production. The Barberton greenstone belt is geologically significant as it contains some of the oldest gold deposits on Earth, is the type locality of komatiites, and is composed of bedded chert containing impact spherules, Mesoarchean barite, and some of Earth's oldest putative microfossils. The intracratonic Witwatersrand basin, which developed between 3.0 and 2.7 Ga, contains the largest known gold deposit on the planet, in addition to abundant uranium resources. Between ~2.6 and 2.2 Ga, thick sediments and minor volcanic debris were deposited, forming the Transvaal Supergroup. Sedimentary rocks in the lower part of the Supergroup consist of quartz arenite, chert and carbonate, with interbedded banded iron formation (BIF), whereas the upper portion contains mainly shale, sandstone, and Mn-rich ironstones. Locally the BIF horizons contain substantial hematite ore, with >60% iron content. Younger, ~2.06 Ga ultramafic to felsic volcanic rocks comprise the Bushveld Complex, a layered intrusion known for great abundances of chromite, and Earth's largest known accumulation of platinum group metals (PGM). At 2.023 Ma, a meteorite impacted the Kaapvaal Craton, and is represented by a crater 190 km in diameter; the largest on Earth. Additional evidence of the impact can be seen from shatter cones and pseudotachylitic breccia located approximately 120 km southwest of Johannesburg.

The field course includes planned visits to: a PGE mine (Bushveld Complex), gold mine (Barberton Greenstone Belt), diamond mine (Cullinan Diamond Mine), and a fluorite-apatite pipe; Vrederfort impact crater; **Komatiites, Jaspilite BIF, Bedded Chert, Giant Stromatolites**; **Witswatersrand strata**; **The Cradle of Humankind**


<u>Cost to sponsor a student: $3000</u>
For more information contact Dr. Patricia Corcoran (pcorcor@uwo.ca)

CONGRATULATIONS TO OUR SCHOLARSHIP & AWARD WINNERS!

GRADUATE

Alan D. Edgar Award in Petrology:
Juliana Casali

Arcangelo Rea Family Foundation Graduate Scholarship:
James Thayer
Jay Nigim

G. Gordon Suffel Fellowship:
Juliana Casali

Faculty of Science TA Award:
Joanna Holmgren

Geophysics Travel Scholarship:
Samantha Palmer
Joanna Holmgren
Hema Sharma
Tianqi Xie

Robert W. Hodder International Geoscience Field Experience Award
Dave Benn
Ian Arturo
Lindsay Blythe
Meredith Fyfe
Zohreh Ghorbani
Chunyi Hao
Jay Nigim

J. Malcolm Slack Earth Sciences Award:
Lindsay Blythe

Lumsden Scholarship in Science:
Stephanie Mabee

Lumsden Scholarship in Earth Science:
Karen Grey
Nikol Posnov
Carolyn Hill
Jordan Siewnarine
Chimira Andres

Robert W. Hodder Travel Bursaries:
Jay Nigim
Jahnavi Shah
David Benn
Lindsay Blythe
Renata Smoke
Meredith Fyfe

CONGRATULATIONS TO OUR SCHOLARSHIP & AWARD WINNERS!

UNDERGRADUATE

Aleksis Dreimanis Prize
Jolee Stewart

Lumsden Scholarship in Science
Melanie Li Kawaja

Dr. Harvey Hunter Memorial Award
Brittany Brasier

JP Bickell Mining Foundation Scholarship
Jolee Stewart
Patrick Merritt
Charlotte Alexander
Jasmine Nieva
Remy Klick
Benjamin Harris

Norman B. Keevil Award in Earth Sciences
Jolee Stewart

Brandon J. Papp Prize
Curtis Russell

Carodocian Prize in Geochemistry
Jessica Kowalski

Gordon Dixon Memorial Award
Sawyer Rowe

Canadian Society of Petroleum Geologists - Student Industry Award
Hanna Rzyszczak

Charles Southworth Memorial Award in Paleontology
Tayler Nichol

Roma Fence Group of Companies Scholarship in Mining and Mineral Exploration
Brittany Brasier

Congrats to our Graduates!

Undergraduate Students

Mohamed Attar
Jonathan Balogun
Alex Cachunjua
Cindy Corrales
Emma Holt-Witherspoon
Oliver Lestyan
Genevieve Malley
Tayler Nichol
Eric Olson
Max Sandering
Taylor Jennifer Tessier
Tyler Travis
Andrew Brown
Rayne Hettinga
Ahmed Kashif
Jordan Siewarnine
Yanan Zhang

Graduate Students

Geology

Ronan Drysdale, M.Sc.
Derek King, M.Sc.
Carolyn Hill, Ph.D.

Geophysics

Jacob Kukovica, M.Sc.

Alumni Relations & Development Update

It has been a very active time in the Alumni Relations and Development portfolio. We have been focusing our attentions on raising funds for all of the field schools and the Richard W. Hutchinson Geoscience Collaborative Suite.

Homecoming 2019 is just around the corner. If you are considering attending, come out to:

Faculty of Science Alumni Event with Rick McGhie

Saturday October 19, 2019 @ 11am-1pm, Grad Club, Middlesex College
$5 at the door – buffet lunch and complimentary soft drinks/coffee, cash bar

Richard W. Hutchinson Geoscience Collaborative Suite Grand Opening

Monday, September 30th, 2019
North Campus Building, Western University

3:30PM: Dr. Kim Tait, Curator of Mineralogy, Royal Ontario Museum and Adjunct Professor, Western University, will speak about relevance of mineral collections in the 21st century.

4:30PM: Grand Opening Ceremony. Brief remarks will be followed by an official ribbon cutting. Hors d'oeuvre's, soft drinks, juices will be served and a cash bar available.

5:30PM: Tours of the Suite will be available (in groups of 5-10 people) for anyone interested, and will be lead by our Geoscience Collections Curator, Dr. Alysha McNeil.

7:00PM: Dinner to celebrate the grand opening of the Suite and honour Dr. Hutchinson. Dinner tickets must be purchased in advance ($60 per person).
Location: Windermere Manor, Grand Hall

Please see your formal invitation for the RSVP and to purchase tickets for the dinner.

We are still in need of funds for the collaborative suite. If you wish to find out more about the needs, please do not hesitate to contact me directly.

We hope you consider joining us for these events!

Western Science

Sincerely, Paula Luchak

APGO Ring Ceremony

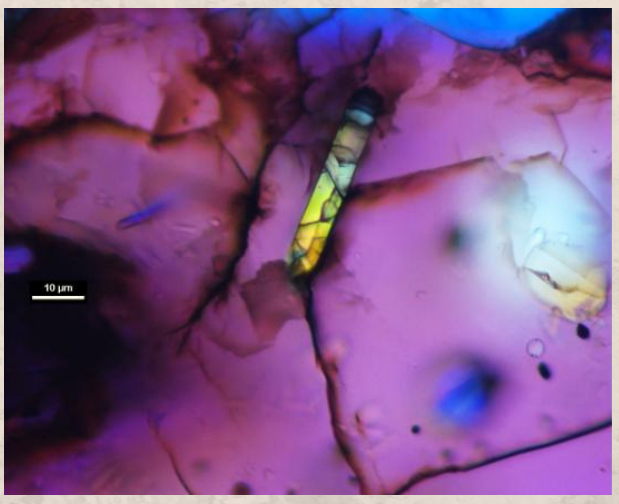
In the News

"Giant beavers didn't eat wood and that's likely why they didn't survive the last Ice Age"

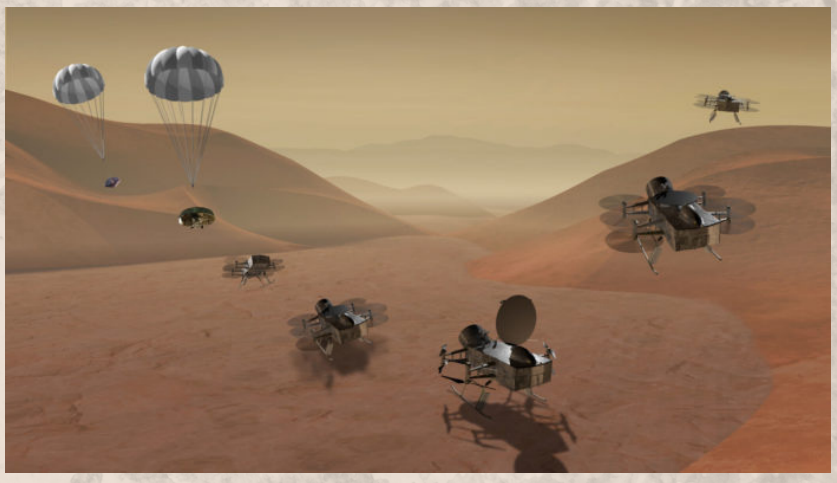
"Tessa Plint, a former Western graduate student currently continuing her studies at Heriot-Watt University (UK), and Fred Longstaffe, Western's Canada Research Chair in Stable Isotope Science, found that giant beavers (Castoroides) ate submerged aquatic plants. Plint and Longstaffe used stable isotopes (chemical tracers) of fossil bones and teeth to determine the diet of giant beavers."

"Research resets timeline for life on Mars"

"Western researchers, leading an international team, have shown that the first 'real chance' of Mars developing life started early, 4.48 billion years ago, when giant, life-inhibiting meteorites stopped striking the Red Planet. The findings not only clarify possibilities for Earth's nearest neighbour, but may reset the timeline for life on our home planet, as well."



"Dragonfly will soar across Saturn Moon"



"NASA has thrown its financial support behind project Dragonfly– a drone mission co-led by Western planetary geologist Catherine Neish – to explore Saturn's massive moon Titan. This week, NASA announced Dragonfly as its pick to examine Titan's geology, chemistry and potential for life."