Dear Alumni and Friends,

It has been a wonderful year – capped off by the recent news that the department has been ranked 2nd in Canada by MacLean’s magazine in their 2016 College and University Programs Guide. This is a superb accolade for a department which has flourished due to the strong financial support of alumni, and the excellence and hard work of faculty, staff and students. In the following pages, you will see news of several wonderful awards won by department members, discussion of some of our research and laboratory capabilities, and some alumni news. Please continue to send us news of your achievements and accolades.

Our field program continues to feature as the highlight of our students’ education. Undergraduate students may participate in as many as 4 or 5 one to two week field schools, as well as several field trips in the local area. Graduate students may join one or more multi-thematic field trips to Canada, the US or Europe. The costs of travel and accommodation are funded solely by the field trip fees paid by the students, subsidized by alumni donations through the Endowed Field Education Fund. The newest addition to the suite of field funds is in memory of Paddon Thompson, a Sci’10. If you are considering a donation to the Field Education Fund, please consider doing so through this fund - it would mean a great deal to Paddon’s family who provided a lead gift to initiate the fund. These funds have been an essential part of our ability to continue to offer transformative field courses to our students.

The state of the teaching microscopes has continued to worsen, and is our highest need at this time. We have purchased one or two microscopes, as Trust Funds have permitted, but really must replace the full suite of microscopes. At this point, the remaining microscopes have been kept functional by cannibalizing parts from the stock of irreparable microscopes. The students are working in groups of 3 to 4 in order to share a single microscope for their laboratory exercises. We must upgrade our microscope based labs to support the continued quality of our undergraduate education. If you wish to support this initiative, we welcome donations to our Geology Trust Fund. Please be sure to let us know that your donation should be directed to the microscope fund.

Continuing on our strategic plan of refurbishing undergraduate teaching laboratories, this summer the first year geological science laboratory on 2nd floor Miller Hall was cleared and rebuilt from the floor up. The suite of teaching samples was reviewed and improved, the tables and chairs were upgraded and the classroom was configured to permit more students to join a laboratory section. The number of students permitted to take the introductory science laboratory classes can now rise to meet demand – this year over 250 students will take this course. Funded by the Donald Burns and Louise Berlin Fund for Undergraduate Education in GSGE, this room joins the Price Lab in the group of modernized labs in the department. Next the general teaching labs on the ground floor of Miller Hall will be refitted, to support teaching of the 700+ first year Engineering Earth Systems students and the 200+ first year students taking History of Life. Focus on our first year teaching spaces, collections and course content is essential so that we maximize first year students’ exposure to high quality teaching in Geology – these courses are the main reason students elect to join our upper year programs in Geological Sciences and Geological Engineering. If you would like to contribute to refurbishment of teaching laboratory space, please direct your donation to the Geology Trust fund.

The faculty, staff and students join me in thanking you for your interest in and support of the Department.

With all best wishes.
DEPARTMENT NEWS
Keep up to date with the department by visiting the departmental website queensu.ca/geol

Queen’s Geology wins Canada Region IBA competition

Congratulations to Queen’s Geology graduates, Steve Diederichs, Judith Elliott, Nick Ettinger, Ben Ewasko, and Liam Wolfe on winning the Canada Region competition of the AAPG’s Imperial Barrel Award. The team also competed at the international competition in Denver, Colorado May 29-31, 2015 along with 130 other teams from around the world.

Since the competition, Judith Elliott is continuing graduate studies with the department under the supervision of Drs. Braun and Fotopoulos. Nick Ettinger is doing graduate studies at the University of Texas at Austin, studying Lower Jurassic carbonates of Slovenia and Montenegro. Steve Diederichs is currently working for Schlumberger in Ohio as a field engineer for their well production services department. Liam Wolfe spent 3 months travelling Southeast Asia and has just started working with Cardinal Energy as a production engineer in Calgary. Ben Ewasko is currently working and pursuing application to law school. When asked about the experience, members of the team had this to say:

Nick: “The Imperial Barrel Award was a fantastic experience for me as it was a very robust introduction to the exploration and new ventures side of the oil and gas industry. It also rendered internship offers and some important contacts for me.”

Steve: “The IBA was the culmination of all of my favorite classes throughout my four years at Queen’s…and showed me what a realistic application of my knowledge might look like in a real world job as an exploration geologist. It was the most difficult but also the most rewarding thing that I was a part of at Queen’s.”

Liam: “Competing and representing Queen’s for the Imperial Barrel Award has been an invaluable experience. I was not only able to gain practical and technical skills, but also learned important soft skills such as, time management and working as a team … The work that is required of the competitors parallels the work of an exploration geologist in industry, and for that I believe that recruiters and companies alike value that experience in any candidates they are considering.”

Ben: “I believe the competition’s focus on teamwork driven preparatory work, combined with polished and persuasive oral presentation will help to differentiate me in my application.”

Judith: “The highlight…was going out to Calgary and Denver, and meeting all of the other teams from across Canada and across the world. Their cultures and perspectives were all so different and I would never have been able to connect and have intellectual conversations with them, had we not participated...”

Proposed Earth and Energy Resources Leadership (EERL) Professional Master’s Program

Program Update from Executive Director, Ione Taylor

The EERL program design incorporates a cross-faculty, interdisciplinary approach that will focus on enhancing integration across multiple fields within earth resource management, including geosciences, engineering, and business, allowing students to develop a complete understanding of the resource cycle. The intended candidate pool consists of early to mid-career professionals working in a range of positions within the resource field. Pursuit of this degree will allow candidates to examine the opportunities and challenges involved in sustainable energy, mineral, and related water resources management, and will help them develop the leadership, innovation, and entrepreneurial skills required to more effectively advance these enterprises. The EERL program has been designed based on extensive interfacing between industry and academia over a period of many months. This includes multiple face-to-face and teleconference meetings with people employed in a range of positions, from recent hires to senior executives, in the minerals and energy sectors. The results of an extensive market survey determined preferences of the two intended “customers” for the program – those who are potential participants, as well as those who are more senior and likely to support, manage, supervise, or hire a graduate of the program. The courses in the Program address top priority skill development needs for current early-career professionals as indicated by respondents to this survey and hiring managers in the energy and minerals sectors. On the academic side, a series of 4 Curriculum Development Workshops under the guidance and facilitation of an expert from the Queen’s Center for Teaching and Learning, were conducted with Faculty, 4th year and grad students, and some alumni to consider the market data and flesh out the learning objectives by incorporating discipline and subject matter expertise. The proposed program has begun moving through the Queen’s University Quality Assurance Process (QUQAPs), receiving the first formal approval October 2nd and continuing through the process to the final step in February. A launch date of September 2016 is anticipated.
**FACULTY UPDATES**

**Dr. Mark Diederichs** Thomas Roy Award - Canadian Geotechnical Society

![Image](Image)

Dr. Mark Diederichs who was awarded the Thomas Roy Award in September at the CGS conference, GéoQuébec 2015. The award is in recognition of Dr. Diederichs’ research, teaching and service to the academic community both in Canada and internationally and for outstanding contribution to engineering geology. Dr. Diederichs has also been awarded a Queen’s Research Excellence Award for 2015 and a Fellowship in the Engineering Institute of Canada.

**Dr. David Gauthier** AG Stermac Award - Canadian Geotechnical Society

![Image](Image)

The AG Stermac Award was presented to Dr. Gauthier at the CGS conference, GéoQuébec 2015 for successfully hosting the Geohazards 6 conference at Queen’s last spring, along with co-organizers Dr. Jean Hutchinson and Dr. Andy Take (Civil Engineering). The award recognizes outstanding service over a period of time to the CGS by a member of the organization.

**Dr. Noel James** Coauthor of Book “Origin of Carbonate Sedimentary Rocks”

![Image](Image)

Dr. Noel James is co-author with Brian Jones (University of Alberta) of a new textbook entitled “Origin of Carbonate Sedimentary Rocks” published by Wiley in August 2015. The book provides an overview of the origin and preservation of carbonate sedimentary rocks and is designed as a teaching tool for upper level undergraduate classes, a fundamental reference for graduate and research students, and a scholarly source of information for practicing professionals whose expertise lies outside this specialty.

**Dr. Dan Layton-Matthews** Distinguished Lecturer 2015-16 - Association of Applied Geochemists

![Image](Image)

Congratulations to Dr. Dan Layton-Matthews who has been announced as the Association of Applied Geochemists (AAG) Distinguished Lecturer for 2015-16. Dr. Layton-Matthews will be presenting a series of lectures in North America, Australia, Europe and Africa over the next two-years. For further information about this lecture series, please see: www.appliedgeochemists.org/index.php/aag-distinguished-lecture

**Queen’s Geology ranks second in Canada**

Macleans Magazine recently released its university rankings for 2015, including a ranking of Geology Universities. The magazine named Queen’s the second best Geology Department in Canada.

**Queen’s University will not divest**

The Investment Committee of the Board of Trustees has decided not to divest the university’s pooled endowment fund and investment funds from fossil fuels. The Investment Committee made the decision after reviewing and adopting the report of the Principal’s Advisory Committee on Divestment of Fossil Fuels. More information can be found at: www.queensu.ca/gazette/stories/investment-committee-makes-decision-divestment

**FUR CUP 2015**

Geology defeated Mining yet again and took home the Fur Cup for another year!

**Linda Brown**, Financial Assistant, has now retired from the department after 25 years of service. A celebration was held in her honor on Sept. 10, 2015.

**Macleans Magazine** recently released its university rankings for 2015, including a ranking of Geology Universities. The magazine named Queen’s the second best Geology Department in Canada.

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In 1945 Vannevar Bush, head of the Office of Scientific Research and Development for the US during World War II, published an article called As We May Think in the Atlantic Monthly. It discussed the idea of using microfilm to provide a way for scientists to read, annotate, and share scientific results. His argument was simply that there was too much to read and a system of annotation and links would allow more efficiency and an entirely new form of communication - trails through the scientific literature. It was interesting, thought provoking even, but ultimately sat ‘out there’ as an idea, unrealized. Until the early 1990’s, when Tim Berners-Lee took the core idea - hypertext - and ran with it, designing and implementing the World Wide Web. I now read the scientific literature in a Web browser, and also the news, and also...

Although ‘using the Web’ isn’t really a core part of the job description of a geoscientist, it is something we all do. It has changed the way we work. This raises the question, for me at least, of what other ideas and technologies are out there that might change the way we work. Instead of focusing on a dormant idea, we’ll let those continue to slumber and look at the later part of the innovation cycle, what happens to a field when a development in another field comes barreling along.

We use software a fair amount in Geological Engineering, and not just GIS and core logging tools and the Web. We use simulation a fair amount. Carefully crafted custom software tools are used to look at stress distribution around excavations, to understand the flow of fluids, and to model and design mitigation strategies for rockfalls, just to pick a few choice areas. There are many tools in each of these areas. We’ll focus on rockfalls just a bit. We have software tools for simulating rockfalls. They work reasonably well. But what if there was a different way to approach this (cue the sound of something coming barreling along...).

Computer games are ubiquitous on all manner of computing devices from desktop machines down to watches. There are many categories of games, but we’ll discuss one type, those that set some kind of action (usually violent) in a 3d space. These games are worlds hosted in engines. At least some of the engines are reusable; scripting links a new world to the existing engine to get the behavior that the game needs so the user can enjoy the dynamic situations within the game story. To be reusable, engines need to have generic capability to depict the world (sort of like a fancier Google Earth) and also to meaningfully interact with it. That interaction requires that the engine has physics capabilities. Since the game engines are big expensive and carefully crafted pieces of software engineering, perhaps these physics capabilities are fairly good. Since humans are very good at recognizing incorrect behavior, perhaps they are very good. Perhaps in the future we may be using tools built on top of game engines to do engineering.

We decided to test whether this was a reasonable idea. Using Unity3d, a freely available game engine, and data from a current research project set in the White Canyon area of British Columbia, we built a rockfall simulator. Using a model of the area built using photogrammetry and LiDAR, using the Unity3d engine, and a fair amount of custom scripting we got interesting results very quickly. So far, at least, it works well, giving comparable results to stand-alone tools used in industry. We’re continuing to work to validate the results and also to re-imagine what the capabilities of the tool can be.

Why is this interesting? Because the physics engine in Unity3d has been validated by many, many users. Because there is no shortage of people who know how to customize the Unity3d environment to do interesting things. Because a game engine can also host all kinds of other simulation, allowing multicomponent simulation to be a reality. For example, we can run virtual trains and virtual hikers and virtual whatever through the White Canyon and study consequences.

Is this application a big deal? Maybe, maybe not. Is the availability of robust physics-capable engines on a huge variety of computing devices a big deal? Perhaps. Maybe, just maybe, the next tool you use in your job will have a heritage that comes from gaming. Maybe your kids will look over your shoulder and ask why you get paid to play a game. Maybe the trusty hammer, brunton, and notebook will be joined by the trusty generic simulation tool that has its origins in a video game.
What Our Students Say About Field Studies

“I understand that Queen’s Geology is unique in the amount of field work they expose their students to and I couldn’t imagine what my experience would have been like without it. Hands on learning, the real-world knowledge, and the sense of community created are the most important aspects of field work to me.”

– Ellen Glover Sci’15

“At Queen’s, we are so fortunate to have world-class professors who dedicate so much time to teaching engineering students about future careers. Coupling this academic influence with field experience ultimately creates a well-rounded program that I have felt very privileged to be a part of! Thank you to all the donors who have contributed to the Field Education Fund!”

– Emily Rowe Sci’15 and current graduate student

“The really cool thing about going to Queen’s is the university spirit. We met at least 3 young Queen’s alumni on this trip; they were contractors, mine staff and very friendly and excited to talk to us. I hope I can be in their position someday to spread and witness the Queen’s pride.”

– Matthew Steel Sci’15

“To whomever is reading this, I express the sincerest form of gratitude as a return on your field education investment. In unrelenting honesty, your hard-earned dollars changed my life in a way that I could not foresee. Thank you for giving me the opportunity to visit Frood-Stobie, Kidd Creek and Macassa underground; that is an opportunity reserved for the fortunate few.”

– Michael D’Souza Sci’15 and current graduate student

Thank you to all donors who have contributed to the Field Education Fund!”

– Emily Rowe Sci’15 and current graduate student

Our facilities include: ESEM Lab, ICPMS and ICPOES, Stable Isotope Lab, Clean Lab, PIMA Lab, SelFrag Lab, TOFMS Lab, Electron Microprobe Lab. A full listing of our analytical services including rates is available on our website: www.queensu.ca/geol/qfir

PADDON THOMPSON MEMORIAL GEOLOGICAL FIELD STUDIES FUND

Paddon Thompson graduated from Geological Engineering at Queen’s in 2010. He possessed a permanent smile, a wonderful sense of humour and a positive outlook on life. A beloved classmate, Paddon is also remembered fondly by Geology staff and faculty. “He was the heart and soul of his class,” says Dr. Jean Hutchinson, Department Head. Sadly, Paddon passed away suddenly on February 7, 2012 from complications of the treatment for his cancer. The Paddon Thompson Memorial Geological Field Studies Fund was established in October 2012 with an initial pledge by his family. Funds in memory of Paddon will be used to support Field Studies in the department, which Paddon identified as a passion. Please honor the memory of Paddon today with a gift to Field Studies in his name. You can make your gift online at: www.givetoqueens.ca/PTHompson

HIGH TECH ANALYTICAL SERVICES - QFIR

In GSGE, we have a lot of state of the art research equipment available for use by our students, but also for analytical services. The department is home to the Queen’s Facility for Isotope Research (QFIR), a research centre with emphasis on providing novel data, protocols, and results not normally available in commercial labs. Our facilities include: ESEM Lab, ICPMS and ICPOES, Stable Isotope Lab, Clean Lab, PIMA Lab, SelFrag Lab, TOFMS Lab, Electron Microprobe Lab. A full listing of our analytical services including rates is available on our website: www.queensu.ca/geol/qfir
Kirsten Pugh ’02
Kirsten Pugh, a Well Integrity Engineer at Cenovus Energy works hard to make sure people and the environment are safe. She recalls playing Tuff Schists hockey as one of her fondest memories at Queen’s. To read more about Kirsten, check out: www.queensu.ca/geology/alumnispotlight

CALL FOR SUPPORT - Microscopes

Remember the microscopes you used in labs as a student in the department? Well, our students today are using those exact same microscopes! To ensure that our students have a solid foundational education, for credibility as a Geology department and to be brought into the 21st century, we need functioning microscopes, and we are asking for your help to make that happen. Our goal is to purchase one set of binocular and petrographic stereoscopes at $20,000 each year. Support the Geology Trust Fund and help students gain a richer learning experience by using current technology.

You can make your gift online at: www.givetoqueens.ca/Geological

ALUMNI SPOTLIGHT

Kirsten Pugh ’02

ALUMNI UPDATES

Michael J Bruni, QC, Sc’74
On March 15, 2015, Michael presented his youngest son, Cassidy, Sc’15 with his iron ring at Grant Hall.

Andrew Feustel, PhD ’95
Andrew received the “Alumni Achievement Award” at the Queen’s University Alumni Association Awards Gala on March 28.

Matthew Lato Sc’06, PhD ’10
Matthew received the “One to Watch Award” at the Queen’s University Alumni Association Awards Gala on March 28.

Katie Anne MacInnis Sc’04
Katie and her husband Mark welcomed a new baby girl, Louisa Mary Dzikowski on September 22, 2015.

Derek McBride Sc’68, MSc’72
Derek is coauthor of a recently published book, “The Metallogeny of Lode Gold Deposits: A Syngenetic Perspective”.

William Pearson MSc’77, PhD’80
Bill received the 2015 Distinguished Service Award from the Prospectors and Developers Association of Canada.

Susan Riddell Rose Sc’86
Susan has been elected as a member of the Board of Trustees for Queen’s University, effective June 1, 2015.

Kathy Scales Sc’78
Kathy was awarded an honorary membership by the Canadian Society of Petroleum Geologists.

Doug VanDine Sc’72, MSc’75 (Civil)
Alumnus and former professor Doug VanDine has been awarded the 2015 Canadian Professional Geoscientist Award. Doug is also serving as President of the Canadian Geotechnical Society for 2015-16.

Calgary Mentoring Event

In 2014 and 2015, the Geology Council hosted a mentoring event in Calgary during the GeoConvention and will do so again in March 2016. This event is a great way to connect with soon to be and recent graduates of the department, as well as to catch up with classmates and make new acquaintances. Due to the nature of the job market, the advice and assistance of Queen’s alumni is invaluable to our students. We encourage all who are able to attend this event, to do so. Details will become available closer to the date (March 2016). Visit: www.geoconvention.com

Sandra McBride
“Since retiring in December, I have finally been able to take trips to warmer climates during the winter - this year I was in Jamaica in January and Costa Rica in February and enjoyed snorkeling at both locations. For next year, I will be heading to Mexico and then later to Florence. I have once again become a grandmother and have a beautiful 3-month old granddaughter to play with and indulge (and babysit, of course!).”

Leigh Smith
2015 marks 50 years with the department for Dr. Leigh Smith. Dr. Smith’s first day with the department was September 1, 1965. Dr. Smith taught carbonate sedimentology and although he stopped lecturing in 2003, he remains active in the department.
Thank you to everyone who came out to these events. Special thanks to Andy and Krystyna Williamson for hosting the Calgary 13th Annual Reunion, and to Roger and Lorna Smith for organizing and providing the food at the Geoconvention Reunion/Mentoring Event. We look forward to seeing everybody in 2016!

UPCOMING REUNIONS

- **January 26, 2016**  Vancouver at Round-Up – Teck Headframe
- **March 8, 2016**  Toronto at PDAC – Metro Toronto Convention Centre

**GAC MAC 2017**
Queen’s will be hosting the Geological Association of Canada annual general meeting in 2017, which will mark the 200th anniversary for the Geological Survey of Canada.

**2015 TAC Workshop, Annual Awards Banquet and AGM**
Queen’s hosted the Tunneling Association of Canada’s 2015 workshop, awards banquet and annual general meeting October 5-6 2015.


For more information about alumni events, please contact: geolalum@queensu.ca
To receive information via email about upcoming departmental alumni events, or to receive the departmental newsletter, please ensure your personal information on file is current. You can update your contact information at: adv.queensu.ca/biographicupdate/

CONNECT WITH THE DEPARTMENT

Geology Alumni Queen's University
Queen's GEO Alumni

We want to hear from you!
If you have a good news story to share for the departmental website or for an upcoming newsletter, please contact geolalum@queensu.ca