

EARTH AND ENVIRONMENTAL SCIENCES



For Faculty, Staff, Students, Alumni, and Friends of Dalhousie Earth and Environmental Sciences

Greetings from the Chair

It is a great pleasure to provide you a report on Earth and Environmental Sciences activities for 2021-22. This is the third year of the new department, merged from the two programs from which the name derives, and I can attest, things are going well, despite the challenges of the pandemic. Since we did not have a newsletter in 2020-21, my update will be for the past two years. A major challenge in 2020-21 was the transition to the on-line environment. Faculty worked tirelessly in the months leading up to the Fall 2020 term with a focus on bringing the outdoor field experience into the virtual world. This included spectacular drone footage of Nova Scotia landscapes (thanks Mike Young!), video recording of lectures in the field, and the collection of materials to be mailed to our students. We sincerely hope that we will not have to do that again, but on the bright side, the department was able to generate an archive of on-line material that will augment, and enrich, the in-person learning experience into the future.

Although our in-person events had to be somewhat curtailed since 2019, the department has still been striving to promote activities that involve our alumni. In the Fall of 2020, we had our first Earth and Environmental Sciences Alumni-

Student field trip lead by Dr. Mike Parsons (GSC-Atlantic; B.Sc. '94) looking at the environmental impact of artisanal gold mining in Nova Scotia. In May of 2022, the department hosted a well-attended Alumni-Student Reception associated with the GAC-MAC Annual Meeting. It was great to catch up with our graduates at both events. We are seeking to further enhance our alumni engagement, so if you are interested in helping and have ideas for future alumni events, please let me know. The department welcomed Dr. Kelvin Fong who joined the EES faculty in January of 2022 as the holder of the Elizabeth May Chair in Sustainability and Environment. Kelvin completed his PhD at the T.H. Chan School of Public Health at Harvard. The chair was vacated by Dr. Daniel Rainham who has now taken up an appointment in the School of Health and Human Performance at Dalhousie, and we are grateful for Daniel's service to the Environmental Science program for many years.

This past year was also marked by the passing of two of our EES colleagues. First, Professor Emeritus and former department chair Dave Scott in December of 2021 and second, University Teaching Fellow Anne Marie Ryan in January of 2022. They are missed greatly, and more details on their lives are provided in separate sections of the newsletter.

I finished my five-year term as chair in 2020, and am grateful to Professor Djordje Grujic for taking the lead as acting chair in 2021 while I was on sabbatical. I have agreed to be chair for another three years to oversee the transformation of space, facilities and staffing of the new department.

Finally, I'd like to thank Dr. Richard Cox and the department outreach committee for another outstanding job on the Newsletter. To find out more about departmental activities, visit our website: <https://www.dal.ca/faculty/science/earth-environmental-sciences.html>, or check out our Twitter, Facebook and Instagram feeds. Comments and feedback are always welcome, and I encourage you to contact me personally.

Sincerely,

James Brennan, Killam Professor and Department Chair.



James (far left) with colleagues at the departmental retreat which was held at Camp Geddies on May 27th and 28th.

Department News

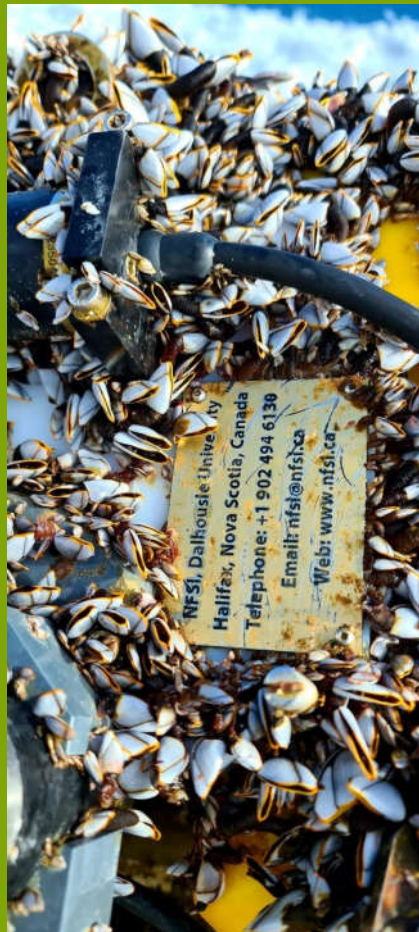
A Warm Welcome Back to Campus!

The Department of Earth and Environmental Sciences was front and center as we helped greet students back on campus at the Faculty of Science Welcome Days held between September 7 and September 10. And warm it was, with temperatures as high as 30 °C on several of the days. The cold drinks arranged by the FoS were much appreciated. The Dept had a booth where we were delighted to meet with and talk to students at all levels, and in a wide range of programs, many of whom were on campus for the first time. The undergraduate societies (EPS and Dawson) were also able to promote their events and garner a lot of interest for their activities. A big thanks to Catherine Brenan, Emma Taniguchi (pictured below), Elena Milito and Madison Mathews for their help.



Media, Events and Research News

The first 12 broadband ocean bottom seismometers (BOBS) received by the National Facility for Seismic Imaging (NFSI) were deployed for testing in November 2021 across the Laurentian Fan. The goal of the project, run by Prof. Mladen Nedimovic, is to investigate the source of the November 1929 Grand Banks earthquake, the most devastating earthquake in Canadian recorded history. The pictures show one of the three "fugitive" BOBS that surfaced unexpectedly just a few weeks after the deployment and then started drifting toward Europe carried by the Gulf Stream and winds. Once on the sea surface, these BOBS are tracked using a GPS beacon. This made it possible to get in touch with fishermen on the Azores and have them collect it in May 2022, when it was within reach. Dr. Graeme Cairns (NFSI Manager) skillfully coordinated the operation using Google Translate to communicate with the fishermen in Portuguese. The pictures show what six month at sea surface does to BOBS instrument. For more information on the NFSI adventures please subscribe to NFSI monthly updates at <https://www.nfsi.ca/outreach/mailling> by providing your name and email address.



Another geophysics project, part of the research of Dr. Miao Zhang, involved installing a seismic network across Nova Scotia (top image below). The work was carried out in the winter of 2021. Using an array of nodal seismometers (lower image below). The results of the study will be published soon and you can follow Dr. Zhang's research through the Dept's website.



A new teaching lab and new geochemistry preparation facility are currently being completed in rooms 2020A and 2030. The teaching lab is scheduled to be ready for this Fall and the geochemistry preparation lab will be ready to support new lab-based courses in the Fall of 2023. The images (bottom right) show the current status of both rooms with a new fume hood and cabinets to be installed in the preparation lab (left) and a full suite of cabinets, desks and state-of-the-art AV equipment to be finished in the main teaching space (right).

The Sterling Hydrology and Climate Change Research Group has been studying the effects of chronic acidification on Nova Scotia's forests and rivers since 2013. They have been working with the Nova Scotia Salmon Association and the Nova Scotia Department of Natural Resources and Renewables, to find solutions to help both fish populations and forests recover. The most effective solution is to return the missing alkalinity and nutrients back to the forest soils, lakes and rivers which involves liming the areas (image below). The group has been working to identify areas to be treated



the Nova Scotia Forestry in Transition Trust to help improve the health of Nova Scotia's forest soils, teaming up also with



first, the best method to use, and how to monitor the effectiveness of the results in partnership with the company Eosense. The group was recently awarded a grant from

the new Dalhousie Centre for Sustainable Soil Management, and the Dalhousie Institute for Comparative Genomics, with the support of Genome Atlantic, Follow the developments of all of Dr. Sterling's research at:

<https://sterlinghydrologyresearchgroup.com/>



Watch for updates and the final images of these exciting new facilities on the Dept website.

It has also been a busy year for the CRISDAL lab under the directorship of Dr. John Gosse. This included field-based studies in Newfoundland with Dr. Art Dyke, recently honored by the Royal Society of Canada (below left with honors students Sef Everest), and where Maureen Matthew was finally able to collect samples for her Ph.D. research after several delays, in the Gros Morne National Park area.



The CRISDal Lab-designed and built ultra-high vacuum ^{14}C extraction and purification system (below left) is close to running samples despite technical set-backs and even two floods! Jim Wilson, Aeon Labs, and PhD student Cody Paige worked with John for two weeks around the clock. Cody presented the results of the heating experiments at the 2021 AMS-15 conference in Sydney, Australia in November. The induction furnace is a bit of a major advancement in the way $^{14}\text{CO}_2$ can be efficiently extracted from quartz, and Cody's system design is now close to complete. Lots of tests remain to be done, but this was the major hurdle. As a side bar, Cody was also shortlisted as one of the top 150 of 1500 applicants for the next astronauts for ESA. We will bring you more news about her progress on the dept's website.



The CRISDal team was also joined by Dr. Gerald Rabb who will be doing research on samples from the Drill Core Storage facility in Switzerland to examine the cosmogenic exposure ages from samples hundreds of meters below the Swiss Alps. Gerald has also been busy suggesting ways to improve safety for the lab, and creating new standard operating procedure files, a benefit of idea exchanges with an international scientist! Alexi Imperial also joined the group and will be assisting in several aspects including running the ICP-OES instrument. This is just a sampling of the group's extensive work and much more can be found on their new website which should be available soon and accessed through the dept's own website.

Other News

As well as beginning the year with our welcome booth, the department participated in both Virtual Open House events in November 2021 and February 2022. The booths were staffed by Drs. Richard Cox and Amy Mui and we also had lots of help from students. We had around 30 visitors to our virtual booths and a number of live calls as well.

In May, we hosted a booth at the GACMAC Conference held in the new Nova Center in Halifax (right). This attracted a lot of interest and we had a free draw for swag bags and number of contest and an alumni event help at the Gahan House and we plan to have our booth at more conferences and host more Dal Alumni events in the next year.



Student Award Winners in 2021 and 2022

Congratulations to EES' **Kathleen Clark**, the 2022 *Volcanology and Igneous Petrology (VIP) Gelinas Medal* for the best BSc thesis. The selection committee were very impressed by Kathleen's work and exceptional research. The medal was awarded on May 26 at the GAC-VIP AGM.

Congratulations to *Science Atlantic Environment Conference 2022* participants and award recipients, including EES' own **Ashlynn Fleming**, Science Atlantic Undergraduate Research Award First Place (Examining the relationship between marginalization and change in Toronto's urban forest between 2008 and 2018) and **Camryn Gallagher**, Science Atlantic Undergraduate Research Award Second Place (Evaluating the historic change in consumption of high-impact animal products in Canada).

<https://scienceatlantic.ca/divisions/environment/winners/?fbclid=IwAR1Q9nhfiLLtGGmWYwogB1eK4h7LYTUwso0DH90JRFFcoohceqUIONjtl6A>

Congratulations **Kathleen Clark**, winner of *Science Atlantic best paper* at the AUGC 2021.

<https://scienceatlantic.ca/divisions/earth-science/winners/>

Congratulations **Catherine Brennan**, recipient of the *Atlantic Chapter Dillon Consulting Limited Scholarship* for 2021.

Congratulations to Earth and Environmental Sciences' MSc student (supervised by Mladen Nedimovic) and Physical Scientist with the Geological Survey of Canada, **Dustin Whalen**, and the Tuktoyaktuk Community Climate Resiliency Project team, recipients of a prestigious *Arctic Inspiration Prize* valued at \$500,000!

See more about the amazing awards ceremony at:

<https://arcticinspirationprize.ca/a-10th-anniversary-ceremony-to-remember/>

Our EES department awards winners are listed on page 13.

Earth Ring recipients 2022

For the first time since 2019 we were able to hold an EARTH Ring ceremony for our graduating students. Our heartfelt congratulations go to all of our students for working so hard during the COVID 19 pandemic to complete their degrees. We wish every one of them the very best in their chosen careers. This year's recipients of the Earth Ring from the EES are (names in **bold**) from left to right and alternating from front to back rows): **Cole Christensen**, **Rory Joyce**, **Sef Everest**, **Max Myers**, **Sadie Jacobs-Peters**, **Garridan Porter**, **Arabella Hayton**, **Kalista Daymen**, **Rosa**



Toutah, **Kathleen Clarke**, also present are Paul Batson (far right, back row), Grant Wach (far right, front row) and Pat Ryall (far left, back row) and other attendees.

Accolades

Congratulations to Dr. Chris Greene (left), Dr. Amy Mui (center) and Dr. Richard Cox (right) who were all promoted to the rank of Senior Instructor in the Department starting in July 2022.



Further congratulations are also due to Dr. Mui who was voted the **Earth and Environmental Sciences Professor of the Year** for 2021/2022 by our undergraduate student community. **Mike Young** was voted **Professor of the Year** for 2020/2021, and we congratulate him also for his continued service to our department.



Dr. Heather Cray received the **Contract and Limited-Term Faculty Award for Excellence in Teaching** for 2022. Her focus on Universal Design for Learning and accessibility is a model for others, and her

supportive, service-oriented teaching is appreciated by both students and colleagues throughout the university.



Dr. Tara Wright received a **MITACS Accelerate Grant** to work with Arts Organizations in Atlantic Canada to develop indicators for their civil,

environmental and sustainability impact. Dr. Wright was also awarded the **Japan Society for the Promotion of Science Award** in 2021. Congratulations to Tara for all of her outstanding work in environmental research and education.



Congratulations are also due to Alexandra (Lexie) Arnott (above), recipient of **Contract and Limited-Term Faculty Award for Excellence in Teaching** for 2021. The fact that the Dept has two instructors who have won this award in back-to-back years is testament to the excellent standard of teaching in both of our degree programs.

Congratulations to the Biodiversity Working Group, which includes the Susan Gass (right), Amy Mui and Heather Cray from our Department, as the recipients of the **Dalhousie University 2022 Academic Innovation Award**. They were commended for providing students with connections to real-world problems & hands-on field experiences.

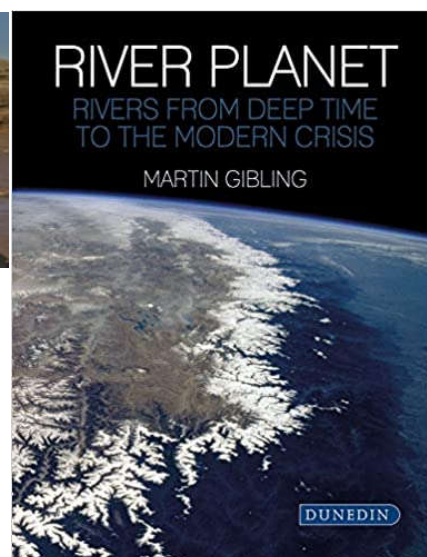


Dr. Sophie Norris (left), who has been working as a post doctoral research fellow with the *CRISDaI* Research Group, has accepted a tenure-track position as an assistant professor at the University of Victoria, British Columbia. We wish her every success as she continues her groundbreaking research into post-glacial landscape evolution.

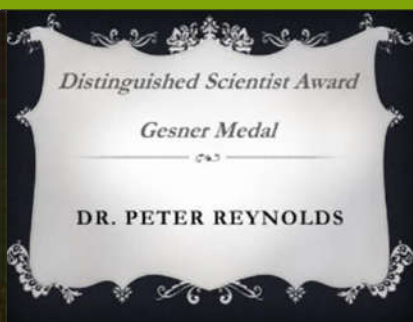
Grant Wach was awarded the prestigious **D'Arcy McGee Beacon Fellowship** by the Ireland Canada University Foundation (ICUF) in 2021. This fellowship enables leading Irish and Canadian academics, researchers, and thinkers to connect and engage, via online lectures. Dr. Wach showcased his research in a lecture on **Energy, Sustainability, Atlantic Margin Geology and Geoforensics**.



Emeritus Professor Martin Gibling has written a new book entitled **River Planet: Rivers from Deep Time to the Modern Crisis** published by Dunedin press. The book has been receiving excellent reviews. Martin was interviewed in May in the department about his book. When asked about what inspired his life-long interest in rivers and fluvial systems Martin replied *"These were processes I could actually see, and rivers in particular caught my attention. the flow of water, the bedforms, the movement of sediment. And it was very exciting to me when I first went to a major river (the Tana River in Norway) and saw the large sand banks with ripples, the different type of channels, and so on. I can remember being very excited by it and actually seeing these things directly"*. His enthusiasm for this subject is truly inspiring and really comes through in this wonderful volume. The full interview will be posted on the EES website this fall.



Two more of our Emeritus Professors, and one of our distinguished EES Adjuncts, have also been honored:



Former Earth Sciences faculty member and chair, Prof. Peter Reynolds (1973-2006) who was honored with the **Gesner Medal**, the **Distinguished Scientist Award**, from the Atlantic Geological Society. The award is made to a person who has, through their own efforts developed and promoted the advancement of geoscience in the Atlantic Region in any field of geology; of large enough scope to have made an impact beyond the immediate Atlantic Region.

Congratulations to Dr. Arthur Dyke (Geological Survey of Canada, Retired and EES Adjunct) on being named a **Fellow in The Royal Society of Canada Class of 2021**. Dr. Dyke's work over 4 decades has revolutionized our understanding of North American ice sheets and sea level change and his research continues to influence scientists in fields as broad as oceanography, geography, biology and archeology.



Congratulations to Prof Emeritus Marcos Zentilli (right) for his appointment as an **honorary member of the Geological Society of Chile** "in recognition of his outstanding contribution to the knowledge and dissemination of Geology in Chile to the national and international community, as well as to society".



REMEMBERING DR. ANNE MARIE RYAN

Originally published by Dalhousie University, February 2022 & edited for the newsletter, June 2022.

Anne Marie (Mia) Ryan, faculty member and University Teaching Fellow in the Department of Earth and Environmental Sciences, passed away unexpectedly with her loving family by her side at the QEII Hospital on January 20, 2022 after an emergency surgery. Born in Ireland on May 17, 1955, she was the daughter of the late Pdraig O'Beirne and Eithne O'Beirne (née Gilsenan). She attended Dalhousie University (PhD), Mount Saint Vincent University (MEd), Acadia University (MSc and BEd), and University College of Dublin (BSc).



Anne Marie was a geologist, teacher, and leader. She was also an advocate for the important role of women in science and was an amazing, active example of such. During her early career she was attracted to “hard” rocks (igneous and metamorphic), and tectonics, but later she developed an interest in the new field of Medical Geology. Her PhD thesis project represented a completely novel direction focused on weathering of granites and mobility of uranium and radon. Her published work on the subject has been regularly cited, and influential in the field of environmental geochemistry.



Anne Marie was incredibly talented and passionate about teaching and learning, especially in the sciences. She understood the unique challenges, perspectives, and considerations of teaching science and worked tirelessly to ensure these perspectives were included at all levels of the institution. She approached teaching by not only ensuring that her students understood natural geological phenomena, but also focused on teaching the whole person – empowering her students to be effective citizens and act for positive social and environmental change. She pushed students to think outside the box, taught them how to ask good questions, and designed creative assignments that provided space for them to take risks. She helped students make connections between science and society, consider various perspectives when approaching a problem, and she wasn't afraid to teach about the non-linear messier side of science including talking about the moral and ethical dimensions of science. She also loved sharing her passion for the natural world by taking students outside to see and learn firsthand about the world around them. It filled her with joy to build relationships and create trust with, as well as to care about, each and every student.

Anne Marie pushed back against traditional views of leadership, focusing on the value and need of servant leadership – in which a leader shares power, puts the needs of others first, and most notably in Anne Marie's case, helps others to develop, perform, and achieve as highly as possible. With her students and colleagues alike, Anne Marie helped to guide, support, and encourage everyone to become the best version of themselves. She believed that all teachers can be amazing leaders, each in their own context. She wanted each of us to recognize who we are as a teaching leader through understanding what matters most to us, deciding where we think we can make a difference, and following through. She was a leader in the field of teaching and made significant contributions through teaching courses, supervising theses and student research projects, publications, numerous conference presentations, educator workshops, and contributing to online forums.

In the Faculty of Science, she taught a Science Leadership course and was the creator and coordinator of the Science Communication and Leadership Certificate – connecting and sharing with students across all Science disciplines. Ten years ago, Anne Marie recognized a need for community amongst the newest hires in the Faculty of Science and so created Dal's first Faculty of Science Community of Practice (CoPSci). Anne Marie's ability to develop community and support personal growth was so successful, there are now several CoPSci groups that bring together dozens of faculty members from across all Science departments.



Anne Marie's substantial impacts on the world of teaching and learning are apparent in the institutional, regional, and national teaching and leadership awards she has received. Amongst the many awards, notably are Dalhousie's *Alumni Association Faculty Award for Excellence in Teaching*, The Association of Atlantic Universities' *Anne Marie Mackinnon Educational Leadership Award*, and the *3M National Teaching Fellowship*, Canada's most prestigious recognition of excellence in leadership and teaching in higher education.

Beyond her teaching and the Communities of Practice, she was an active member of the Dalhousie

community at all levels. She was a member of various Earth and Environmental Science (EES) departmental committees, acted as a first-year EES student advisor for many years, and provided much valued mentorship to new faculty in the department. At the faculty level, she played a pivotal role in providing support for faculty in Science as Dalhousie transitioned into online learning during the COVID-19 pandemic. At an institutional level, she was the first Faculty Associate at Dalhousie's Centre for Learning and Teaching where, for fifteen years, she taught courses, held workshops, and inspired faculty and graduate students in teaching and learning endeavors across the disciplines. She was a vocal member of Dal's Academic Quality Team (AQT), ensuring the voices of course instructors were included in institutional decisions pertaining to teaching and learning. She recently began co-leading Dalhousie Leading in Teaching Excellence (D-LITE) bringing together interested faculty from across campus to encourage leadership in teaching and learning. Whether in groups, or individually, she always took the time to have deep and lasting conversations, sharing her teaching wisdom, always supportive and challenging, while also listening and learning with others. Anne Marie leaves a deep and enduring legacy focused on personal growth, risk-taking, kindness, creativity, and wonder, that will continue to live on through her Communities of Practice, her students, colleagues, friends, and all those whose lives she touched through her leadership and support. Despite all the accolades she received over the years, she recently wrote about the impact that she had on students saying that what mattered most to her was "to know that I could make a difference when I look back – that is gold."

Campus flags were lowered on Campus and a message board has been posted on the 3rd floor of the LSC for everyone to share their memories of Ann Marie. A memorial book was also recently printed and this is available for all to view in the Dept office. The University will install a permanent outdoor meeting table in Anne Marie's honor. Donations can be made to this project at: <https://www.projectdal.ca/project/annemarieryanfund/>

A celebration of life was held at Sullivan's Pond on May 21st where many people gathered to share their memories of Anne Marie. She is survived by her loving husband of 42 years, Dr. Robert (Bob) Ryan, three daughters Fiona Ryan (Emily Jewer), Kerriane Ryan (Jarvis Googoo), and Erin Ryan Gale (Lloyd, Addison, and Alexis Gale); her siblings John, Richard, Dermot, and Gina O'Beirne, Donna Durkan, and Ursula Sortino; and many biological and chosen family. Donations can be made in Anne Marie's name to Development and Peace and/or Heart and Stroke Foundation of Canada.

A TRIBUTE TO PROFESSOR DAVID SCOTT

Originally published by Dalhousie University, November 2021 & edited for the newsletter, June 2022.

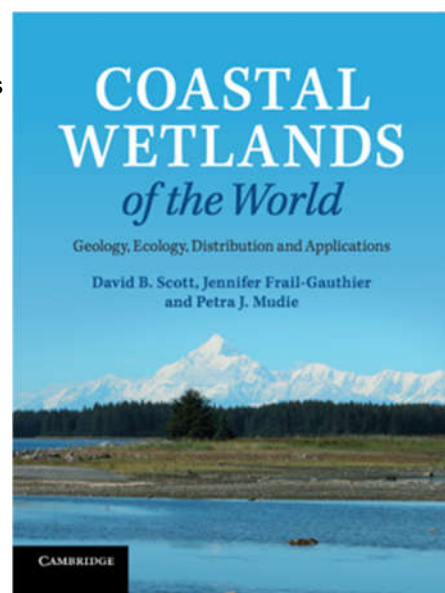
David B. Scott passed away on December 21, 2021 with his wife, Kumiko, by his side. Dave was an emeritus professor and past chair of the Department of Earth Sciences.

Dave was born in Oakland, Calif., to David Bernet Scott and Gladys King Scott on May 25, 1947. He grew up in the Pacific northwest (northern California and northwestern Washington State). Dave was a late bloomer. He almost failed grade two but liked school for its extracurriculars, such as the varsity cross country running team and parties. He eventually developed an aptitude for geology, earning his BSc. in Geology and Oceanography from the University of Washington and MSc. in geology from Western Washington University. After working in San Diego for a few years, he started a PhD program at Dalhousie University. He whizzed through his PhD in a record two years and became a faculty member in the Department of Geology, now the Department of Earth and Environmental Sciences. He was a Killam Professor from 2005-2010 and served as departmental Chair from 2008-2011. Dave became the Director of the Centre for Environmental and Marine Geology in 2000. The centre began in the early 1970s and represented the growing field of marine geoscience, serving as a bridge between the Department of Geology and Institute for Oceanography at Dalhousie.



Dave's work appeared in over 140 peer-reviewed scientific papers and book chapters, helping him become an internationally respected geological oceanographer. In 2013 Dave received the Joseph A. Cushman Award, a prestigious lifetime achievement award recognizing his contributions to the field of micropaleontology. On a lighter note, he also enjoyed visiting many elementary schools in the province to give talks about dinosaurs and take young students to field trips to beaches to look for fossils. This dedication to students and their education was manifested in being voted professor of the year in 2006 by the department's undergraduate students.

Dave's life's work focused on applying microfossils, especially the protistan group foraminifera, to study oceanographic and coastal change. He led many international projects in the Atlantic, the Pacific, and both polar regions. His pioneering paper published in 1978 in *Nature* described how former sea level positions could be precisely located within centimeters using foraminifera that are preserved in salt marsh sediment. This landmark advance introduced a whole new field to coastal science. It paved the way for modern scientific approaches that test and validate numerical models of sea-level change, and his method was the basis of modern similar work that was cited and tweeted by President Obama in 2015 and 2016, respectively. In addition, Dave played a prominent role to develop scientific interest in deep-water Atlantic corals, he studied the drivers of Arctic sea-ice cover, he extensively documented the deglaciation of eastern Canada, and he investigated the impacts of pollution on many coastal environments.



He was a fantastic father and a husband. He loved to bring the whole family fishing, where he would exhibit levels of patience extending from untangling everyone's lines to paddling the canoe around the lake for hours in search of fish. He also took his family on adventures around the world whether on sabbatical or geological field trips to places including Argentina, Europe, the United States cross country, Bermuda, Japan, Australia and New Zealand. Dave had an adventurous soul and imparted this feeling on everyone around him.



A research family tree (above), compiled by Professors Grant Wach, Pete van Hengstum, Andrea Hawkes, Owen Sherwood, and Tom Duffett, Fred Walsh & Chloe Younger, shows just how many people Dave worked with and nurtured throughout his career. A tribute was also published in the *Journal of Foraminiferal Research*. **Citation: van Hengstum, P.J., in press. Celebrating the Life of Professor David B. Scott, *Journal of Foraminiferal Research*, vol. 52 (3), July 2022.**

Dave leaves behind his wife, Kumiko; and children, Helen Scott-Davison (Tyler), Erica and Tarou, and grandchildren. Dave also leaves many “academic children”, previous students and postdocs, who often became extended family and joined his family for dinners and drinks. Many current faculty members in many Canadian, American, and international universities were once mentored early in their career by Dave at Dalhousie University. He enjoyed frequent gatherings with long-time family friends, the Lunnns and the Mathesons, whom helped him during many trips together after being diagnosed with Alzheimer's. His family would also like to thank all the care staff at Sullivan's Lane, Parkstone, for providing such consideration and comfort in the last years of his life.

Dave's appreciation for the people he surrounded himself with ran deep and thus his battle with Alzheimer's and eventual passing also ripples through many. Dave will be missed by many and remembered for a long time to come. Due to the COVID restrictions, a celebration of his life is scheduled at the later date in the fall of 2022. A memorial bench is being planned for the Dal campus and a tribute volume has also been produced and will be available for everyone to look through in the Dept.'s office in the very near future.

Earth and Environmental Sciences 2021/22 Graduates

GRADUATE STUDENTS

Natashia Drage, M.Sc. (supervisor Brenan) “An experimental study of the effect of pressure on the formation of chromite deposits”

Richard Chow, M.Sc. (supervisor Fedortchouk) “Trace element partitioning between apatite and kimberlite-like melts – implications for volatile degassing and formation of different kimberlite facies”

Anne C. Hargreaves, M.Sc. (supervisor Wach) “Seismic and lithological characterization and source rock potential of the Aptian Naskapi shale endmember, Logan Canyon formation, offshore Nova Scotia”

Kenneth Martyns-Yellowe, M.Sc. (supervisor Wach) “Integrated Lithostratigraphic, Formation and Structural Evaluation of the Migrant Structure, Sable Subbasin, Offshore Nova Scotia”

Lobke Rotteveel, M.Sc. (supervisor Sterling) “Trends, Patterns, and Drivers of Freshwater Aluminum Concentrations: Revisiting the Conceptual Model of Freshwater Acidification”

Phil Sedore, M.Sc. (supervisor Maselli) “Environmental Controls on the Generation of Submarine Landslides in Arctic Fiords: An Example from Pangnirtung Fiord, Eastern Baffin Island, Nunavut”

Sydney Stashin, M.Sc. (supervisor Gosse) “Late Cenozoic basin evolution of the western Canadian Arctic archipelago: The Beaufort formation and Iperk sequence”

Dawn Tobey, M.Sc. (supervisor Gibling) “Water and Wind: The Fluvial and Eolian Forces Behind the Pennsylvanian-Permian Halgaito Formation, Utah”

Kara Vogler, M.Sc. (supervisor Coutand) “Thermal history of the Labrador rifted margin: Insights from apatite and zircon (U-Th)/He and apatite fission track thermochronology”

Honours graduates

Environmental Science: **Camryn Gallagher, Emily Lannigan, Hope Moon**

Earth Science: **Kathleen Clark, Sef Everest, Garridan Porter, Michael Powell, Rosa Toutah**

Graduating Gold Medalists

Gold Medal for Environmental Science: **Hope Moon**

Gold medal for Earth Science: **Anna Ryan**

Honours Thesis Awards

Best Honours Thesis: Kathleen Clark (ERTH) and Hope Moon (ENVS)

Best Thesis Presentation and Defence: Michael Powell (ERTH) and Camryn Gallagher (ENVS)

Earth and Environmental Science Undergraduate News

Congratulations to our award-winning undergraduates!!

MacEachern-Ponsford Award:

Douglas Award:

James L. Hall Scholarship:

Brian MacLean Memorial Prize:

Milligan Undergraduate Award:

David Barlow Memorial Award:

Michael Keen Research Award:

Art and Dorothy Cook Scholarship:

Environmental Science Award:

Owen Hertzman Prize:

Pearson Education Canada Book Prize:

NSERC Undergraduate Student Research Awards:

Michael Powell

Brooke Reid

Samantha Shapira

Sadie Jacobs-Peters

Megan MacDonald and Sana Salehi

Megan MacDonald

Catherine Brenan

Hope Moon

Lauren Lowther and Levyn Radomske

Catherine Brenan and Emma Taniguchi

Kiah Heneke-Flindall

Elena Milito and Kailyn Hanke

Congratulations also to:

Professor of the year: Dr. Amy Mui

TA of the year: Jessica Needham



Students in the EPS participating in an apple picking contest (bottom left), although are clearly pictured with pumpkins, and on their annual Point Pleasant Park ocean front clean up (bottom center). Earth Sciences students working hard on a cold morning in the Spring of 2022 (top center and right) during their geophysics field class. It was so great to see everyone finally getting together for both work and play!

Graduate Student News

Scholarships and Awards

NSERC

Maureen Matthew - 2021, 2022

Killam

Maureen Matthew - 2021, 2022

Dalhousie University President's Award

Maureen Matthew - 2021, 2022

Department of Earth and Environmental Sciences Ph.D. Scholarship

Nina Golombek - 2021, 2022

Marina Dottore Stagna - 2021, 2022

Lydia Fairhurst - 2021, 2022

Peteris Rozenbaks - 2021, 2022

Alexandra Del Favero-Campbell - 2022

Lauren MacLellan - 2022

Michael Powell - 2022

J. Ewart Blanchard Memorial Scholarship

Jose Castillio Castellano - 2021

Fernando Cordoba Ramirez - 2021

Pinar Gurun - 2021

Alireza Niksejel - 2021

Nedimovic Family Graduate Scholarship

Ana Corbalan Castejon - 2021

Marina Dottore Stagna - 2021

Nova Scotia Graduate Scholarship

Nina Golombek - 2021, 2022

Shabiz Bin Khalid - 2021, 2022

Peteris Rozenbaks - 2021, 2022

Lauren MacLellan - 2022

Nayeem Rifkhan - 2022

Study Abroad Program

Pinar Gurun - 2021, 2022

Canadian Society of Petroleum Geologists

- Best M.Sc. Thesis

Sydney Stashin - 2022

Society of Economic Geologists

Jose Castillio Castellano - 2022

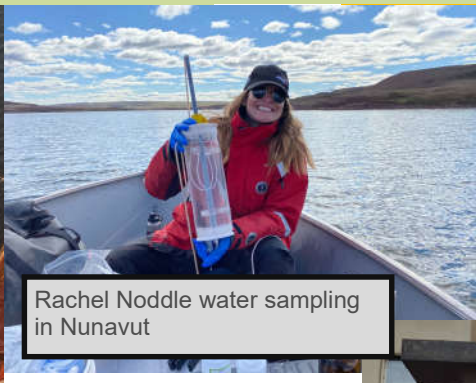
Jerome H. Remick III Poster Award - GAC-MAC 2022

Maureen Matthew

Shaomin Chen "bucket challenge" CGS Hudson



Rachel Noddle water sampling in Nunavut



Graduate Dawson Executive 2021/2022

Shaomin Chen/Anna Ryan - Presidents

Rachel Noddle – Vice President

Lydia Fairhurst - Treasurer



The winning score for the 2022 Faculty-Grad student curling challenge



Nina Golombek attending ISOCAMP at the UNM

Teaching Engagement-Alumni and University Associates of Dalhousie

3rd Year Stratigraphy, 4th Year Petroleum Geoscience and Energy Systems, and Departmental Seminars

By Lauren Morris and Professor Grant Wach

For class engagement during the pandemic, we invited alumni and university associates to present guest lectures for our students on-line, and for in-person learning. Guests presented on topics relating to stratigraphy, and petroleum geoscience and energy systems, as well as their journeys and careers as geoscientists.



Susan Eaton, P. Geo– Geoscientist, Journalist, Polar Explorer, Dalhousie Alum (B.Sc. Honours Geology & Biology).

Presented on her incredible polar explorations, the women-led Sedna Epic Expedition project, and her career journey from multiple degrees to creating her own programs and companies.

David Brown – retired Senior Advisor of Geology at the Canada-Nova Scotia Off-shore Petroleum Board (CNSOPB), Dalhousie Alum (B.Sc. Honours Geology) and Adjunct Faculty.

Presented on geology of the offshore Scotian Basin and contributed to the lab on seismic and borehole correlation of the offshore.



Dr. Victoria Arbour – Curator of Paleontology at Royal BC Museum, Dalhousie Alum (B.Sc. Earth Sciences and Biology).

Presented on the geology of the Western Canada Sedimentary Basin and her research on the *Zuul crurivastator* ankylosaurian dinosaur fossil, (“Zuul”- remember Ghostbusters and Dan Akroyd!) recently discovered in North America, as well as her career journey.

Dr. Ricardo Silva – Assistant Professor in Sedimentology at the University of Manitoba, part of the Basin, Environment and Stratigraphy (BETY) research group, Dalhousie Post-Doctoral Fellow.

Presented on Chemostratigraphy, Magnetostratigraphy, and the Global Stratotype Section (“Golden Spikes”) in the Jurassic.



Natasha Morrison, P.Geo – Geophysicist at Nova Scotia Department of Natural Resources and Renewables, Dalhousie Alum (M.Sc. Source Rock Geochemistry/Geophysics, B.Sc. Earth Sciences).

Presented on the basics of the oil & gas industry, current provincial projects, and a Q&A about working in the industry.

Dr. David Mosher – Research Oceanographer at the Bedford Institute of Oceanography, Dalhousie Alum (Ph.D. Geophysics); Canadian representative to the UN Law of the Seas; Adjunct Faculty.

Presented on marine geophysics and a Q&A about his history in the industry and the UN Law of the Seas.



Carla Skinner, P.Geo – Physical Scientist at Natural Resources Canada, current Ph.D. candidate, Dalhousie Alum (M.Sc. Petroleum Geoscience, B.Sc. Honours Earth Sciences).

Presented on petrophysics and geophysical logging tools.

Kenneth Martyns-Yellowe – Graduate Research and Teaching Assistant, Digital Communications for Dalhousie Emera ideaHUB, Dalhousie Alum (M.Sc. Earth & Environmental Science, B.Sc. Earth Sciences).

Presented on the Stratigraphy and Structural Evaluation of the Migrant Structure, Sable Subbasin, Offshore Nova Scotia, comprising elements of his M.Sc. research.



Taylor Campbell – Project Geologist (St. Barbara Ltd.- Atlantic Gold Corp), Dal Alum (M.Sc. and B.Sc. Hons. Earth Sciences),

along
with,

Eleanor Chisholm – Field Geologist (St. Barbara-Atlantic Gold Corp), Dal Alum (B.Sc. Earth Sciences).



Presented a lab on Economic Minerals and the Stratigraphy of Nova Scotia (created by Professor Emeritus Marcos Zentilli) and held a Q&A on their career paths from Dalhousie and current work at the mine.

We would like to offer our sincere thanks to all of our alumni for their help throughout the past two years and look forward to seeing more engagement between our alumni and students. Please consult the Earth and Environmental Sciences website for updates on all of our alumni events.

Who's Who in Dalhousie Earth Sciences

Faculty: Instructors, Professors (Assistant, Associate, Full, and Emeritus)



Lexie Arnott



James Brennan



Isabelle Coutand



Richard Cox



Heather Cray



Yana Fedortchouk



Kelvin Fong



Caroline Franklin



Susan Gass



Martin Gibling



John Gosse



Chris Greene



Djordje Grujic



Rebecca Jamieson



Mladen Nedimovic



Vittorio Maselli



Amy Mui



Lawrence Plug



Owen Sherwood



Shannon Sterling



Grant Wach



Tarah Wright



Mike Young



Miao Zhang



Marcos Zentilli

Staff



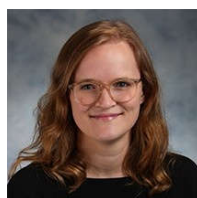
Thomas Duffett



Sean Hartwell



Chelsea Fougere



Kristin Hart



Norma Keeping



Roman Kislitsyn



Dan MacDonald



Darlene Van de Rijt



Guang Yang



Alexis Imperial

Not Pictured:

Dawn Hall

Chloe Younger

Helen Lau

From all of us to all of you ...



Dalhousie Department of Earth and Environmental Sciences, Fall 2021

... please keep in touch!

Giving to Dalhousie Earth and Environmental Sciences

Your gift provides assistance to the department to support a variety of activities that enhance the learning experience. This includes our various field schools and scholarships, and support for other undergraduate and graduate activities. Please consider a donation within a specific category, or donate to the department to use in the area of greatest need. For details, visit: <https://alumniapps2.dal.ca/giving>.

To receive information via email about upcoming departmental events, or to receive the departmental newsletter, please ensure that your personal information on file is current. You can update your contact information at:

http://www.dal.ca/faculty/science/earth-sciences/alumni_friends/update_your_contact.html

macduff@dal.ca



Department of Earth and Environmental Sciences

Dalhousie University
Rm 3006, Life Sciences Centre
1459 Oxford Street, PO Box 15000
Halifax, Nova Scotia, Canada B3H 4R2