

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 privilege and pleasure to write a report on Earth and Environmental Sciences activities for the past year. James Brenan has skillfully done this for the past seven years but has stepped down as the department chair at the end of 2023. We are grateful to James for the many years of his dedicated leadership that have transformed our department.

The long-awaited renovations to the department space and significant expansion have been completed in December 2023. Some 5000 ft² of office, research, and teaching space has been added to the department “footprint” on the 3rd floor of the Biology wing of the Life Sciences Centre. With that completion, all the department teaching space has now been renovated. On March 25, 2024, the department hosted a well-attended Alumni-Student Reception at the Lions Head Pub in Halifax for the second time. It was a memorable event. This Fall (2024) we are planning an alumni event to celebrate our expansion and showcase our new

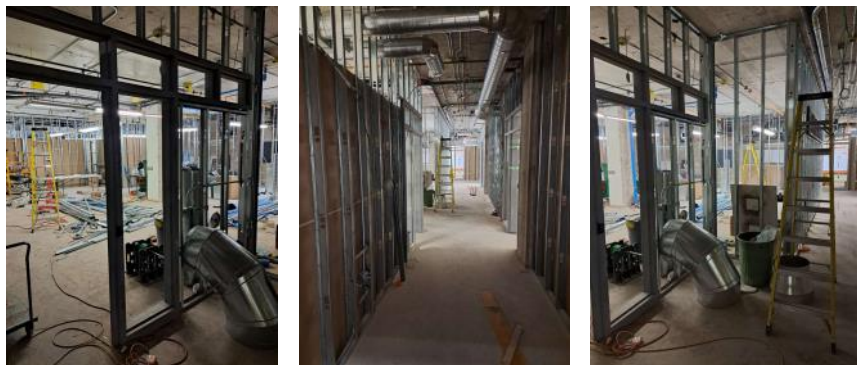
space. We hope to see you there. To strengthen our outreach, student recruiting, and national and international collaborations, last fall we hired a young German filmmaker Felix Heinzelmann to shoot promotional videos for the department (<https://www.dal.ca/faculty/science/earth-environmental-sciences.html>) and research groups (e.g. <https://www.nfsi.ca/>). Felix has done an outstanding job capturing raw emotions. If you have a chance, please follow the provided links and take a look at these fabulous short videos. We would like to further enhance our outreach and alumni engagement, so please let us know if you have ideas for future alumni events. Last year we welcomed a new research faculty member Sian Kou-Giesbrecht. Her research interests are broadly in terrestrial ecosystem ecology, biogeochemistry, carbon and nitrogen cycling, global change, and terrestrial biosphere modelling and Earth system modelling. She is having a remarkably successful start to her career in our department. This year we are dedicating to faculty expansion, like we've never seen before. We hope to advertise, interview, and hire four

new research faculty members by September 1, 2025. One of the positions is for an NSERC Tier 2 Canada Research Chair, which our department managed to secure in a university-wide competition. I look forward to continuing to work with our outstanding faculty, staff, and students to achieve our goals.

Finally, I would 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,

Mladen Nedimović, Killam Professor, NFSI Director, and Department Chair



The new 3rd floor EES wing during renovations (left). These include new offices and lab spaces for our faculty, support staff and graduate students, a new meeting room and kitchenette, and a new computer lab for teaching. Images of the finished project can be seen on page 2.

Department News

A Warm Welcome Back to Campus!



The Department of Earth and Environmental Sciences hosted our annual barbeque to get another year underway. Our colleagues and our undergraduate students stepped up at the beginning of the fall semester in September, to host our welcome BBQ with various burgers and hot dogs and all the fixings! The weather once again cooperated and made for a more memorable. The BBQ was well attended and everyone enjoyed multiple batches of delicious food prepared to help feed all of the hungry attendees. This year we hosted the event in the space between the Biology / EES, Oceanography and Psychology wings where we all gathered to share news and tales of our summers. Thanks to everyone for getting the year off to such a great start!



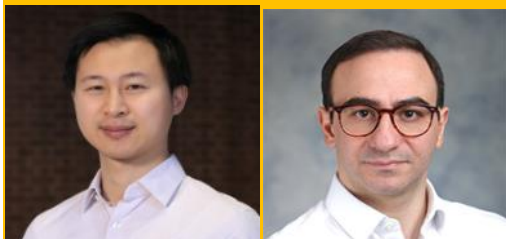
Department and Research News

As Mladen mentioned on page 1, we are delighted that our new office and lab wing has been completed and everyone moved into their new offices over the past year. This was a long time in coming, but we are finally together as a department after spending many years dispersed around the campus. As well as our new offices, there are new lab spaces and a state-of-the-art computing lab (below right) which will be used to help teach a number of courses within both of our degree programs. A new meeting room (below Left) has already extensively been used, and with the room's new conference facilities, has helped everyone keep in touch when not on campus.



We will be hosting an event to unveil these new facilities and introduce them to our community during the upcoming academic year. Watch for announcements on our webpage (<https://www.dal.ca/faculty/science/earth-environmental-sciences/news-events.html>).

Our colleagues Kelvin Fong (left) and Vittorio Maselli (right) have moved on to new positions at George Washington University and Università degli Studi di Modena e Reggio Emilia respectively. We wish them both the very best and also look forward to continued collaborations in the future.



This year we welcomed Dr. Sian Kou-Giesbrecht (below) to our faculty. Sian's research explores the impacts of global change on terrestrial ecosystems, nutrient cycling, and the terrestrial carbon (C) sink. The terrestrial C sink currently sequesters a quarter of anthropogenic CO₂ emissions in vegetation and soil biomass, thereby exerting a pivotal control on atmospheric CO₂ levels and climate change. The question that Sian is hoping to answer is, will the terrestrial C sink continue to sequester a quarter of anthropogenic CO₂ emissions, or will this fraction increase or decrease?



Sian has made an immediate impact to our undergraduate programs by helping teach Environmental Informatics and teaching Global Biogeochemistry.

Continue to follow the developments of all of Dr. Kou-Giesbrecht's research at:

<https://siankou-giesbrecht.weebly.com/>



In the summer of 2023, CarbonRun, co-founded by EES' Dr. Shannon Sterling, continued to conduct a river alkalinity enhancement project in Pictou County that aims to help restore the salmon population while removing CO₂ from the atmosphere. This work was featured on the CBC and can be found here: <https://www.cbc.ca/news/canada/nova-scotia/nova-scotia-s-rivers-still-suffer-from-acid-rain-restoring-them-could-also-help-the-climate-1.7239696?cmp=rss>

CarbonRun, was also among 12 startups who had \$7M worth of carbon removal services purchased by the Frontier fund. Read more about CarbonRun's project and the funding commitment made here: <https://frontierclimate.com/writing/fall-2023-purchases>

CarbonRun was also got a nice shout-out in Bloomberg as well: <https://www.bloomberg.com/news/articles/2023-09-07/frontier-climate-change-fund-makes-7-million-in-new-carbon-removal-commitments>

Congratulations to Shannon and the whole CarbonRun team, including some of our EES technicians and undergraduate summer students namely, Alex Bevilacqua, Kristin Hart, Rowan Norrad and Elena Milito.

Dalhousie Laboratory for Experimental High Pressure Geological Research relocated to the 3rd floor where the work conducted by Professors James Brenan and Yana Fedortchouk will continue. The Dal LEHPGR was founded in 2016 when



Yana Fedortchouk's Experimental Petrology Lab was merged with new equipment was installed following the appointment

of Professor James Brenan formerly of the University of Toronto. Equipment in the lab includes the new "Red Press" Piston Cylinder Capable of recreating pressures of 0.5 GPa to 3.5 GPa at 2000°C (pictured above). Professor Brenan's research is aimed at the origin of the distribution of the highly siderophile elements: Re, Au and the Platinum Group Elements (PGEs; Os, Ir, Ru, Rh, Pt, Pd). Professor Fedortchouk's research focuses on diamonds and kimberlites, deep-seated magmas that form primary deposits of diamonds. Kimberlites transport diamonds from the Earth's mantle to the surface and partially dissolve them during the ascent, affecting their commercial value.

Follow the research of the Dal LEHPGR lab at:

<https://dalhousiehighpressurelaboratory.weebly.com/>

Media, Accolades and Awards

Congratulations to Dr. Caroline Franklin (below) who was voted **Professor of the Year for 2023/2024** by our undergraduate student community! A well deserved recognition of all Caroline's dedication to our undergraduate ENVS program.



Congratulations to Meg Langlais, one of our Queen Elizabeth Scholarship students, who had a new paper, "*Behavioral dynamics and feeding strategies of sharksuckers in symbiosis with Atlantic Nurse sharks: insights from a fish cleaning station in The Bahamas*", published in the journal *Marine Biology*, as a result of her work at the Cape Eleuthera Institute. This would not have been possible for Meg without the QES program, the CEI's amazing guidance and collegial workspace, and the whole shark team at CEI welcoming Meg into their research group.



Congratulations to fourth-year environmental science student Kiah Heneke-Flindall was chosen as one of Dal's Top Co-op Students of the Year for 2023! Kiah spent her three work terms with Folklore Reforestation in British Columbia, Ravenwood Silviculture in New Brunswick, and Hope Blooms in Halifax, where she remains the program coordinator for Hope Blooms' climate action youth program, Green Labs.



EES MSc student, Anna Ryan (along with her supervisor Vittorio Maselli and fellow Dal researcher Tony Walker) received a lot of attention on their publication in *Nature Communications*, documenting microplastics scooped up from the North Atlantic and deposited on land (Newfoundland) during Hurricane Larry in 2021. This included interview and articles in several media, and the links to all of these can be found on our website.



A number of our EES students attended the Science Atlantic Environment Conference at UPEI and Hannah Freeman (left) won the Acadian Forest Region Award for her poster. Well done, Hannah!



Congratulations to Amy Mui (pictured on the right) who was the recipient of the 2023 Early Career Faculty Award of Excellence for Teaching at Dalhousie University. Congratulations Amy on this amazing accomplishment!



Congratulations to Peteris Rozenbaks (far right) who received the Sandra Barr Award for the best graduate student presentation at the recent Atlantic Geoscience Society (AGS) annual meeting in Moncton, NB.



Congratulations to Sarah Macdonald (right), recipient of the Art and Dorothy Cooke Memorial Research Scholarship for 2023-24. This award recognizes an Environmental Science Honours student whose thesis research proposal is judged to be of strong merit.



Congratulations to all the presenters at "NSIS Student Symposium 2024: Current Research in Nova Scotia" on March 4th. Lauren Kew (left) took home the "Crowd Favourite" award for her presentation "Reconstructing Changes in the Northwest Atlantic Depth Gradient Using Deep-Water Gorgonian Corals" and Sana Salehi (right) won the "Best Talk" award for her presentation "The Impact of Precipitation Phase on Changing Groundwater Recharge in Mountain Regions of Canada and the US".



Sana (pictured to the left standing outside the Expo City conference centre) also attended the COP28 meeting in Dubai. She told us that attending COP28 was a transformative experience, providing insights into the complex world of climate negotiations and the critical importance of multidisciplinary collaboration, science communication, and advocacy. The promises made at COP28 are a step in the right direction, but achieving these goals requires the commitment and action of all stakeholders, including governments, businesses, and individuals. As young people, our involvement through voting and advocacy is crucial to ensuring a sustainable and equitable future, thus we should constantly seek opportunities outside of classrooms to shape our understanding of the world's pressing issues.

Congratulations to EES' Amy Mui (far left) and project collaborators Sue Gass (EES - centre left), Melanie Zurba (School for Resource & Environmental Studies—centre), and Georgia Klein (centre right) and Laurel Schut (College of Sustainability – far left) who were awarded an Anne Marie Ryan Teaching & Learning Enhancement Grant for their proposal "Eco-Hope: Developing Strategies to Counter Eco-Anxiety and Build Resilience in Students" in December of 2023.



Congratulations to our award-winning undergraduates!!

MacEachern-Ponsford Award: Wednesday Gillespie

Douglas Award: Evelyn Ferguson

Milligan Undergraduate Award: Emma McCarron

Art and Dorothy Cooke Scholarship: Sarah MacDonald

David Barlow Award:
Catherine Potvin

James L. Hall Award: Emily Theben

Environmental Science Award: Liam Bendzsa

Michael J. Keen Memorial Award:
Hannah Freeman

Owen Hertzman Prize: Sasha Cilibeck and Elena Milito

Pearson Education Canada Prize: Robyn Holysh

Best Honours Thesis Prize : Lauren Kew (*ERTH*) and Rosie Bleyer (*ENVS*)

Best Honours Thesis Presentation Prize: Lauren Kew (*ERTH*) and Sarah MacDonald (*ENVS*)

Teaching Engagement, Alumni Affairs and Other Events

Open House 2023

On November 4th we welcomed prospective students to our campus for our Fall Open House. Our booth was staffed by Dr. Richard Cox and Prof. James Brenan and we also had lots of help from students, namely Sana Salehi (left), Hannah Freeman (centre left), Sasha Chilibeck (centre right) and Tristan LeClerk (right). Our team of students did an outstanding job of engaging our visitors and sharing with them stories and experiences they have enjoyed while studying in our department.

Thanks to them for making

this such a successful event and we look forward to this again in 2023. We had a plenty of visitors to our booth and who also got to comments on our temporary displays that we were showcasing (below) to gauge public reaction. We hope this will help as we begin to plan for new displays and new materials to replace the older wooden cabinets in the in the near future.



A big thanks goes out to adjunct faculty and EES alumnus James Steenberg, ably assisted by EES alumnus Heba Jarrar and current ID PhD student David Foster, for an outstanding EES field trip to the Pockwock Watershed on Sunday the 15th of Oct 2023. The photo shows trip leaders James, Heba and David in the field with us along with new EES faculty Sian. All three provided informative accounts of the important research being done to manage Nova Scotia's forests, water resources and provide protection from invasive species. A great day was had by all no doubt helped by the beautiful weather.



Our alumni also held the annual meet and greet at the Lion's Head Tavern on March 25th. This year's event was mired in controversy due to the addition of a quiz which was horribly gerrymandered! Anna Ryan and Natalie Shields can be seen reacting to this on the left. (Okay, this didn't really happen, but I had to make a fuss after my terrible quiz performance - RAC)! The event was very successful with around 60 of our alumni in attendance. We look forward to this event again in 2025. Please keep up to date with our alumni events at:

<https://www.dal.ca/faculty/science/earth-environmental-sciences/alumni.html>

Who's Who in Dalhousie Earth Sciences

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



Lexie Arnott



James Brenan



Isabelle Coutand



Richard Cox



Yana Fedortchouk



Caroline Franklin



Susan Gass



Martin Gibling



John Gosse



Chris Greene



Jennifer Grek-Martin



Djordje Grujic



Rebecca Jamieson



Mladen Nedimovic



Sian Kou-Giesbrecht



Amy Mui



Lawrence Plug



Owen Sherwood



Shannon Sterling



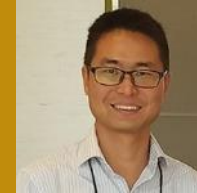
Grant Wach



Tarah Wright



Mike Young



Miao Zhang



Marcos Zentilli



Kate Bosmann



Graeme Cairns



Thomas Duffett



Chelsea Fougere



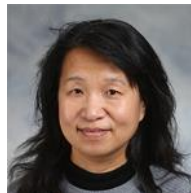
Kristin Hart



Norma Keeping



Darlene Van de Rijt



Guang Yang



Alexis Imperial



Roman Kislitsyn

Not Pictured:

Dawn Hall
 Chloe Younger
 Helen Lau
 Danielle Wood
 Vernon Eville
 Wenda Li
 Tamara Wilson

Staff

From all of us to all of you ...



Dalhousie Department of Earth and Environmental Sciences in the Fall of 2023

... 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

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