UNIVERSITY OF TORONTO SCARBOROUGH

FEBRUARY 2023

DEPT. OF PHYSICAL AND ENVIRONMENTAL SCIENCES

DPES DIGEST

Photo: Chai Chen

EDITORS:

DR. SHADI DALILI

YAO YAN HUANG

“I (we) wish to acknowledge this land on which the University of Toronto operates. For thousands of years it has been the traditional land of the Huron-Wendat, the Seneca, and most recently, the Mississaugas of the Credit River. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.”

- University of Toronto, Land Acknowledgement

Photo: Chai Chen

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WELCOME

TO A BRAND NEW YEAR!

Hello DPES community and welcome to the first DPES Digest issue of 2023!

We hope everyone had a safe and joyous holiday break, and look forward to what's to come in this new year. Hopefully, the break has provided you time to recharge, relax, and prepare for a new semester. If you find yourself struggling this semester, please do not hesitate to reach out to the resources available on campus:

Health and Wellness Centre (SL270)

- Monday 9:00am - 4:30pm
- Tuesday 10:00am - 4:30pm
- Wednesday 9:00am - 7:30pm
- Thursday 9:00am - 7:30pm
- Friday 9:00am - 4:30pm
- Phone Number: 416-287-7065

Academic Advising and Career Centre (AC213)

- Monday & Tuesday 10:00 am - 4:00 pm
- Wednesday 10:00 am - 6:45 pm
- Thursday 10:00 am - 6:45 pm
- Friday, 10:00 am - 3:00 pm
- Phone Number: 416-287-7561

Equity, Diversity, and Inclusion Office (BV 5th Floor)

- Email: edio.utsc@utoronto.ca
- 8:45 a.m. - 5:00 p.m. Monday to Friday (by appointment only)

AccessAbility Office (AA142)

Contact ability.utsc@utoronto.ca or call 416-287-7560 to schedule an appointment.

LUNAR NEW YEAR

Year of the Rabbit
Lunar New Year, also known as Chinese New Year and the Spring Festival, is a festival celebrated in numerous cultures that marks the beginning of the year in the lunar calendar. This year, the date fell on Sunday January 22nd and ushered in the Year of the Rabbit. The rabbit is the 4th animal in the Chinese zodiac cycle.

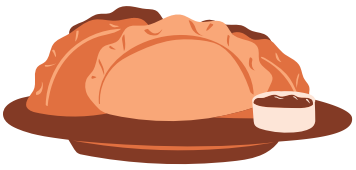
The International Student Centre hosted a Lunar New Year celebration in the Highland Hall Event Centre on Friday, January 20, 2023, from 11:00 am - 02:00 pm. The event featured a traditional Lion Dance, information on Chinese horoscopes, martial arts demonstrations, calligraphy writing, and snacks and giveaways.

Video: https://www.youtube.com/watch?v=oJvEeR35Lr8&ab_channel=UniversityofTorontoScarborough

Traditions & Sayings
Traditionally in China, this celebration lasts for 15 days until the first full moon, with many specific activities associated with each day. New Year's Eve is an important day, where the entire extended family gets together. The 15th day is known as the Lantern Festival or Yuan Xia Jie, and it is tradition to consume glutinous rice balls with sweet stuffing like sesame. Cleaning is usually completed before the New Year, to avoid sweeping away the metaphorical good fortunes. There are many regional variations in traditions within China, north and south, and within diaspora. Dumplings are important foods in the north and glutinous rice dishes in the south. In modern times, watching the CCTV Spring Festival Gala is also an important tradition.

恭喜發財
Cantonese: Kung Hei Fat Choi
Mandarin: gōng xǐ fā cái
This is a traditional greeting meaning congratulations and best wishes for a prosperous new year.

年年有余
Mandarin: Nián nián yǒu yú
A phrase meaning every year having ample surplus. Families will often have fish on the New Year's eve dinner but leave a portion uneaten, usually the head. This is because of the play on words where "余(surplus)" shares the same pronunciation with "鱼(fish)".

Source: Alexa Battler UTSC News https://utsc.utoronto.ca/news-events/sites/utsc.utoronto.ca.news-events/files/styles/4_3_focal_point_cta_mobile_/public/image/article/LunarNewYear32.jpg?h=56d0ca2e&itok=B1vvT-iF

Lion Dance

The Lion Dance is performed by two dancers in a lion costume, one controlling the front legs and head and the other the hind legs. It likely started as a folk tradition to bring good fortune and chase away evil spirits and is now customary at new year. There are many styles of dance and costumes and is usually accompanied by percussion instruments like drums and cymbals. There is no worry about being eaten by these lions as they are vegetarian, fond of eating lettuce, a homonym for fortune (choy/cai). They also accept red envelopes (this one feeds the dancers).

Red Pockets
红包
Mandarin: Hóng bāo
Cantonese: Lai see

A red pocket or red envelope containing money is given on New Year's day from grandparents and parents to children and grandchildren. The amount of money is usually not important, and more about the act of giving, however kids will definitely count up their cash and compare with each other how much they got. The young pay their respect to the old through a greeting or some sort of warm wishes to receive the red pocket. Close relatives, friends, employers, and even adult children to their parents can also give out red envelopes. They are also given sometimes during weddings, birthdays, graduations, and other celebrations.

Read more: https://studycli.org/chinese-culture/hongbao/

Other Cultures

Many other cultures and countries also celebrate the Spring Festival or some variation including Korea, Vietnam, and Mongolia. Historical influences from China have since evovled to unique variations on traditions and rituals. For example in Korea, eating a bowl of ddeokguk, or rice cake soup marks a person's Lunar Calendar Birthday.

Read more: https://www.twinkl.ca/blog/what-is-the-difference-between-chinese-new-year-and-lunar-new-year#:~:text=The%20festival%20that%20is%20frequently,same%20traditions%20as%20in%20China.

BLACK HISTORY MONTH

February marks Black History Month, a time where we come together to celebrate the outstanding achievements of Black individuals. We would like to take a moment to highlight some historically significant Black scientists who revolutionized the STEM field.

MARY W. JACKSON

In 1958, Mary Jackson became the first Black female engineer for NASA. For years, Jackson conducted research for NASA, primarily focusing on how the air around an airplane behaved. Unfortunately, it was extremely difficult for Jackson to get promotions because she was a female scientist. She decided to leave engineering and pursue a role as Langley's Federal Women's Program Manager, where she dedicated her life to promoting the next generation of female scientists.

Source: https://www.nasa.gov/content/mary-w-jackson-biography

MAE JEMISON

Dr. Mae Jemison is the first African-American woman in space. As a child, Jemison showed a strong aptitude for the sciences, enabling her to start college at the young age of sixteen. Jemison graduated from Cornell Medical School in 1981, earning a Doctorate of Medicine. In June 1987, Jemison was chosen for the astronaut program to investigate a bone cell research experiment.

Source: https://www.nasa.gov/image-feature/mae-jemison-first-african-american-woman-in-space

THE COP15 EXPERIENCE:

GAINING PERSPECTIVE ON GLOBAL NATURE CONSERVATION

By Dr. Stuart Livingstone

Photo Credits: Stuart Livingstone

Since 1992, signatory nations to the UN Convention on Biological Diversity (CBD) have been working together to implement a global strategy for biodiversity conservation. In December of 2022, over 10,000 delegates from around the globe convened in chilly Montreal for the 2nd half of the 15th Conference of the Parties (COP15) for the CBD with the goal of solidifying a new suite of targets. The Kunming-Montreal Global Biodiversity Framework emerged out of the COP, and it has been widely praised for its ambition and inclusivity. The framework is grounded in a human rights-based approach to conservation, recognizing the inalienable rights of all to a clean, healthy, and sustainable environment, also extending those rights to future generations. The varied objectives and targets of the framework also reflect a shift away from the notion of “fortress conservation” to a more holistic perspective that recognizes the need for sustainable engagement with nature, and the long existing stewardship practices of Indigenous peoples around the planet.

The new framework includes 23 action-oriented targets which each signatory nation will adapt to their own national contexts and strive to achieve by 2030. The targets run the gamut of all the things you would expect to emerge from a biodiversity convention: sustainable and equitable access to biodiversity, restoration of degraded lands, species recovery, education, and development of scientific innovation. But the focal target that has garnered the most attention is for signatory nations to ensure that by 2030, at least 30 per cent of terrestrial, inland water, and of coastal and marine areas are effectively conserved, or “30 by 30”. Embedded into this area-based target for biodiversity protection is the need for signatory nations to recognize and respect Indigenous rights and territories, and a commitment to achieve these conservation outcomes in partnership with Indigenous peoples.

The COP saw the Canadian federal government announce the new Project Finance for Permanence initiative, which will support Indigenous-led conservation in several regions across Canada (Trudeau, 2022), as well as the new First Nations Guardians Network (ECCC, 2022). While there remains many challenges in the varied interactions between Canadian governments and Indigenous peoples in Canada (McIntosh, 2022), the many examples of partnerships supporting Indigenous-led conservation have become bright spots in the conservation landscape, addressing objectives for both reconciliation with Indigenous peoples and international commitments for biodiversity conservation.

I was lucky to be able to attend COP15 with 24 students from the Master of Environmental Science (MEnvSc) program, specifically with those enrolled in my Conservation Policy Graduate course. These UN COP events are a far cry from the typical academic conferences that I've taken part in. At the COPs, international commitments for biodiversity planning are negotiated and formalized behind closed doors while a wealth of side-events are held that give practitioners and policy makers an opportunity to share their successes. While at the COP, I spent much of my time at the Canada Pavilion where Indigenous leaders were sharing their success stories, and also reflecting on the dark history of conservation in Canada (Indigenous Circle of Experts, 2018). Indigenous-led conservation was front and centre at the COP, with significant focus on the promotion of more holistic relationships with nature, cultural continuity for Indigenous communities, the significance of Indigenous language and Indigenous knowledge and the power of cross-cultural literacy for shared conservation outcomes.

Several students had poignant reflections on their time at the COP as well. Kirsten Scott noted that "listening to Indigenous people from South America talk about the impact of development in their ancestral territories as part of a "Stop Ecocide" panel was moving and sad. It was also starkly similar to comments I've heard from Indigenous people of Canada, even though the impacts are thousands of miles apart." Attending a panel on the Sustainable Wildlife Management Programme, Angelina Campbell heard panelists speak about the importance of timely and equitable engagement between local communities and international partners. She also found that the One-Health framework (Mackenzie & Jeggo, 2019) has become a critical interdisciplinary lens for human interactions with wildlife to protect the health of people, wildlife and the environment.

Photo Credits: Christine Ah-Chong, Andre Sanchez

Photo Credits: Stuart Livingstone, Andre Sanchez

Kate Dickson commented on the challenge of deciphering the state of negotiations and policy development at the COP, saying “I found it really interesting to watch these organizations, who aren't directly involved in the negotiations but who are able to be there listening, provide really unbiased and honest feedback on how the talks were going. With the other events, it's easy to get a little sidetracked on why you're there, but the briefings were a nice reminder of what was actually happening at COP in real time!”

Guangrui Li attended some sessions on global advances in the links between biodiversity and city infrastructure, reflecting that “representatives from India, Philippines, and Nepal introduced current and future biodiversity-friendly infrastructure projects. It is very encouraging that conserving biodiversity while fulfilling the demands for development is becoming a consensus of more and more countries.“

Sarah Zhao noted her favourite talk being one by the Okanagan Nation Alliance, which focused on Indigenous-led conservation towards the recovery of southern Mountain Caribou. She said the session focused on “how traditional knowledge can be implemented into the legal system, and how species conservation in its current stance is a necessity brought about through colonialism and exploitation. It greatly provided insight into how the intrinsic value of species is no longer respected or protected.”

Our time at the COP, which was limited to two days, was something of a snap shot given that the conference ran for almost two weeks! But the immense scope and scale of the COP was still evident. There was a palpable sense of positivity at the COP, with so many practitioners clearly aiming at a sustainable future. With the revised language and targets now in place for the new CBD framework, we need meaningful implementation by our federal, provincial, and municipal governments. But increasingly, there’s also a need for academics and practitioners to work together to inform evidence-based conservation policy and practice. Thankfully, here at DPES, we’re working to cultivate the next generation of conservation leaders in Canada.

Photo Credits: Christine Ah-Chong

I would like to extend a huge THANK YOU to DPES, Shelley Eisner and the Pedagogies of Inclusive Excellence Fund for making this trip possible!

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FACULTY PROMOTION

(excerpts taken from DPES Chair communication)

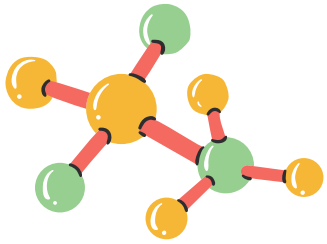
Congratulations to UTSC's **Dr. Marco Zimmer-De Iuliis**, who was recently granted Continuing Status and Promotion to Associate, Professor, Teaching Stream. He has brought enormous energy, creativity, and teaching excellence to DPES, and he continues to impress the entire UTSC community.

Professional Background

Dr. Zimmer-De Iuliis completed his MSc and PhD in Inorganic Chemistry with Professor Bob Morris at the University of Toronto, and spent two years at the University of Toronto Mississauga as a postdoctoral fellow with Professor Ulrich Fekl. He was a lab demonstrater for all levels of undergraduate chemistry during his graduate studies, also holding a lectureship for a third-year inorganic chemistry course as a postdoctoral fellow. He also completed his Bachelor of Education at the Ontario Institute for Studies in Education at the University of Toronto after a semester of this lectureship.

Prior to becoming an Assistant Professor, Teaching Stream, at UTSC in July 2017, Dr. Zimmer-De Iuliis taught chemistry and mathematics for a year in the United Kingdom, then at George Brown College in the Faculty of Nursing. He also taught Bioinorganic Chemistry and Introduction to Inorganic Chemistry at the University of Toronto Mississauga while holding sessional lecturer appointments at the University Transfer Program at Seneca College.

Dr. Zimmer De-Iuliis is highly committed to continued professional growth and his ongoing teaching excellence. He has been successful with numerous teaching grants, including the prestigious LEAF seed grant ($45,000) awarded to support the first-year scientific writing project. He regularly participates in professional development activities, including the Instructional Skills Workshop (Center for Teaching and Learning, 2017) and the Peer-2-Peer Faculty Mentoring for Teaching Program Workshops (Center for Teaching, Support, and Innovation, 2019).



Oustanding Contributions to UTSC

At UTSC, it is clear that Dr. Zimmer-De Iuliis is strongly committed to providing an outstanding teaching and learning experience. He is responsible for several important courses with small (CHMC31) and large (CHMA10) class sizes, as well as the introduction of a new advanced-stream, first-year course (CHMA12). He has been an exceptional leader in the revitalization of the first-year chemistry lab and lecture curriculum, including a new introductory textbook to be published in-house.

His excellent supervision of two graduate student recipients of the Chemistry Teaching Fellowship Program also supported the development of new CHMC31 lab materials and course materials for the Preparatory University Chemistry Course. This new, free course is an exceptional community-based initiative to improve the transition from high-school to first-year university courses. It will provide incoming UTSC students an opportunity to review key concepts, practice problem-solving, and gain hands-on lab experience.

In recognition of his outstanding academic record, Dr. Zimmer-De Iuliis has both received the Dean's Merit Award and been nominated for campus- and university-wide teaching awards multiple times each. His list of accomplishments is far-reaching, but even more impressive is his deep passion and love of teaching–something that all of his students can attest to.

WARMEST CONGRATULATIONS DR. ZIMMER-DE IULIIS!

FACULTY PROMOTION

(excerpts taken from DPES Chair communication)

Congratulations to UTSC's **Dr. Heidi Daxberger**, who was recently granted Continuing Status and Promotion to Associate, Professor, Teaching Stream. Her strive for excellence in teaching, demonstration of educational leadership, and dedication to ongoing pedagogical/professional development is exemplary.

Professional Background

Dr. Daxberger received her M.Sc. (2009) from the Friedrich-Alexander University in Germany, with a research focus on Structural Geology & Petrology. She completed her Ph.D. in Structural Geology (2013) at McMaster University. The quality of her scholarship is reflected in the numerous conference presentations, as well as the six (6) peer-reviewed publications in highly respected journals in her field (Geomorphology, Tectonophysics). As a lecturer with a Contractually-Limited Term Appointment (CLTA) at the Department of Physical and Environmental Sciences (July 2014 – June 2017), she demonstrated her teaching skills and talent by successfully delivering both introductory and advanced courses. She was also active in acquiring a number of teaching equipment grants for the department ($4,500-$25,000) that have profoundly enhanced student learning experiences and our capacity with the delivery of laboratory exercises (e.g., polarizing microscopes and rock thin sections). She also fostered a number of national and international research collaborations.

In 2017, Dr. Daxberger joined the Department of Physical and Environmental Sciences as an Assistant Professor, Teaching Stream. Since then, she has overwhelmingly established her status as a very popular and highly regarded course instructor, with outstanding course evaluation metrics and comments. Her promotion package provided abundant evidence that she is a superlative educator, who has shown a sustained level of excellence in teaching at the undergraduate level. Her record includes very significant pedagogical contributions to departmental/divisional curricular initiatives and teaching committees. She has been instrumental in the development of a coherent and unifying curriculum for the Environmental Sciences discipline, spanning second-, third-, and fourth-year courses. For her impeccable academic record, she has received the Dean's Merit Award multiple times and has been nominated for campus-wide teaching awards on multiple occasions. In 2020, she was the recipient of the University of Toronto Scarborough Teaching Award in the category of Assistant Professors.

Dr. Daxberger's teaching record amply demonstrates her aptitude to enhance student learning through the development of mentoring programs (>30 student volunteers supervised in Reading/Research courses), innovative classroom practices, and distinctive approaches to the delivery of both courses and curricula. To facilitate her endeavours, she has been very successful in obtaining grants (>10 Teaching Equipment grants, Teaching Enhancement Grants, and Professional Development Fund) that have allowed her to develop on-line, interactive teaching materials for her courses. Most notable highlights are the development of an astonishing virtual field trip to Albion Falls that provides our students with geologic graphs/maps, UAV video footage, 3D-imagery, and close-up photographs. Heidi's passion for teaching and her unwavering commitment to improve her skills can also be seen with her participation in nearly 20 workshops/conferences through the UTSC's Centre for Teaching and Learning and the completion of her CTSI-ACUE (Association of College and University Educators) – certificate in Effective Teaching Practice.

Several external appraisers profusely praised Dr. Daxberger's all around excellent work and noted that they see compelling evidence of her passion to strive for excellence in teaching, demonstrate educational leadership, and dedicate herself to ongoing pedagogical/professional development for many years to come. We are deeply impressed with Heidi's contributions to the core educational enterprise of our department....and we look forward to her future professional endeavours!

Warmest congratulations Heidi!! We are immensely proud of all your successes and know there are many more to come!!

WARMEST CONGRATULATIONS DR. DAXBERGER!

AWARD HIGHLIGHT

Professor Myrna Simpson of UTSC's Department of Physical and Environmental Sciences has received a prestigious DIMA Award from the Chemical Institute of Canada.

Prof. Myrna Simpson is the 2023 recipient of the CIC Environment Division R&D Dima Award, awarded for her distinguished contributions to research and/or development in the field of environmental chemistry. Prof. Myrna Simpson is also the recipient of the highly prestigious Clair C. Patterson Award from the Geochemical Society. This award is presented annually for an innovative breakthrough in environmental geochemistry of fundamental significance within the last decade. To be viewed as innovative, the work must show a high degree of creativity and/or be a fundamental departure from usual practice while contributing significantly to understanding in environmental geochemistry. With this award, Professor Simpson joins a list of highly distinguished scholars in the field of environmental geochemistry (https://www.geochemsoc.org/honors/awards/ccpattersonaward).

Prof. Simpson obtained her B.Sc. in Chemistry & Mathematical Sciences (1993) and Ph.D. in Environmental Soil Chemistry (1999) from the University of Alberta. After completing a postdoctoral fellowship in the Department of Chemistry at The Ohio State University, she moved to the University of Toronto in 2002. In 2004, Myrna co-founded the Environmental Nuclear Magnetic Resonance (NMR) Centre which is the only high field NMR facility in Canada solely dedicated to environmental research. In addition, Myrna has developed mass spectrometry-based methods that is used with NMR data for a more holistic and integrative approach to unravelling complex environmental processes. She is the Tier 1 Canada Research Chair in Integrative Molecular Biogeochemistry and has been awarded two NSERC Discovery Accelerator Supplement (2010 & 2015). Myrna has also received international awards including the IUSS PM Huang Award, the SETAC/RSC award for Environmental Science, and the RSC Analytical Division Sir George Stokes Award with A. Simpson, A. Wheeler, Bruker BioSpin + several trainees. Over her career, she has made several distinguished contributions to the field of environmental chemistry and has authored/co-authored over 230 publications which have been cited >11,000 times (h-index of 60).

WARMEST CONGRATULATIONS PROFESSOR SIMPSON!

OTHER LINKS:

- https://www.utoronto.ca/celebrates/myrna-simpson-recognized-dima-award
- https://utsc.utoronto.ca/news-events/daily-update/myrna-simpson-receives-clair-c-patterson-award-geochemical-society

AWARD HIGHLIGHT

Professor Oleksandr (Alex) Voznyy is the 2023 recipient of the Strem Award for Pure or Applied Inorganic Chemistry. This award is presented to a Canadian citizen or landed immigrant who has made an outstanding contribution to inorganic chemistry, demonstrating exceptional promise.

Background

Prof. Voznyy joined DPES in 2018 with a graduate appointment in Chemistry. Prof. Voznyy's research program focuses on the development of materials for energy applications, with the overarching goal of providing solutions for clean energy technologies. He has published a prodigious number of papers (>200), has an impressive list of invited talks, stellar number of citations (≈34,000 citations, H-index=87), and a recent appointment as an Associate Editor (Applied AI Letters), which all speak volumes for the superb quality and immense impact of his work. Another major highlight in his career is his induction into the highly coveted list of highly cited researchers in Materials Science by Web of Science in 2020. Each year, Clarivate identifies the world's most influential researchers — the select few who have been most frequently cited by their peers over the last decade. In 2020, fewer than 6,200, or about 0.1%, of the world's researchers, have earned this exclusive distinction.

Using AI for Materials Discovery

Professor Voznyy was recently interviewed by UTSC News for his work on harnessing artificial intelligence to discover new and more efficient materials for clean energy technology. Voznny's team developed a machine learning model with data from The Materials Project open database to predict information about new materials. The model developed by Voznyy's team can do these calculations 1,000 times faster than conventional calculations, which relies on a quantum chemistry approach.

Previous models were able to reproduce the stabilities of known materials, but they couldn't predict for materials with unknown crystal structures. By training the new model on something called distorted structures, it not only improved the model's understanding of strain physics, it also allows the model to relax a crystal structure to its more stable configuration.

"Knowing the precise crystal geometry is essential to accurately predicting what the properties of new materials will look like and how they will perform," says Voznyy to UTSC News. "This method significantly speeds up this process and opens up a lot of possibilities."

Read more:

- https://www.cheminst.ca/awards/csc/strem-chem/
- https://utsc.utoronto.ca/news-events/breaking-research/u-t-scarborough-researchers-use-ai-speed-discovery-materials-clean-energy
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GRADUATE PROFILE
SARA SOUZA

When did you graduate from UTSC?

I graduated in November 2022 from the Master of Environmental Sciences, Conservation and Biodiversity stream. I am also an internationally educated student and a newcomer to Canada, but came to Canada as a PR, sp was deemed a domestic student during my graduate studies.

What is the title/position you hold now and how long have you been there?

I am now a Wildlife Technician at Canadian Wildlife Services, a branch of Environment and Climate Change Canada. I have worked in this position since I started my co-op in May 2022.

If you could give a brief summary of your role, what would that be?

I have two main projects I have been working on. One is conducting migratory bird population surveys, identifying, and documenting species presence and colony sizes around the Great Lakes. The other involves trapping and banding birds, collecting biological data, and removing and deploying GPS transmitter tags to track species movements and understand land and habitat use throughout the year. To collect this data, we travel to field sites by land and boat, often working long days in remote locations during the late spring and summer months. All data is then managed, input and organized in databases for future analysis and reporting on species ecology.

What is something interesting the department doesn't know about you?

I have encountered sharks while scuba diving a couple of times. I have another master's (Ecology), and my thesis was about dolphin abundance in southeastern Brazil. I enjoy drawing, watercolour painting and all craft-related hobbies. I have a dog (whippet) named Snoopy; he is super sweet.

What experiences while at UTSC did you find were helpful in getting you to where you are now?

Because my course was almost entirely online, my experiences were also primarily virtual. Learning how to communicate better using online meetings and virtual coffees and getting comfortable in front of a camera definitely helped grow my network.

What opportunities did you find helpful in getting you to where you are now?

Advanced Seminar in Environmental Science took me away from my comfort zone. As an introvert, I find it hard to "sell myself" and talk to people I don't know. Saying how great I am is not something I am comfortable doing. This course has helped me prepare myself. I learned how to build a good resume and cover letter and how to position myself in an interview. That was crucial for getting my co-op position. Take the most of those seminars, ask questions, practice applying for jobs you like and do not skip the mock interviews.

What are the challenges of your current position?

This position has many challenges. The biggest one is that plans are constantly changing due to weather conditions and other constraints that we can not foresee. When working in the field, knowing what to expect is hard, and you must be prepared for anything. So, being adaptable is very important to adjust to different scenarios.

What are the most rewarding aspects of your current position?

I love being outside, watching wildlife, travelling to gorgeous sceneries, and working with a passionate team. Having those moments in nature is so rewarding that I barely notice how tired I am. I feel very so grateful to be where I am and to do the job I do.

What advice would you give to current students?

Self-awareness will help you understand what you want. It's common to feel lost when you have little to no work experience about which jobs to apply for and what certifications to get. Volunteering is one way to get some experience and understand what scenario you do well. You can transfer everything you learn or experience to other jobs. Remember that if you end up hating your job, it's not the end of the world. You don't have to stay and do that forever. Learn from your mistakes and find something else. Don't lie to get a job; if you are not a good fit for the position you will regret it later.

Work life balance?

We all seek work-life balance, but it may have a different meaning for each person. First, define what it means for you and learn how to set boundaries to accomplish it. Take care of your body and mental health, exercise more, eat well and enjoy your time with your colleagues at work because you spend most of your time with them; they are your second family. You are important in your job, but you are not irreplaceable. Remember that when deciding what's best for you.

Where do you hope to be career-wise in 10 years?

I have learned to focus on what I can do now as best as I can. The future is a mystery, and I can't control it. It's important to have career aspirations, but it is essential to be open to other opportunities for growth. That being said, ten years from now, I plan to be in an indeterminate position within the government, doing research essential to understanding population dynamics and how we can contribute to species conservation. Whether it will be with birds (like in my current job), marine mammals (like my previous experience and passion), or even some other animal group, it will depend on what opportunities arise. Additionally, I want to be more knowledgeable and become a mentor to help other students, new professionals, and newcomers like me to achieve their goals.

What advice would you give yourself if you can go 10 years in the past?

Don't give up on your dreams. Trust that you'll find your way, somehow. Everything you've been through will make you grow as a better person. Take care of your mental health and find time to do what you love and to be with your loved ones.

A Day in the Life of a Geologist

with Professor Mandy Meriano

By Harry Xu

Dr. Mandy Meriano is specialized in groundwater flow and impacts of urban development on water quality and quantity and understanding the linkages between groundwater and surface water using analytical, geochemical, and numerical modeling.

What has brought you to the world of Geology?

My first-year biology professor said today's water is the same that dinosaurs drank. I didn't know this in high school, so I became very interested in the environment around me. I was also inspired by my interactions with many professors back then.

What's your favourite pastime?

Knitting! I also love to take my dog Gypsy for nice hikes on the trails.

Students at EESD33 Drilling Day 2018.
Source: UTSC DPES Facebook

Is there any memorable field experience you want to share with us in your knowledge?

When I was working as a consultant at an environmental engineering company on a drill job, we were drilling and looking for contamination in this one area, and we hit a gas line. It was quite a learning experience and a very terrifying one. You know how I tell you guys it is okay to make mistakes? That was one of those mistakes I'd never want to make, because people can get hurt; even one is too many. That's why health and safety are so important to me, as I mentioned a lot in my classes. It was not my fault alone but also the company. The lesson is always to do your checks and take your time.

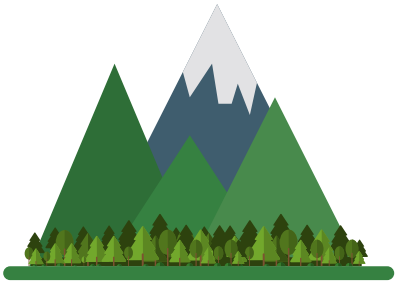
What would you do for preparation before stepping out into the field?

This is important to me. We have one designated course, EESD33- Field Techniques, and I have a whole module on the preparation process....How to do locates, how to make sure that you've got your locates and your crew together, you have all the emergency information. Then you would have a level of comfort, certainty, and confidence. You would know what's happening, where the dangers lie, and how to avoid them. You would know how to keep everyone safe, and I strongly believe that should be the foremost responsibility of a geoscientist.

Students love this course because it brings all your classroom theoretical learning and throws you into the field. It is like learning to swim in the water for the first time. What works in the classroom often doesn't work in the field. You may get frustrated when going in there. It'd be like "oh my god, it's not working. The pipe broke, I lost this, that fell into the well, the battery ran out, and the generator is not working." You may feel like nothing is working and thought it was too easy.

Travelling is undoubtedly a part of being a geoscientist. Do you enjoy it much?

I always think it's such a wonderful thing. It is so exotic going from place to place. I wanted that as an undergrad, and I did it. It has been an amazing journey. I think travelling is so important. I hope and I wish for everyone to have the time and resources to do it. I know not everyone can, but what I think is (it's) one of the best ways to learn. We can learn about our science. We can learn about our impact. We can learn about challenges outside of our understanding. That's what travelling highlights. I love experiencing different cultures, but at the same time, I know it's challenging to operate in cultures you don't understand and are not familiar with. It requires a lot of patience. It requires being aware and accepting of differences. And that's one of the things I learned through my travelling.



When it comes to my career, I have worked with some people whose work culture was different, their approach was different, and I had to be very careful that I didn't come across as too aggressive. So be respectful, and be patient. Listening and putting judgment aside are the other things I have learned. Don't judge. It's wrong. So be open, listen to people, and focus on the objectives. It's not about people. It's not about what somebody says. It's not about personal emotions. It's about goals and objectives, and it's about working together. And sometimes, it's hard because people come from different angles, backgrounds, and experiences. And that's one of the challenging things when working within teams. Most of us in environmental sciences and geosciences don't work in isolation. We have to work in teams because we are in such an interdisciplinary science. We have to work with different people. So yeah, that's travelling as it comes with your career. It teaches you a lot.

That was very informative. Do you have some additional notes for the students?

I always tell my students that you're not just my students. You're also my colleagues. That's what it is, and that's how I see you. Our interactions are not just from an instructor to a student. But once the class is over, I honestly see all of you as my colleagues because you will eventually be my colleagues. Who knows? We might even work together at some point. And I have been actually working with my students in the past, and it's the most wonderful thing. So, follow your passions, but be bold, be brave, and be free. Don't be scared of anything.

UTSC SUSTAINABILITY WEEK

Sustainability at the University of Toronto has improved immensely since the establishment of the **President's Committee on the Environment, Climate Change & Sustainability** (CECCS) five years ago. The university recently ranked second in the world in the inaugural QS Sustainability Ranking, a well-respected accomplishment that our sustainability journey is moving in a positive direction. One outstanding example is the introduction of the sustainability pathways program, which will allow University of Toronto students to be recognized for their sustainability experiences in various courses and co-curricular activities. The university is also holding the annual Adams Sustainability Celebration to recognize the impact made by students, faculty, and staff, including the Innovation Prize Pitch Competition on March 3rd at Hart House.

We're celebrating sustainability at UTSC with our annual **Sustainability Week** from **February 27th to March 3rd**. This week of events and workshops held by the Sustainability Office features events from many student-led, sustainability-minded clubs. For responsible recycling, there will be e-waste and battery drop-off bins in the Meeting Place all week. Be sure to check out all the events detailed below!

Sustainable Kitchen
6-7 PM, Culinaria SW313

Hosted in collaboration with the Culinaria Research Centre, join the Sustainability Office to learn how to make vegetarian dumplings and miso soup to make use of kitchen scraps. Register on CLNx.

FEB
28

UTSC Sustainability Clubs Day
11 AM-3 PM, Meeting Place

Interested in joining a new club at UTSC? Drop by the Meeting Place to learn more about the many different student clubs that have a focus on sustainability.

MAR
1

Repair and Embroidery Event
12-4 PM, AC227

Join *Regenesis* and *Prestige* for a Repair Workshop! You can repair old clothes or embroider something new with their help. Snacks provided. Register through their Instagram: @regenesisutsc @prestige_utsc

The Sunnah's of Sustainability
4-6 PM, AC227

Join the *Muslim Student Association* and a speaker from Enviromuslims for a discussion on how sustainability is an integral part of Islam and daily things that can be done to live sustainably. Register through their Instagram: @msa_utsc

Upcyling Workshop
6-8 PM, AC227

Hosted by *BioSA*, bring your old shirts and pants to this workshop to be taught how to upcycle these items into a new and useful product like a tote bag with no sewing! Snacks provided. Register through their Instagram: @thebiosa

Indigenous Sustainability and Development
5-7 PM

This event is a conversation--with food--hosted by the *IDSSA* on Indigenous-led sustainability. Register through their Instagram: @idssa.utsc

Bee Hotel Construction Workshop
12-2 PM, HW Patio

Come along with UTSC Parks Canada Club and help prepare Bee Hotels for the upcoming summer field season! Led by our very own Professor Scott Macivor and his BUGS lab, we will explore the importance of bees and wasps and habitat creation in the city. Register at: https://forms.gle/W2MRZw1mU3XbLcKh9

The Valley Clean-up
2-3 PM

Hosted by *GCSA*, join the club in participating in a valley clean-up. The event will begin with students meeting at the top of the steps at the entrance to the Valley Trail, HW patio. Register through their Instagram: @gsca_utsc

UTSC FREE STORE

Did you know that UTSC has a Free Store on campus? Yes, you read that right! Everything in the store is **FREE.** This initiative was set up by Student Housing and Residence Life, and currently co-operated by student group Regenesis UTSC. The goal of the Free Store is to practice sustainability and reduce landfill waste by giving unused items to those in need. For more information, please check out the Regenesis UTSC Instagram page (@regenesisutsc) and feel free to send them a message!

Currently, there is a contest going on for people who donate items to the Free Store. Be sure to check it out for a chance to win a prize!

FROM THE TRACES CENTRE

GC-QQQ PREVIEW

In the December 2022 issue of the DPES digest, TRACES previewed the addition of a liquid chromatography (LC) triple quadrupole (QQQ) mass spectrometer to its analytical repertoire which was acquired as part of an investment aimed at closing the instrument gaps within the facility. This was one of three major acquisitions secured through this investment. As an update to that previous article, this instrument (*Picture 1)* has now been installed in the southeast corner of the TRACES facility and is up and running!

Picture 1. Agilent 6470 QQQ mass spectrometer connected to our ultra-high performance liquid chromatography (uHPLC) system.

Picture 2. Agilent 7010B QQQ mass spectrometer connected to an 8890 GC system.

Originally, this issue of the Digest was going to feature a more comprehensive discussion of the operating principles and capabilities of the LC 6470 QQQ mass spectrometer. However, we would instead like to take this opportunity to preview the addition of the second major acquisition – the gas chromatography (GC) 7010B QQQ mass spectrometer. The installation for this instrument (*Picture 2*) has also been completed and is now running alongside the bank of GCs in TRACES!

The 7010B QQQ mass spectrometer is connected to an Agilent 8890 GC system (*Picture 2*). This versatile GC/MS/MS setup can perform a wide range of qualitative and targeted quantitative analyses and the high efficiency source of the 7010B is capable of achieving sensitivities in the low femtogram range for certain analytes! That's a lot of zeros to the left of the decimal place! Application examples for this system include, but are not limited to, pesticide

FROM THE TRACES CENTRE

GC-QQQ PREVIEW

residues in food matrices, dioxins and other persistent organic pollutants, indoor air toxins, environmental semi-volatiles and metabolomics studies. Our GC/MS/MS system is also equipped with an extensive sample handling system (*Picture 3*) which includes the standard 2 mL vial trays for liquid samples, a temperature-controlled agitator module, a headspace sampler, and injection adapter tools for both SPME (headspace and immersion extraction) and ITEX (In-Tube Extraction Dynamic Headspace) which further broadens the range of possible analytical applications in solid, liquid and gas samples.

Picture 3. PAL RSI 120 sample handling system.

In upcoming issues of the Digest, TRACES will provide more detailed articles on the capabilities and power of LC and GC triple quadrupole mass spectrometry and how they differ from single quadrupole systems, as well as more focused application articles. On a final note, at the time that this article was being written, the third and final instrument acquisition – an inductively coupled plasma mass spectrometer (ICP-MS) – was in the process of being installed so stay tuned for more information in the next DPES Digest article!

CONTEST UPDATE:

Congratulations to Myrna Simpson! She was the first person to correctly guess the word puzzle and the last names of each DPES Faculty/Staff member and received a $25 Starbucks Gift Card prize. Congratulations as well to Edina Illyes (pictured right) and N. Gadfly Stratton for correctly guessing the word puzzle before all of the other contestants! They have been awarded TRACES tuques for their valiant efforts.

Edina Illyes (right) and Tony Adamo (left).

DPES PROGRAMS SUMMARY

TOTAL PROGRAMS: 17

COOP PROGRAMS: 9

COMBINED DEGREE PROGRAMS: 3

CHEMISTRY

Chemistry Specialist
Chemistry Major
Biochemistry Major
Biological Chemistry Specialist
Environmental Chemistry Specialist
Environmental Chemistry Major

PHYSICS AND ASTROPHYSICS

Physics and Astrophysics Specialist
Physics and Astrophysics Major
Physical and Mathematical Sciences Specialist
Physical Sciences Major
Environmental Physics Specialist
Minor Program in Astronomy and Astrophysics

ENVIRONMENTAL SCIENCE

Environmental Biology Specialist
Environmental Geoscience Specialist
Environmental Science Major Environmental Science Minor
Natural Sciences and Environmental Management Minor

ENVIRONMENTAL STUDIES

Environmental Studies Major

CO-OP

Chemistry Specialist - Coop
Chemistry Major - Coop
Biochemistry Major - Coop
Biological Chemistry Specialist – Coop
Environmental Chemistry Specialist – Coop
Environmental Biology Specialist-Coop
Environmental Geoscience Specialist-Coop
Environmental Physics Specialist- Coop
Environmental Science Major-Coop

COMBINED DEGREE PROGRAMS

HONOURS BACHELOR OF SCIENCE / MASTER OF ENGINEERING

HONOURS BACHELOR OF SCIENCE / MASTER OF ENVIRONMENTAL SCIENCE

HONOURS BACHELOR OF SCIENCE OR HONOURS BACHELOR OF ARTS / MASTER OF TEACHING

UNIVERSITY OF TORONTO SCARBOROUGH

DPES DIGEST IS LOOKING FOR YOU!

Interested in assisting with the DPES newsletter?
Have any great ideas you want to see come to light?
Send us your resume!

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