



School of the Environment
UNIVERSITY OF TORONTO

2017-18 ANNUAL REPORT

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Jessica Green | Associate Professor, Political Science/Environment

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Kate Neville | Assistant Professor, Political Science/Environment

Hui Peng | Assistant Professor, Chemistry/Environment

Scott Prudham | Professor, Geography/Environment

John Robinson | Professor, Munk School of Global Affairs/Environment

Njal Rollinson | Assistant Professor, Ecology & Evolutionary Biology/Environment

Beth Savan | Senior Lecturer Emeritus, Environment/Senior Fellow, Massey College

Stephen Scharper | Associate Professor, Anthropology, UTM/Environment

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SCHOOL OF THE ENVIRONMENT 2017-2018

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MESSAGE FROM THE DIRECTOR

Professor Kimberly Strong



This message marks the end of my term as Director of the School of the Environment. With that in mind, we have added a 2013-2018 Retrospective as a centerpiece of this year's Annual Report. Through the effort and enthusiasm of many people, the past five years have seen many accomplishments. We launched the Environmental Science Major and Minor programs, introduced a dozen new courses, and developed a proposal for a Master of Environment and Sustainability, while new endowments enabled us to establish six scholarships and an annual symposium. The School's research and teaching received a significant boost with the recruitment of seven new cross-appointed tenure-stream faculty and another search approved for 2018-19. Undergraduate enrolments remain strong and enrolments in our graduate Collaborative Specializations have quadrupled since the School was established.

The 2017-18 academic year has also been eventful and productive. A major activity was a review of the School's undergraduate programs under the University's Quality Assurance Process. This involved extensive consultations, the preparation of a detailed self-study report, and a site visit by external reviewers. The resulting review was very positive and provided recommendations "to make a very good School even better"; in the coming year the School will be working with the Faculty and University on an implementation plan to put these into action.

We undertook three faculty searches this year and are very pleased to welcome two outstanding new colleagues. **Jessica F. Green** joined us on July 1, 2018 as an Associate Professor in a cross-appointment with the Department of Political Science, and **J. Alstan Jakubiec** will be starting on January 1, 2019 as an Assistant Professor in a cross-appointment with the Daniels Faculty of Architecture, Landscape, and Design. The search for a cross-appointment with the Department of Computer Science will continue next year.

Other highlights this year include the inaugural award of the Barbara Green Scholarship in Environmental Entrepreneurship and of the Marjorie Gillespie Bolton and Mabel Gillespie Norris Memorial Scholarship, a very successful Research Day with a new format and almost 100 attendees, a new agreement with the School of Continuing Studies to transition some of our professional development courses there, a new WordPress website for the School, linking the Environment Seminar Series to ENV100H (the core course in our graduate Environmental Studies Collaborative Specialization), and multiple events, including several organized by the School's Environmental Finance Advisory Committee. More highlights can be seen in the 2017-2018 Overview on the opposite page.

As the School has grown, we have decided to split the role of Academic Associate Director (AAD) into two positions, effective July 1, 2018. **Jessica D'eon**, Assistant Professor Teaching Stream in the Department of Chemistry, has become our new Undergraduate Associate Director and **Clare Wiseman**, Associate Professor in the School, has become our Graduate Associate Director. In addition, **Karen Ing**, Associate Professor Teaching Stream in the School, has provided outstanding service over the past year, first serving as Interim AAD from December through June, and then becoming the Interim Director for July and August. I thank all three for taking on these key positions. The School is in good hands!

Looking back, my term as Director has been a highly rewarding experience. It has given me the opportunity to meet many wonderful people who come from a variety of backgrounds and disciplines, but who all share a profound interest in the environment and sustainability. I thank all who have supported me and the School over the past five years, including our faculty, staff, students, sessional lecturers, alumni, donors, those with more informal connections, and the Faculty of Arts & Science; it has been a very great pleasure working with everyone.

Looking forward, the School will soon have a new leader. I wish the next Director great success in this role and in building on recent accomplishments to create an ever brighter future for the School of the Environment.

- Professors **Hui Peng** and **Njal Rollinson** are two of 30 scholars who are sharing \$7.3 million in federal funding through the **Canada Foundation for Innovation's John R. Evans Leaders Fund**.

- The **Environmental Students' Union (ENSU)** and Prof. **John Robinson** receive **Green Ribbon** awards from **U of T's Sustainability Office**.

- Professor Emeritus **Henry Regier** awarded honorary degree of **Doctor of Science** from **Michigan State University**.

- School of Environment students **Kyoko Adachi** (Environmental Ethics Major), **Allegra Bethlenfalvy** (Environmental Studies Major) and **Amanda Harvey-Sanchez** (Environmental Studies and Anthropology Majors) receive the **Gordon Cressy Student Leadership Award**.

- The extensive and detailed preparation of a self-study report results in positive external review of the School's undergraduate programs under the **University of Toronto's Quality Assurance Process**.

- Inaugural award in fall 2017 of the **Barbara Green Scholarship in Environmental Entrepreneurship**, resulting from a very generous endowment by **David Scrymgeour**, **Sandra Beaumont**, and **Steven Scrymgeour** in memory of their mother.

- Inaugural award in April 2018 of the **Marjorie Gillespie Bolton and Mabel Gillespie Norris Memorial Scholarship**, resulting from a donation by **Kevin (Vin) Bolton** in memory of his mother and aunt.



FACULTY UPDATES

- July 2018 arrival of Associate Professor **Jessica Green**, new cross-appointment with the Department of Political Science in the area of Global Environmental Politics and International Relations.
- Assistant Professor **John Alstan Jakubiec** is the new cross-appointment in Sustainable Built Environments with the Daniels Faculty of Architecture, Landscape, and Design arriving in January 2019.
- Upcoming cross-appointment with the Department of Computer Science in the area of **Sustainability and Climate Informatics**.

STAFF UPDATES

- October 2017 arrival of **Stella Kyriakakis** as Assistant to the Director.
- December 2017 arrival of **Kiran Champatsingh** as Communications Officer.

NEW FACULTY



Jessica F. Green, Associate Professor, Department of Political Science and School of the Environment

We are delighted to announce that **Jessica F. Green** joined the School of the Environment on July 1, 2018 as an Associate Professor in a new cross-appointment in Global Environmental Politics and International Relations with the Department of Political Science. "With a background in both Political Science and Environmental Studies, she will be another terrific addition to the School's faculty," said School Director **Kimberly Strong**.

Dr. Green holds a PhD from Princeton University, a Master of Public Affairs from Columbia University, and a BA from Brown University. Prior to joining the University of Toronto, Dr. Green was an Associate Professor in Environmental Studies at New York University.

Her research interests include climate governance, non-state actors, private authority, global governance, and transnational regulation. She is interested in the ways that global institutions, both public and private, can provide public goods, particularly in the area of environment.

In 2017, Dr. Green received the Emerging Young Scholar Award from the Science Technology and Environmental Policy Section of the American Political Science Association (APSA). Her book, *Rethinking Private Authority: Agents and Entrepreneurs in Global Environmental Governance* (Princeton University Press, 2014) received three awards in 2015: the Harold and Margaret Sprout Award for the best book in environmental politics from the International Studies Association, the Lynton Keith Caldwell Award from APSA, and the Levine Prize from the International Political Science Association.



J. Alstan Jakubiec, Assistant Professor, Daniels Faculty of Architecture, Landscape, and Design and School of the Environment

We are also very pleased to announce a successful conclusion to this year's search for a cross-appointment in the area of Sustainable Built Environments with the Daniels Faculty of Architecture, Landscape, and Design. **Alstan Jakubiec** has accepted an offer and will be starting an Assistant Professor on January 1, 2019. "He is another excellent faculty appointment, one that provides an opportunity to build new links between the Daniels Faculty and the School and to develop new expertise in the area of sustainable built environments," said School Director **Kimberly Strong**.

Dr. Jakubiec is currently an Assistant Professor at the Singapore University of Technology and Design, where he runs the Design for Climate and Comfort Lab (<http://asd.sutd.edu.sg/dcc/>). He has a PhD in Building Technology from MIT, a Master of Architecture from the University of Pennsylvania, and a BSc in Architecture from the Georgia Institute of Technology.

Dr. Jakubiec's work focuses on integrating concepts of natural daylighting, materiality, visual and thermal comfort, and ventilation into the architectural design process. As a founding board member of two companies, Solemma and Mapdwell, he works to bring the fruits of research on architectural and urban sustainability to designers and consumers. At Solemma, he is the lead developer of the widely used DIVA sustainable design software for daylighting and energy modeling. Dr. Jakubiec also teaches architectural energy systems, lighting design, and urban sustainability.

RESEARCH

GTA Urban Emissions Project

by Debra Wunch



(L-R) Sébastien Ars (Postdoctoral Fellow), Jaden Phillips (4th year undergraduate, Environmental Science and Psychology), and Colin Arrowsmith (4th year undergraduate, Physics) about to embark on a survey with the mobile atmospheric monitoring laboratory. Photo: Debra Wunch

Carbon is a fundamental building block of all living organisms. Carbon is also present in the Earth's atmosphere, primarily as carbon dioxide (CO_2) and methane (CH_4), and these gases are cycled between the Earth's atmosphere, ocean, and terrestrial biosphere. This cycling is referred to as the "carbon cycle". Carbon dioxide and methane are also greenhouse gases: they trap longwave radiation toward the Earth, warming our planet's surface. Without carbon dioxide in our atmosphere, the Earth would have an average temperature of about -18°C , instead of the much more comfortable $+15^\circ\text{C}$!

Human emissions, primarily through our burning of fossil fuels, but also through changes in land use, have increased atmospheric concentrations of carbon dioxide and methane since the industrial revolution. This change to the composition of our atmosphere causes average surface temperatures to rise, which has serious environmental consequences. Measurements of atmospheric carbon dioxide and methane play an important role in monitoring the changes to our atmosphere, and evaluating the impacts of emissions regulations.

Methane is much less abundant in the atmosphere than carbon dioxide, but it is a stronger greenhouse gas on a per-molecule basis, and it has fewer sources to the atmosphere. We are developing an urban greenhouse gas monitoring system in the greater Toronto area, focusing on identifying and quantifying emissions of methane to the atmosphere. There are several sources of methane in and around Toronto, including landfills, wastewater treatment plants, natural gas, agriculture, and ruminants.

Our mobile laboratory consists of a weather station and greenhouse gas analyser installed in a bicycle cargo trailer. We cycle around the city to measure known sources of methane to the atmosphere and to find previously unknown sources. Using this technique, we are beginning to piece together a picture of methane concentrations and emissions throughout the city. Our long-term goal is to identify and quantify the main emitters, help the city reduce its emissions, and provide verification of those emission reductions.

Residents of the GTA (present and past): from your knowledge of the city, can you suggest where we should measure? While methane gas is itself odorless, many processes that involve methane are not (e.g., decomposing organic matter, sewage treatment, additives to natural gas). If you have any ideas, please let us know! On our website, there's a link labeled "Where should we look?" that lets you click on a map or describe to us where we should visit and why. We will use the information you provide to design future cycling routes around the city.

<http://www.atmosp.physics.utoronto.ca/GTA-Emissions/About/index.html>

RESEARCH

Waste Not, Want Not: Stories of Wastefulness in Religion and Society

by *Tanhum Yoreh*

This special topics course explores religious environmentalism, its proponents and opponents, and its core values within three of the major Abrahamic faiths: Judaism, Christianity and Islam. Religious environmentalists have used teachings from the sacred texts as exemplars of sustainability. Some, however, claim that these texts teach domination, anthropocentrism and hierarchical values. Looking at a broad range of worldviews, we focus on the topics of wastefulness, consumption, and simplicity.

For instance, we look at ways in which religious communities in the past have taken measures to limit individual consumption through sumptuary laws and compare the moral arguments used historically to those used today by contemporary social movements such as the voluntary simplicity movement. Can we learn from the past? Are the arguments similar across time and place? Are they still relevant? Are they effective?

Waste Not combines two aspects of my pedagogic philosophy: primary texts and experiential learning. Reading unmediated primary sources gives the students the opportunity to use their imaginations and critical thinking to unpack the texts that have helped shape societies around the globe. We look at a wide range of historical texts from sources such as the Hebrew Bible, New Testament, Quran, Hadith, Talmud, legal codes, church sermons, and philosophical treatises. To complement these readings we look at contemporary texts such as Pope Francis' encyclical *Laudato Si – On Care for Our Common Home*, and other faith-based environmental statements calling for environmental action.

What are the values emphasized in such teachings? How similar are they to general environmentalism? In what ways are they unique? And perhaps most importantly, how do they manifest themselves in the behaviour of adherents? Where does religious environmentalism

fit to modern efforts to preserve the natural world? (e.g. limiting climate change).

There is an unmet hunger for investigating how the ideas and theories discussed in the classroom are translated into practice. To meet this demand in my course, students are given a window into the complexities and heterogeneity of Toronto's environmentally engaged religious communities, through fieldtrips and modern readings.

This past year, the class went on field trips to visit the Mary Ward Centre, The Jesuit Forum for Social Faith and Justice, The Narayever Congregation, Shores, and the Noor Cultural Centre. Seeing the sacred spaces with their own eyes, hearing religious leaders speak about the environmental initiatives undertaken in their communities, and being at the stomping grounds of faith-based environmental organizations are eye-opening learning experiences.

The Sustainable Built Environment Performance Assessment (SBEPA) Network

by *John Robinson*

Achieving the kinds of sustainability and carbon reduction goals adopted by many jurisdictions around the world will require a great increase in the number of sustainable buildings that actually perform as designed. The Sustainable Built Environment Performance Assessment (SBEPA) research network is a trans-disciplinary research group at the University of Toronto intended to improve our ability to assess the performance of the built environment.

SBEPA intends to focus on performance in terms of both environmental and human wellbeing in the built environment, and to look for opportunities to create 'net positive' outcomes in both areas, an approach we call regenerative sustainability.

The Network draws Faculty from five Schools and Faculties including Architecture, Engineering, Computer Science, Environment, and Public Health, as well as from the Facilities and Services team at the University. The University campus will be used as a 'living lab' for creating and applying a framework that evaluates this broader concept of sustainability in the built environment of U of T and beyond. The Network has recently hired a Postdoctoral Fellow Researcher and is planning to publish a position paper outlining our approach to built environment performance assessment.

SBEPA has adopted the following simple conceptual framework to show the linkages between more quantitative assessment of the performance of environmental systems and the more qualitative assessment of human wellbeing. The diagram depicts three performance gaps, which will form the basis of SBEPA research.

RESEARCH

Our Real Climate-Change Challenge

By Douglas Macdonald

The current Canadian climate change policy dialogue is focussed upon actions of the Trudeau government – the threat to impose carbon pricing in the two unwilling provinces, Saskatchewan and Ontario, and the purchase of the Trans Mountain pipeline to overcome British Columbia resistance. However, a far more important problem goes largely unnoticed. This is the fact that provinces are pursuing conflicting climate change policy goals. Governments in Ontario (prior to the election of **Doug Ford**), Quebec, New Brunswick and Nova Scotia have been implementing climate policies intended to reduce their greenhouse gas emissions. Alberta and Saskatchewan, on the other hand, have been implementing policies intended to increase their emissions.

The following Government of Canada data on megatonnes (one million tonnes) of emissions shows the result.

	2005	2015	% change
Alberta	233	274	+18%
Saskatchewan	70	75	+7.8%
Ontario	204	166	-19%
Quebec	89	80	-10%
New Brunswick	20	14	-31%
Nova Scotia	23	16	-30%

Source: Table 3-7 GHG Emissions by Provinces/Territories, Selected Years; page 047, Government of Canada (2017), Canada's 7th National Communication and Third Biennial Report

The country is going down two different climate-change paths and the current plan is that we continue to do so for the next decade while we work to achieve the Paris reduction target.

Existing Alberta and federal government policies under the current national policy, the Pan-Canadian Framework, are intended to see Alberta emissions increase by a further 9% over the 2005 level by 2030 – while emissions in the country as a whole decrease by 30%. How can that be done? It is only possible if other provinces

are willing to make the cuts Alberta refuses to make. Since that is extremely unlikely, it is almost certain we will miss the 2030 target, just as we have missed every previous target.

Although he is likely to win the Saskatchewan and Ontario court challenges, this problem cannot be solved

by **Prime Minister Trudeau's** backstop carbon price. A federal carbon tax in those provinces (and Alberta if **Jason Kenney** wins in 2019) will not meet the Paris goal, but will increase provincial resentments and widen the gap between emissions-reducing and emissions-increasing provinces. Instead, we need national policy which truly is co-ordinated, in which all provinces are moving in the same direction. As a first step in that direction, Canadians must recognize the real threat to our national climate-change policy.



A. *Prediction Gap: predicted versus actual resource use (e.g. modelled and measured energy, water consumption).*

B. *Expectations Gap: expected versus actual lived experience (e.g. pre- and post-occupancy evaluations).*

C. *Outcomes Gap: measured versus perceived environmental conditions (e.g. thermal comfort measurements and survey results).*

Combining assessment of these three gaps in specific built environments, with feedback to and from four key audiences—designers, developers, operators and policy-makers—we plan to begin to identify the design opportunities that provide net-positive places and spaces on both environmental and human scales.

RESEARCH

Indigenous and Peasant Livelihoods in the Peruvian Amazon

By Christian Abizaid

For more than 15 years now, I have been conducting research on indigenous and peasant livelihoods in the Peruvian Amazon. My research combines ethnographic methods with community and household surveys, and social network analysis, to explore questions around rural livelihoods at multiple scales. Specifically, I am interested in understanding how geographical, microeconomic, relational, and structural factors shape rural settlement, resource use, and vulnerability to environmental hazards in a region that remains poorly understood and is of great concern due to climate change. Currently, my research is being supported by the Social Sciences and Humanities Research Council of Canada (SSHRC).

A research leave during the 2017-2018 academic year enabled me to spend more time in the field and to gain significant new experiences that are enriching my understanding of rural livelihoods in the Peruvian Amazon, a fascinating part of the world. Specifically, I had the opportunity to re-visit riverine communities where I have been conducting research intermittently since 2002, documenting river dynamics and livelihood



Riverine community, Ucayali River.

responses to environmental and socioeconomic change for almost two decades now. During the summer of 2017, I was joined in the field by **Jennifer Langill**, an MA student working under my supervision (with **Ryan Isakson**), to conduct thesis work in a riverine community near Pucallpa, Peru on local people's experiences with flooding. Ms. Langill's study provides a more nuanced understanding of the significant challenges, but also benefits, associated with floods, and how local flood experience is shaped by gender, age, livelihood orientation, and historical and locational factors.

As part of my sabbatical this year, I was finally able to spend about two weeks in Ucayali during the peak of the flood season (February-March 2018), which gave me a much better sense of what it is like to live there during a flood. For years, I had known that in order to better understand the intricate connection between floods, people and their livelihoods in the Peruvian Amazon, one needs to actually be present during the flood.

Finally, in June 2018, I returned to Peru with two of my collaborators from the PARLAP project. We undertook a ~1000km boat trip down the Ucayali and Amazonas rivers, between Pucallpa and Iquitos, visiting more than 25 communities along the way, where we made observations and talked with local residents. This recent trip has helped me to gain a regional perspective on the links between river dynamics and livelihoods, and a broader understanding of livelihood heterogeneity in the Peruvian Amazon that will shape my research in the years to come.

Identification of Toxic 'Unknowns' in the Environment

by Hui Peng

We are exposed daily to hundreds of thousands of chemicals produced by industry or the natural environment. While some of these chemicals could be toxic, and may eventually lead to various adverse health impacts, the majority (>99%) of the chemicals in the environment cannot be 'recognized' by current technologies, and remain 'unknown'. To more completely understand the potential health risks of environmental chemical exposure, we should identify these 'unknown' chemicals and characterize their toxicities.

However, this could be challenged by many conceptual and technique questions: How to identify thousands of unknown chemicals in the environment, especially if their authentic standards are not available? What are the emission sources of these chemicals? How to characterize toxicities of these chemicals? Which of the thousands of chemicals are the most critical ones for regulation to reduce the health risks?

The latest projects supported by Canada Foundation for Innovation (CFI) and Ontario Research Fund (ORF) explores these questions. A state-of-the-art High-Resolution Mass Spectrometry will be obtained through this project. The new facility will allow the Peng group to develop analytical chemistry methods, in combination with computation, to identify thousands of chemicals in the environment. In parallel, the equipment will be also used to develop novel chemical proteomics methods to characterize the toxicities and toxic mechanisms of numerous chemicals identified in the environment. The project is just beginning, but the hope is to combine chemistry and biology tools to answer these long-standing questions in environmental science.

RESEARCH

Atmospheric Water Vapour Measurements in the Canadian High Arctic

By Dan Weaver and Kimberly Strong

Atmospheric water vapour plays a crucial role in the chemistry, dynamics, and radiative balance of the Earth's atmosphere. Climate change-induced shifts to the global hydrological cycle affect atmospheric transport processes, creating and intensifying droughts and flooding. Understanding the global water cycle has critical value, but our understanding of water vapour's abundances, variability, and transport are incomplete and atmospheric models are not able to accurately represent the water cycle. Observations are key to addressing this deficiency. Observations of the Arctic region are particularly sparse and important for understanding how the planet's atmosphere is changing.

Motivated by this need, we have been measuring atmospheric water vapour near Eureka, Nunavut (80°N , 86°W) and comparing measurements made by a suite of ground-based, balloon-borne, and satellite instruments; this work is the subject of two recent papers by PhD student **Dan Weaver**. Our primary instrument is an infrared spectrometer that measures the absorption of sunlight by water vapour, from which we can retrieve its concentrations. The accompanying photo shows our instrument, installed at the Polar Environment Atmospheric Research Laboratory (PEARL). The water vapour retrievals have been performed in collaboration with colleagues at the Karlsruhe Institute of Technology as part of the Multi-platform remote Sensing of Isotopologues for investigating the Cycle of Atmospheric water (MUSICA) project.

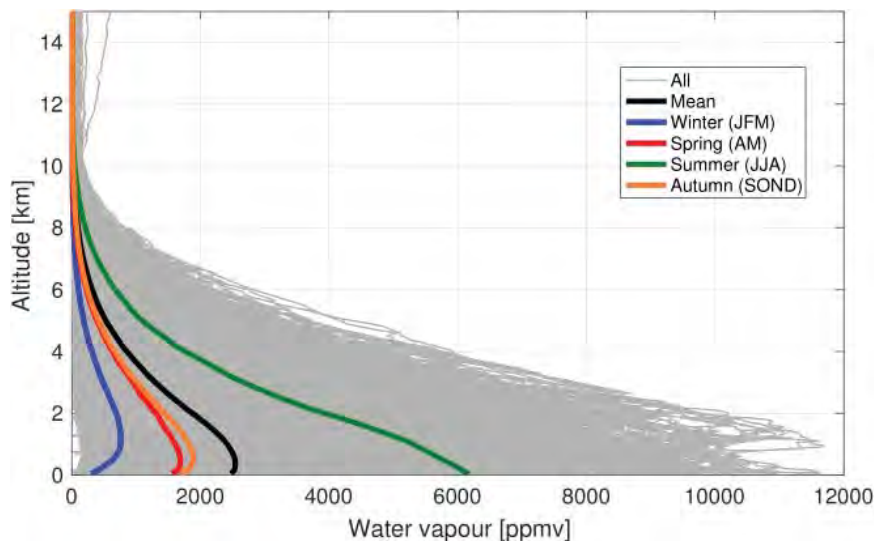
Eureka is a challenging site for water vapour measurements, as it is extremely cold and dry with a large seasonal cycle in water vapour. This can be seen in the plot of water vapour profiles measured by radiosondes launched daily from the Eureka Weather Station by Environment and Climate Change Canada. This figure shows profiles recorded between August 2006 and De-



cember 2015, along with overall and seasonal mean profiles. The definition of seasons is atypical, with a short spring (April-May, AM) and long autumn (September-December, SOND). The water vapour mixing ratio profiles vary by an order of magnitude over the year, with a maximum at the surface during summer months, and a minimum in winter.

We have used measurements from these radiosondes and our spectrometer for a detailed intercomparison of water vapour total columns

measured by sun photometers, a microwave radiometer, and an infrared emission spectrometer at PEARL, and of water vapour vertical profiles measured by seven satellite instruments. No single instrument is capable of capturing complete information about atmospheric water vapour at all times and there are limits to all measurement techniques. These studies provide a useful assessment of the accuracy and consistency of current water vapour measurements in the Arctic.



More details can be found in Weaver, Strong, et al., *Intercomparison of atmospheric water vapour measurements at a Canadian High Arctic site. Atmos. Meas. Tech.*, 10, 2851-2880, 2017 (<https://www.atmos-meas-tech.net/10/2851/2017/>) and Weaver, Strong, et al., *Comparison of ground-based and satellite measurements of water vapour vertical profiles over Ellesmere Island, Nunavut, submitted to Atmos. Meas. Tech.*

RESEARCH

Monitoring the Recovery of a Contaminated Site on the Welland River Watershed

By Jessica D'eon

CHM 410H-1410H Analytical Environmental Chemistry is a lab-intensive class that includes a field sampling component. In Fall 2016 the class field site moved from the Humber River to Lake Niapenco on the Welland River watershed in Binbrook, Ontario just south of Hamilton. The impetus for this move was the discovery by research scientists at Environment and Climate Change Canada that the watershed had been contamination by fluorinated organics due to fire-fighter training activities at the Hamilton Airport.

In October 2016 and 2017 CHM 410H-1410H students, teaching assistants, and faculty collected water, sediment, invertebrate, and fish samples from Lake Niapenco and a nearby background site for the analysis of these trace contaminants. This sampling trip was facilitated by the School of the Environment through the use of their waders and other relevant sam-



Students from CHM410H collecting fish.

pling equipment. This field experience has been a huge success!

The diversity of samples collected mean that students are exposed to a variety of sampling techniques and strategies. The act of leaving campus early in the morning and working hard together all day is

also an incredible bonding activity and the sense of community it creates permeates the entire class.

The large number of samples collected (more than 30 each year) together with the large number of contaminants analyzed (11 fluorinated organics in every sample) means that the lab yields large and rich datasets that allow students to write varied and creative lab reports. For many students this is the first time they were required to work thorough a large data set and condense their findings into meaningful results that they can compare to literature or regulatory guidelines.

There is currently no on-going monitoring of the Welland River ecosystem, aside from that related to the consumption of sport fish, and so CHM 410H-1410H is filling this knowledge gap as we return year after year to monitor the recovery of this ecosystem.

Out of the Social Vacuum: Evaluating Social Motivators for Cycling Uptake

By Emma Heffernan

Models of transportation mode choice focus on individual demographics, household characteristics, and route considerations to explain why individuals make particular travel mode share choices. New analysis from the **Toronto Cycling Think and Do Tank** complements these models by positing that social factors can also impact the travel mode choice of an individual. It theorizes that interactions with social groups can have aggregated effects on individual decision-making, particularly when the individual receives some utility by conforming to their group members' behaviour expectations.

We also theorize that exposure to new social groups can change the individual's preferences as they are informed or exposed to preferable or beneficial features of a particular behaviour. We tested these theories using data from four cycling

mentorship program interventions to identify if social variables were consistently correlated with changes in cycling behaviours.

We found two compelling correlations. First, we found that individuals that stated that their family believed that cycling is dangerous at the beginning of the intervention were more likely to increase their recreational cycling at the end of the intervention. These individuals, potentially, began to bike more frequently as they gained the skill and confidence necessary to overcome the fear that cycling is dangerous. Second, we found a positive relationship between the development of new social connections during the intervention and an increase in recreational cycling. Though demographics have been linked at multiple junctures to particular travel mode choices, the link between

social connections and increased recreational cycling is not impacted by having children, being older, or having lived in Canada for a shorter period of time. Regardless of demographics, those that made more social connections recreationally cycled with greater frequency at the end of the intervention.

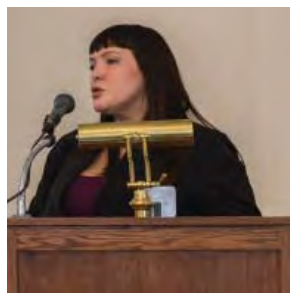
Overall, the results illustrate that cycling adoption is not only motivated by transportation related needs, or financial considerations, but also by social factors. The focus of cycling adoption programs should consider social motivators or barriers for participants, in order to ensure maximum attraction and effectiveness. Taking social factors into account can increase the success of behaviour change programs to encourage active transportation both for recreational and utilitarian purposes.

RESEARCH DAY PRESENTATIONS

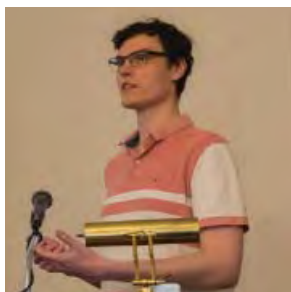
The School of the Environment's annual **Research Day**, held on April 18, 2018 during Earth Week, showcased research conducted by faculty and graduate students of the School of the Environment. Hosted by Professor **Kimberly Strong**, Director of the School of the Environment, the 2018 program included 10 short research talks, followed by a presentation of graduate student awards and a reception.



MASOUD AKHSHIK, PhD
Candidate, Faculty of Forestry
and School of the Environment
***Artificial Intelligence for
Environmental Predictions***



VIDYA ANDERSON, PhD
Candidate, Department of
Physical & Environmental
Sciences at UTSC and School
of the Environment
***Evaluating the Capacity
of Green Infrastructure
to Address the Impacts of
Climate Change in Ontario by
Reducing GHG Emissions and
Reducing Air Pollutants—Field
Research Results***



BRENDAN BYRNE, PhD
Candidate, Department of
Physics and School of the
Environment
***Investigating the Carbon
Cycle with Atmospheric CO₂
Observations***



SULEYMAN DEMI, PhD
Candidate, Department
of Social Justice Education
at OISE and School of the
Environment
***Indigenous Food Systems and
Climate Change: Experiences
of Smallholder Farmers in
Ghana***



ELLEN GUTE, PhD Candidate,
Department of Physical &
Environmental Sciences
at UTSC and School of the
Environment
***Pollen Fragments Forfeit
their Ice Nucleating Ability
when Exposed to Atmospheric
Oxidizing Chemicals such as
the Hydroxyl Radical***



ERIK LUTSCH, PhD Candidate,
Department of Physics and
School of the Environment
***Detecting Wildfire Pollution
in the Arctic Using a Network
of Ground-Based FTIR
Spectrometers, Satellite
Observations, and Model
Results***



DOUGLAS MACDONALD,
Senior Lecturer Emeritus,
School of the Environment
***Carbon Province, Hydro
Province: The Challenge of
Canadian Energy and Climate
Federalism***



LAURA TOZER, PhD Candidate,
Department of Geography &
Planning and School of the
Environment
***Urban Decarbonization:
Practices and Politics of
Carbon Neutrality***



DANIEL WEAVER, PhD
Candidate, Department of
Physics and School of the
Environment
***Measuring Atmospheric Water
Vapour in the Canadian High
Arctic***



JIELAN XU, PhD Candidate,
Department of Geography &
Planning and School of the
Environment
***Exploring the Relationships
Between the Built
Environment, Activity
Participation, and Healthy
Aging***

MESSAGE FROM THE ACADEMIC ASSOCIATE DIRECTOR

Professor Karen Ing



I stepped into the role of the Academic Associate Director on an interim basis from December 2017 to June 2018, as Prof. **Sarah Finkelstein**, who held the position previously, went on leave. Being interim, I was particularly thankful and appreciative of our experienced administrative staff, as well as the patience and wisdom of our Director, who all helped in guiding me through the duties of this position.

Their guidance was especially valued since the academic component of the School continues to grow and flourish along its multidisciplinary and transdisciplinary path. Our collaborative graduate specializations are attracting almost 200 students spanning more than 20 disciplines, and there are over 750 students enrolled in our undergraduate programs with approximately 3000 students enrolled in courses from a number of different faculties including Arts and Science, Engineering, Architecture, Music, and Kinesiology.

Evidence of continuing growth at the School for the 2017-2018 academic year comes with the launch of five new undergraduate courses approved by the Faculty of Arts and Science that were previously special topics courses, as well as one new special topics course. These courses are:

- ENV 262H The Science of Energy in the Environment, a new breadth course taught by Prof. **Stephen Morris**, Dept. of Physics
- ENV 361H Social Media and Environmentalism, taught by Prof. **Steve Easterbrook**, Dept. of Computer Science
- ENV 362H Energy and Environment - Transitions in History, taught by Prof. **Ben Akrigg**, Dept. of Classics
- ENV 462H Energy and Environment - Economics, Politics and Sustainability, taught by Prof. **Adonis Yatchew**, Dept. of Economics
- ENV 461H The U of T Campus as a Living Lab of Sustainability, taught by Prof. **John Robinson**, Munk School of Global Affairs and the School of the Environment
- ENV 382H - Special Topics in Environment - Waste Not, Want Not. Stories of Wastefulness in Religion and Society, taught by Prof. **Tanhum Yoreh** of the School of the Environment

The 2017-2018 academic year also saw the School's undergraduate academic programs undergo a cyclical self-study under the University of Toronto's Quality Assurance Process (UTQAP). This gave us the opportunity to reflect on our achievements over the past five years as well as an assessment of our needs and challenges moving forward. The process is still unfolding as we digest the supportive report conducted by two external expert reviewers, with the aim of preparing a response which will then guide the future of the School.

As I step down from this position, I envision even more exciting opportunities for my successor(s) as the School works towards launching our first stand-alone Masters program as early as fall 2019. Stay tuned for updates in our next annual report.

UNDERGRADUATE

2017 - 2018 UNDERGRADUATE RESEARCH AND EXPERIENTIAL COURSES

ENV 421H Environmental Research - Instructor: Tanhum Yoreh, School of the Environment

In this course, senior undergraduate students work together over the fall and winter terms in small groups to conduct research related to a broad environmental research theme for the class. During the 2017-2018 school year, one group of students focused on the research question: in what ways do Catholic communities understand and practice religious values that have an impact on the environment, and what are the differences between communities within the Catholic denomination? The students interviewed mainly chaplain leaders and priests from Catholic communities and organizations in the GTA. They then qualitatively analyzed each participant's responses and looked for similarities and differences between each organization in their attitudes towards the environment.

“We developed our skills in how to conduct a literature review, develop a methodology, conduct interviews and deliver oral presentations. It also taught us to learn how to work together as a group and individually, work efficiently to meet deadlines, and also gave us the opportunity to work closely with Professor Yoreh in his area of expertise. Our research project was beneficial because it helped us better understand Catholicism as a whole and it allowed us to explore an understudied area of environmentalism. All in all, ENV421H was an amazing experience that helped us to grow and learn in many ways.
- Nicole Capicotto, Danielle Foppiano, Minjian Zhu

ENV 440H Professional Experience Course - Instructor: David Sider, Sessional Lecturer

This course provides an opportunity for students to gain practical work experience in the environmental field through placements with organizations and agencies engaged in a wide range of issues from local to global scales. Student placements include activities such as research, policy development, project administration, proposal writing, networking, community organizing, and public awareness. In 2017-18, 49 students did summer/fall placements at non-profit/charitable groups (e.g., EcoSpark, High Park Nature Centre, Foodshare, Jane Goodall Institute), government agencies (e.g., City of Toronto Environment & Energy Division, Environment Canada), private sector companies (e.g., Better Current, Triovest Realty Advisors), and U of T organizations (Sustainability Office, Bike Chain).

“The academic component of the course was useful in helping me to think through what I was learning in my placement in a more analytical way. I especially enjoyed the process of writing the final paper because it allowed me to draw more general insights on factors influencing the effectiveness of ENGOS. I'm looking forward to applying my learning from the course to my work as an employee at GreenPAC this summer, and in my future career.
- Amanda Harvey-Sanchez

ENV 461H: The U of T Campus as a Living Lab of Sustainability – Instructor: John Robinson, School of the Environment

This course explores and applies the living lab concept, in the context of operational sustainability at the University of Toronto. Beginning by looking at the literature on university sustainability and the living lab concept, the bulk of the course involves undertaking an applied research project on some aspect of campus sustainability, working in close partnership with operational staff at the University of Toronto. Students develop the skills needed to work across disciplines and fields of study, and with non-academic partners. This course puts students to work on operational sustainability projects identified by the staff working in or with the Sustainability Office at the University of Toronto. A crucial aspect of this course is the ability of students to work collaboratively together in a group environment, and to work effectively with a university staff person acting as a “client” for their work.

“After completing the project for ENV461H in the fall of 2017 I wanted to continue working on the course as an Independent Study, supervised by John Robinson. My project is intended to make procurement at U of T more sustainable, both from a purely environmental side but also to advance the idea of social responsibility and making sure that university projects benefit the broader city community as well whenever possible. I presented my work during the Procurement Pre-Conference Session at the CAUBO (Canadian Association of University Business Officers) 2018 Conference in Vancouver.
- Rachel Sutton

2017-18 SCHOOL OF THE ENVIRONMENT UNDERGRADUATE COURSES AND INSTRUCTORS

ENV 100H	Introduction to Environmental Studies	Simon Appolloni (Sessional)
SII 199H	Debating and Understanding Current Environmental Issues	Karen Ing, Environment
ENV 200H	Assessing Global Change: Science and the Environment	Karen Ing, Environment
ENV 221H	Multidisciplinary Perspectives on Environment	Karen Ing, Environment
ENV 222H	Interdisciplinary Environmental Studies	Anastasia Hervas, Geography (Course Instructor)
ENV 223H	Fundamental Environmental Skills	Karen Morrison (Sessional)
ENV 233H	Earth Systems Chemistry	Jessica D'eon, Chemistry; Oliver Warr, Earth Sciences (Course Instructor)
ENV 234H	Environmental Biology	Helene Cyr, EEB (Co-ordinator); Jorg Bollman, Earth Sciences
ENV 237/238H	Physics of the Changing Environment	Debra Wunch, Physics/Environment
ENV 262H	The Science of Energy in the Environment	Stephen Morris, Physics
ENV 299/399Y	Research Opportunity Program Research Course	Brad Bass, Environment
ENV 307H	Urban Sustainability	David Sider (Sessional)
ENV 316H	Laboratory & Field Methods in Environmental Science	Debra Wunch, Physics/Environment; Njal Rollinson, EEB/Environment
ENV 320H	National Environmental Policy	David Pond (Sessional)
JGE 321H	Multicultural Perspectives on Environmental Management	Jeffery Squire, Geography (Course Instructor)
ENV 322H	International Environmental Policy	Erich Vogt (Sessional)
ENV 323H	Ontario Environmental Policy	Russ Houldin (Sessional)
JGE 331H	Resource & Environmental Theory	Scott Prudham, Geography/Environment
ENV 333H	Ecological Worldviews	Stephen Scharper, UTM Anthropology/Environment
ENV 334H	Environmental Biology: Applied Ecology	Helene Cyr, EEB
ENV 335H	Environmental Design	Sheila Waite-Chuah (Sessional)
ENV 337H	Human Interactions with the Environment	Carlos Avendano (Sessional)
ENV 341H	Environment and Human Health	Clare Wiseman, Environment
ENV 346H	Terrestrial Energy Systems	Ian Sinclair, Civil Engineering (Sessional)
ENV 347H	The Power of Economic Ideas	Russ Houldin (Sessional)
ENV 350H	Energy Policy and Environment	Keith Stewart (Sessional)

2017-18 SCHOOL OF THE ENVIRONMENT UNDERGRADUATE COURSES AND INSTRUCTORS

ENV 361H	Social Media and Environmentalism	Steve Easterbrook, Computer Science
ENV 362H	Energy & Environment - Transitions in History	Ben Akrigg, Classics
ENV 382H	Special Topics in the Environment: Waste Not, Want Not. Stories of Wastefulness in Religion and Society	Tanhum Yoreh , Environment
ENV 395Y	Special Topics Field Course: Ecology and Conservation in the Amazon, Galápagos, and Andes	Monika Havelka, UTM Geography; Barbara Murck, UTM Geography
ENV 396H	Special Topics Field Course: Australian Environment, Wildlife and Conservation (Australia)	University faculty in Australia, University of New South Wales
ENV 421H	Environmental Research	Tanhum Yoreh , Environment
ENV 422H	Environmental Law	Paul Muldoon (Sessional)
ENV 432H	Urban Ecology	Karen Ing, Environment; Don Jackson, EEB
ENV 440H	Professional Experience Course	David Sider (Sessional)
ENV 451H	Current Environmental Topics	Erich Vogt (Sessional)
ENV 452H	Environmental Science Seminar	Jennifer Murphy, Chemistry; Hui Peng, Chemistry/Environment
JEH 455H	Current Issues in Environment and Health	Christine Wong (Sessional)
ENV 461H	Special Topics Course: The U of T Campus as a Living Lab of Sustainability	John Robinson, Munk/Environment
ENV 462H	Energy and Environment	Adonis Yatchew, Economics

CORE PROGRAMS

The School of the Environment offers two core interdisciplinary undergraduate programs:

*Environmental Science (BSc Major and Minor) *Environmental Studies (BA Major and Minor)

COLLABORATIVE PROGRAMS

These collaborative programs combine the School's interdisciplinary core with a set of discipline-specific courses:

Specialist Programs

Environmental Chemistry
(BSc, with the Department of
Chemistry)

Environmental Geosciences
(BSc, with the Department of
Earth Sciences)

*Environment and Health
(BSc, with the Human Biology
Program)

*Environment and Toxicology
(BSc, with the Department of
Pharmacology and Toxicology)

Major Programs

*Environmental Ethics
(BA, with the Department of
Philosophy)

*Environment and Health
(BSc, with the Human Biology
Program)

Minor Programs

*Environment and Behaviour
(BSc, with the Department of
Psychology)

*Environmental Ethics
(BA, with the Department of
Philosophy)

*Environment and Energy
(BSc, with the Department of
Geography)

DIRECTED MINORS

The following directed minor programs are offered by other departments and are for students interested in acquiring a limited body of knowledge in a specific discipline.

Environmental Anthropology (BA)
Geographic Information Systems (BA)
Environmental Chemistry (BSc)
Physical and Environmental
Geography (BSc)
Environmental Economics (BA)
Environmental Geography (BA)
Environmental Biology (BSc)
Geographic Information Systems (BA)

** indicates programs administered by the School.*

SUMMER ABROAD

ENV 395Y Special Topics Field Course: Ecology and Conservation in the Amazon, Galápagos, and Andes. May 19 - June 19, 2018

Instructors: Monika Havelka and Barbara Murck, Senior Lecturers, Geography, UTM.

This was the 13th year of the summer program in Ecuador and it was a wonderful opportunity for students interested in life sciences, environmental studies, conservation biology, geology and geography to experience one of the most ecologically diverse countries in the world and to explore the pressures and challenges on these unique environments.

The program was hosted by the Universidad San Francisco de Quito (USFQ) and uses two of its research centres, the Galápagos Academic Institute for the Arts and Sciences, (GAIAS) and the Tiputini Biodiversity Station (TBS; located in the Amazon Rainforest), as well as its Quito campus.



*Snorkeling at Kicker Rock, Galapagos.
Photo: Shuhong Luo*

Students lived, studied and conducted biological fieldwork in the Amazon Rainforest on the north bank of the Tiputini River. The site borders the Yasuni Biosphere Reserve, a region famous for having one of the highest species diversities on Earth. The students also spent time in Quito, the Andes Highlands and the Galapagos Islands.

ENV 396H Special Topics: Australian Wildlife and Conservation. June 24 - July 18, 2018

This was the fifth year of the University of Toronto's Summer Program in Australia. The program provides a unique opportunity to consider human impacts on the natural environment, and measures to address these impacts, focusing particularly on protected conservation areas.

From its rainforests, coastlines and coral reefs to its arid interior, Australia offers a diverse range of natural and cultural landscapes and ecosystems to explore. Evolving from origins in ancient Gondwana and millions of years of geographic isolation, Australia boasts geographical and natural features found nowhere else in the world.



*Blue Mountains Lookout.
Photo: Rosalie Chapple*

The program was taught by faculty from the University of New South Wales, parks staff, and local guides, and included visits to Byron Bay, Sydney and Cairns.

International Courses For Undergraduate Students

The School of the Environment, working with the University's Centre for International Experience (CIE), identifies partner universities with programs and courses of relevance and interest to students enrolled in environmental programs, or interested in taking environmental elective courses. The goal is to provide students with a more global perspective and is in keeping with President Gertler's strategic goal of strengthening the University of Toronto's international partnerships and profile. The School's effort to establish and highlight international opportunities is ongoing.

Students interested in any of the term-abroad opportunities must apply through the CIE [<http://cie.utoronto.ca/Going/Apply.htm>].

Selection of Partner Universities with Environment-Related Programs and/or Courses

National University of Singapore
Chinese University of Hong Kong
City University of Hong Kong
Lund University, Sweden
University of Copenhagen, Denmark
University of Oslo, Norway
Utrecht University, Netherlands

CO-CURRICULAR ACTIVITIES

Co-curricular activities encourage growth and learning for students beyond the classroom. Through a variety of partnerships, School of Environment students have the opportunity to actively participate in university life; find connection, community, and friendship; encounter new ways of thinking and being in the world; and experience leadership, independence, and success.

SOCIAL INNOVATION & SOCIAL ENTREPRENEURSHIP

The Agency is a hub that facilitates introductions and wayfinding for students, faculty, teaching staff, alumni and partners focused on social innovation at UofT. They simplify pathways and amplify collective resources that contribute to positive social change, positioning UofT as a leader in the field of social innovation. They host and partner on a variety of events at UofT and outside in the community that benefit students and bring together fellow students, alumni, staff, faculty and practitioners. Founder and U of T alumnus **Cindy Ross**

Pederson visited three ENV classes (ENV222H, ENV337H, ENV1001H) in Spring 2018 to talk about social innovation and invite students to join in The Agency's events.



MAR 19, 2018 - CAREERS FOR SOCIAL CHANGE

Students participated in an interactive living library to learn about people who are creating social change locally and globally.



April 6, 2018 - ROAD TRIP TO MaRS Discovery District

A small group of students went to MaRS for a tour of the facilities, a briefing on its history, and an introduction to a sampling of organizations that are based in this community.



Backpack to Briefcase (b2B): Mentorship Dinners

The School of Environment undergraduate and graduate students met with alumni who were invited back to share their education and career experiences; and to offer encouragement and advice at a Backpack to Briefcase (b2B) mentorship dinner on February 15, 2018 at the Faculty Club. The alumni guests at this dinner were **Michael Lawler** (HBA 2011), **Emily Van Halem** (HBA 2008), **Sarry Zheng** (HBSC 2009). The event provided an opportunity for students to understand their education in a broader context – opening discussions with alumni, faculty members, staff and peers about life after graduation.

Career Day

The School of the Environment co-presented the 2018 Environmental Career Day on March 9 at Hart House Great Hall, with 250 undergraduate and graduate students in attendance. This annual event was a collaborative effort with the School's Environmental Students' Union (ENSU), Graduate Environmental Students' Association (GESA), Forestry Club (undergraduates), Forestry Graduate Students Association, and the Toronto Undergraduate Geography Society (TUGS).

ENVIRONMENTAL STUDENTS' UNION (ENSU) 2017/2018 YEAR IN REVIEW

The Environmental Students' Union (ENSU) is a student-run organization representing the undergraduate students enrolled in programs at the School of the Environment. ENSU's mission is to build a community for environmental students, staff, and faculty, so that they feel welcome and at home in their program.

This year, its goals were to increase student involvement, build student community and identity, and heighten environmental awareness on campus. The student union largely operates by hosting events for School of Environment students, which are planned and run by the elected executive board. These events are social, professional, or academic, and always seek to be as sustainable as possible. Additionally, we run a mentorship program to help lower year students become acquainted with U of T, the School of the Environment, and university life.

The members of the 2017-2018 ENSU Executive are:

Rachel Sutton, Co-President
James Povilonis, Co-President
Jared Connoy, Treasurer
Ruby Tang, Secretary
Iqra Sheikh, Mentorship Coordinator
Monika Filiks, Commuter Representative
Laura Curran, Sustainability Officer
Allegra Bethlenfalvy, Sustainability Officer
Princess Edogiawerie, Social Media Coordinator
Zihan Cai, Upper Year Representative
Greg Seljak, Upper Year Representative
Farida Rady, Newsletter Editor
Kody McKann, Social Media Coordinator
Harpreet Chohan, Webmaster
Charlotte Craig, Lower Year Representative



BYO Social.

2017-2018 events organized by ENSU:

- Month of Local Greenspace tours (September)
- ENSU Pub night (November)
- General Meeting (November)
- Documentary Screening: An Inconvenient Sequel (November)
- Academic seminar on Urban Sustainability (November)
- School of the Environment Spirit Wear (December)
- Pub Night (February)
- BYO Social (March)
- Documentary Screening: Okja (March)
- GMO vs. non-GMO Pancake giveaway and discussion (March)



ENSU pub night.

ENSU HONOURED WITH GREEN RIBBON AND SANJEEV DEWITT COURSE UNION OF THE YEAR AWARDS



A commitment to diversity and sustainability led to ENSU receiving the Sanjeev Dewett Course Union of the Year award from the Arts and Science Student Union (ASSU), as well as a Green Ribbon Award for their "outstanding contribution to campus sustainability.

Sanjeev (Sanj) Dewett Course Union of the Year Award is presented annually to the most active Course Union in ASSU and is named after a two-term President of ASSU.

The Green Ribbon Awards recognize outstanding achievements in campus sustainability and are awarded by the University's Sustainability Office.

UNDERGRADUATE AWARDS

Congratulations to the following undergraduate students who received School of the Environment scholarships awarded in 2017-2018.

FRANCES L. ALLEN SCHOLARSHIP

Awarded to a second or third-year student in a specialist or major BA program in the School of the Environment. The recipient was **Jennifer Del Riccio**, Environmental Science and Psychology Majors; Environmental Studies Minor.

CHACHRA FAMILY SCHOLARSHIP IN ENVIRONMENT AND SCIENCE

Awarded to one or two students in a School of the Environment BSc specialist or major program, on the basis of financial need and academic merit. The recipient was **Wen Yin (Cindy) Wei**, Environmental Science Major; Environmental Studies and Environmental Biology Minors.

DR. STANLEY ALLAN CORD SCHOLARSHIP IN ENVIRONMENTAL STUDIES

Awarded to a School of the Environment student in their third or fourth year, on the basis of Academic Merit. The recipient was **Nathan Postma**, Environmental Studies and Anthropology (Society, Culture & Language) Majors; Environmental Anthropology Minor.

JANE GOODALL SCHOLARSHIP

Awarded to one or more outstanding students enrolled in a School of the Environment program. Preference is given to students studying environment and development. The recipient was **Charlotte Hobson**, Environmental Studies and Environmental Geography Majors; Environmental Biology Minor.

BARBARA GREEN SCHOLARSHIP IN ENVIRONMENTAL ENTREPRENEURSHIP

Awarded on the basis of merit to a full-time Canadian undergraduate student who is beginning year two in the School of the Environment, with consideration given to academic ability, a clear interest in the environment paired with an entrepreneurial interest and spirit, involvement in sports, culture and extracurricular activities, community engagement and contributions, and an interest in future environmental stewardship. The inaugural recipient is **Jared Connoy**, Environmental Studies and Economics Majors.

Pictured left: Jared Connoy



PETER JOHN HARE MEMORIAL SCHOLARSHIP IN ENVIRONMENT

Awarded to students in a School of the Environment specialist or major program. Preference is given to students taking courses in environmental science, as well as students who demonstrate a commitment to environmental issues. The recipients are **Laura Curran**, Environmental Science Major; Psychology Specialist; Environment & Behaviour Minor; **Dana Pugh**, Environmental Studies and Forestry Conservation Majors; and **Cameron So** Environmental Science Major; Environmental Studies Minor; Ecology & Evolutionary Biology Specialist.

ROBERT HUNTER SCHOLARSHIP

Awarded to outstanding School of the Environment students in memory of **Robert Hunter**, journalist and co-founder of Greenpeace. Preference is given to students who are focusing their environmental studies on climate (extra-curricular involvement with climate issues will also be considered). The recipients are **Jaden Phillips**, Environmental Science Major; Psychology Specialist; Environment & Behaviour Minor; **Emily Shaw**, Environmental Studies and Political Science Majors; and Economics Minor and **Amanda Harvey-Sanchez**, Environmental Studies and Anthropology (Society, Culture & Language) Majors; Equity Studies Minor.



(L-R) Jaden Phillips, Bobbi Hunter, Amanda Harvey-Sanchez and Dalton McGuinty.

JANE JOY MEMORIAL SCHOLARSHIP: EXCELLENCE IN ENVIRONMENTAL SUSTAINABILITY

Created with a donation by the University of Toronto Women's Association, this is awarded to a student specializing or majoring in Environmental Science at the School of the Environment, who has demonstrated involvement in sustainability issues. The recipient was **Cynthia Nwabukei**, Environmental Science and Environment & Health Majors; Environmental Studies Minor.

UNDERGRADUATE AWARDS

DOUGLAS PIMLOTT AWARDS AND SCHOLARSHIPS

These awards are in honour of **Douglas Pimlott**, the first Director of the former Environmental Studies Program at Innis College. They are awarded to School of the Environment students with excellent levels of academic achievement combined with a demonstrated commitment to social involvement in environmental issues.

DOUGLAS PIMLOTT ENTRANCE SCHOLARSHIP

Larissa Werbowski, Environmental Science and Psychology Majors; Environmental Studies Minor.

DOUGLAS PIMLOTT OSOTF AWARD RECIPIENT

Sabrina Delos Reyes, Environmental Studies and Urban Studies Majors; Environmental Geography Minor.

DOUGLAS PIMLOTT GRADUATING SCHOLARSHIP

Alexa Waud, Environment & Health and Peace, Conflict & Justice Majors.

Xia (Alice) Zhu, Environmental Chemistry Specialist.

Li Miao, Environmental Science and Physical & Environmental Geography Majors; Environment & Energy Minor.

Adriana Shu-Yin, Environmental Science and Environment & Health Majors; Environmental Geography Minor.



(L-R) Dr. Franz Hartmann, Li Miao, Adriana Shu-Yin, Larissa Werbowski and Monte Hummel.

KATHRYN S. ROLPH SCHOLARSHIP

Awarded to an outstanding second or third year student in a program offered by the School of the Environment who has achieved a high mark in a course on environmental issues offered by or on behalf of the School.

The recipient was **Julia Robsen**, Environmental Studies and Equity Studies Majors; Environmental Biology Minor.

SCHOOL OF THE ENVIRONMENT UNDERGRADUATE AWARD

This is awarded to a student in the School of the Environment and is based on financial need and academic achievement. The recipient was **Sabrina Delos Reyes**, Environmental Studies and Urban Studies Majors; Environmental Geography Minor.

SIDNEY AND LUCILLE SILVER SCHOLARSHIP

Awarded to a third-year student in a School of the Environment or Geography specialist or double major program.

The recipient was **Su Hyun Park**, Environmental Science and Environment & Health Majors; French as a Second Language Minor.

RODNEY WHITE ENVIRONMENTAL STUDIES SCHOLARSHIP

This award was established in memory of Professor **Rodney White**, Director of the former Institute for Environmental Studies and co-founder of the Centre for Environment, which became the School of the Environment. The Rodney White Environmental Studies Scholarship is awarded to a third-year undergraduate student on the basis of academic merit, with preference given to a student studying topics related to environment and international development. This year's recipient is **Kathryn Condon**, Environmental Studies and Ethics, Society & Law Majors; Environmental Ethics Minor.



(L-R) Sue White, Kathryn Condon, Jiayi Chen and Kelly Willis.

SKIP WILLIS UNDERGRADUATE SCHOLARSHIP

This award was established in memory of **Errick (Skip)**

Willis, Principal of the Willis Climate Group and a founding member of the Professional Development Program's Envi-

ronmental Finance program. The award is given to an undergraduate student at the School who has demonstrated interest in adaption and mitigation of climate change in Canada, market-based instruments, and carbon offset projects. This year's recipient is **Jiayi Chen**, Environmental Science Major; Environmental Studies and Urban Studies Minors.

GRADUATE

GRADUATE COLLABORATIVE SPECIALIZATIONS

The School of the Environment offers two Collaborative Specializations at the Master's and Doctoral level: Environmental Studies (ES), and Environment and Health (EH). Students who are admitted to a 'home' unit apply to a Collaborative Specialization and pursue course work and research in environmental areas. Through these specializations, students have the opportunity to pursue interdisciplinary graduate work in the field of the environment and to interact with students and faculty spanning three campuses.

25 Environmental Studies Degree Programs

9 Environment and Health Degree Programs

167 Enrolled Students

54 New Students

35 Graduate Alumni

124 Graduate Faculty

2017-18 SCHOOL OF THE ENVIRONMENT GRADUATE COURSE OFFERINGS AND INSTRUCTORS

ENV 1001F	Environmental Decision Making	Tanhum Yoreh
ENV 1001S	Environmental Decision Making	Kate Neville
ENV 1008F	Worldviews and Ecology	Stephen Scharper
ENV 1103F	The UofT Campus as a Living Lab of Sustainability	John Robinson
ENV 1444S	Capitalist Nature	Scott Prudham
ENV 1701F	Environmental Law	Paul Muldoon
ENV 1704S	Environmental Risk Analysis and Management	Christopher Ollson
ENV 1707F	Environmental Finance and Sustainable Investing	Susan McGeachie
ENV 4001S	Graduate Seminars in Environment and Health	Tania Onica
JSE 1708S	The Development of Sustainability Thought	John Robinson

GRADUATE FACULTY

The following individuals have graduate faculty appointments at the School of the Environment.

FULL MEMBERS

Grant Allen, Chemical Eng. & Applied Chem.
Robert Andrews, Civil Engineering
George Arhonditsis, Physical & Environ. Sci., UTSC
Spencer Barrett, Ecology & Evolutionary Biology
Steven Bernstein, Political Science
Alana Boland, Geography
Arthur Chan, Chemical Eng. & App. Chem.
Jing Chen, Geography
Donald C. Cole, Public Health
Simon Coleman, Religion
Tenley Conway, Geography, UTM
Paul Corey, Public Health
Sharon Cowling, Earth Sciences
Hilary Cunningham, Anthropology
Amrita Daniere, Geography, UTM
George Dei, Leadership, Higher and Adult Education, OISE
Miriam Diamond, Earth Sciences
Maria Dittrich, Earth Sciences
Birsen Donmez, Mechanical and Industrial Eng.
Steve Easterbrook, Computer Science
Elizabeth Edwards, Chemical Eng. & App. Chem.
Mark Engstrom, Ecology & Evolutionary Biology/ROM
Greg Evans, Chemical Eng. & Applied Chem.
Sarah Finkelstein, Earth Sciences
Roberta Fulthorpe, Physical & Environ. Sci., UTSC
William Gough, Physical & Environ. Sci., UTSC
Mart Gross, Ecology & Evolutionary Biology
L. Danny Harvey, Geography
Yuhong He, Geography, UTM
Matthew Hoffman, Political Science, UTSC
D. Linn Holness, Public Health
Ken Howard, Physical & Environ. Sci., UTSC
Marney Isaac, Physical & Environ. Sci., UTSC
Donald Jackson, Ecology & Evolutionary Biology
Charles Jia, Chemical Eng. & Applied Chem.
Dylan Jones, Physics
Shashi Kant, Forestry
Bryan Karney, Civil Engineering
Thembele Kepe, Geography UTSC

J. Gary Knowles, Leadership, Higher and Adult Education, OISE
Martin Krkosek, Ecology & Evolutionary Biology
Paul Kushner, Physics
Scott Mabury, Chemistry
Virginia Maclaren, Geography
Heather MacLean, Civil Engineering
Jay Malcolm, Forestry
David Martell, Forestry
Patricia McCarney, Political Science
Andrew Miall, Earth Sciences
Eric Miller, Civil Engineering
Carl Mitchell, Physical & Environ. Sci., UTSC
G.W. Kent Moore, Physics, UTM
Andrea Most, English
Jennifer Murphy, Chemistry
Michelle Murphy, History
Andrea Olive, Political Science UTM
W. Richard Peltier, Physics
Blake Poland, Public Health
W. Scott Prudham, Geography/Environment
John Robinson, Munk School of Global Affairs/Environment
Helen Rodd, Ecology & Evolutionary Biology
Rowan Sage, Ecology & Evolutionary Biology
Mohini Sain, Forestry
Andrea Sass-Kortsak, Public Health
Shiho Satsuka, Anthropology
Lawrence Sawchuk, Social Sciences, UTSC
Stephen Scharper, Anthropology, UTM/Environment
Barbara Sherwood Lollar, Earth Sciences
André Simpson, Physical & Environ. Sci., UTSC
Myrna Simpson, Physical & Environ. Sci., UTSC
Grace Skogstad, Social Sciences, UTSC
C. Tattersall Smith, Geography
Sandy Smith, Forestry
Kimberly Strong, Physics/Environment
Edward Swenson, Anthropology
Susan Tarlo, Medicine
Judith Teichman, Political Science
Ross Upshur, Medical Science
Willem Vanderburg, Civil Engineering
Sarah Wakefield, Geography
Kaley Walker, Physics
Denis Walsh, Philosophy
Frank Wania, Physical & Environ. Sci., UTSC
Peter Wells, Pharmacy

Clare Wiseman, Environment
Debra Wunch, Physics/Environment

ADJUNCT MEMBERS

Jane Ambachtsheer, Environment
Brad Bass, Environment

ASSOCIATE MEMBERS

Christian Abizaid, Geography/Environment
Christoph Becker, Information
Kerry Bowman, Bioethics
Laura Brown, Geography, UTM
Susannah Bunce, Geography UTSC
Andrew Green, Law
Jacob Hirsh, Management, UTM
Igor Lehnher, Geography, UTM
Douglas Macdonald, Environment
Barbara Murck, Geography, UTM
Kate Neville, Political Science/Environment
Dennis O'Hara, St. Michael's College
Matthew Ratto, Information
Njal Rollinson, Ecology & Evolutionary Biology/Environment
Marcelo Vieta, Adult Education and Community Development, LHAE/OISE
Helene Wagner, Ecology & Evolutionary Biology
Kathi Wilson, Geography, UTM
Cindy Woodland, Pharmacology
Tanhum Yoreh, Environment

MEMBERS EMERTI

Paul Aird, Forestry
Michael Bunce, Social Sciences, UTSC
Ian Burton, Physical & Environ. Sci., UTSC
Catherine Chalin Clark, Public Health
Brian Greenwood, Physical & Environ. Sci., UTSC
Andy Kenney, Forestry
Robert K. Logan, Physics
William Michelson, Sociology
Scott Munro, Geography
Henry Regier, Environment
Richard Sandbrook, Political Science
Beth Savan, Environment
Frances Silverman, Dalla Lana School of Public Health
Ingrid Stefanovic, Philosophy
Richard Stren, Political Science
Dudley Williams, Physical & Environ. Sci., UTSC
G. Ronald Williams, Biochemistry

2017-18 ALUMNI OF THE GRADUATE COLLABORATIVE SPECIALIZATIONS (CS) IN ENVIRONMENTAL STUDIES (ES) AND ENVIRONMENT & HEALTH (EH)

Graduate	Department	Degree/ Specialization	Supervisor	Research Topic
Chris Ames	Forestry	MFC/ES	Jay Malcolm	Common Buckthorn (<i>Rhamnus Cathartica</i> L.) Meta Analysis and Review of Literature Published 2008 - 2017
Shan (Amy) Bai	Chemical Engineering	MEng/ES	Charles Jia	Microwave Assisted Chemical Activation of Fluid Coke
Sivani Baskaran	Chemistry	MSc/ES	Frank Wania	Model-based Exploration of the Variability in Lake Trout (<i>Salvelinus namaycush</i>) BAFs caused by Physiology and Trophic Relationships
Mohsin Bin Latheef	Rotman School of Management	MBA/ES	Dilip Soman	Electric Vehicles: Plugging in with Behavioural Insights
Joy Kishor Das	Forestry	MFC/ES	Danijela Puric-Mladenovic	Plant Diversity in Pine Plantations in the Lake Simcoe Watershed
Matthew de Vries	Anthropology	MSc/ES	Shawn Lehman	How "Edgy" are Tamarins? A Preliminary Investigation of Spatial Variation in the Behaviour of Two Sympatric Callitrichids
Emmanuel Debaty	Political Science	MA/ES	Victor Falkenheim	Rights of Nature
Stephanie Ann Elliott	Public Health	MPH/EH	Howard Hu	Prenatal Fluoride Exposure and Attention Deficits in Children
Beth Jean Evans	Political Science	PhD/ES	Matthew Hoffmann and Steven Bernstein	Many Shades of REDD: Explaining Variation in the Adoption and Adaptation of the Reducing Emissions from Deforestation and Forest Degradation (REDD) Mechanism in Latin America
Shree Krishna Gautam	Forestry	MFC/ES	John Caspersen	An Assessment of Beech and Sugar Maple Regeneration Following Silvicultural Intervention Designed to Mitigate the Impact of Beech Bark Disease in Haliburton Forest
Cadhla Gray	Global Affairs	MGS/ES	Teresa Kramarz	Is Costa Rica's Ecotourism Development Model Applicable to Ecuador? Historically Divergent Economic, Legal, and Environmental Institutions Result in Varying Conditions for Ecotourism Growth

Continued on page 28.

Curriculum

ENVIRON
created -
graduate

Proposal
AND SUS

THE CAM

PROFESS
offered e

Faculty

8 NEW FACULTY CROSS-
APPOINTMENTS established.

GRADUATE FACULTY expanded.

DISTINGUISHED VISITING
FELLOWSHIP created.

SCHOOL OF THE ENVIRONMENT 2013 - 2018 MILESTONES

Scholarships

Events and Initiatives

Many SEMINARS AND EVENTS offered,
covering a wide range of topics.

STEP Forward Career Workshops.

Environmental Students' Union (ENSU)
Peer Mentorship Program initiated.

Graduate Environmental Students'
Association (GESA) re-established.

ENVIRONMENTAL SCIENCE MAJOR & MINOR
FIRST COHORT
started in 2016.

Program for a MASTER OF ENVIRONMENT
AND SUSTAINABILITY developed.

UNIVERSITY AS A LIVING LAB introduced.

ENVIRONMENTAL EXPERIENCE COURSE -
offered every year.



6

NEW ENV
SCIENCE
COURSES

5

BIG NEW IDEAS
COURSES

9

NEW
FACULTY

124

GRADUATE
FACULTY



16

ENDOWED
UNDERGRADUATE
SCHOLARSHIPS

\$30,000

AWARDED
each year
to
UNDERGRADS

RAISED \$1.8M in Partnership with the
Advancement Office at the Faculty of
Arts & Science.

ESTABLISHED three new undergraduate
scholarships, three new graduate fellow-
ships, and the annual MINDEN
SYMPOSIUM ON THE ENVIRONMENT.



8

ENDOWED
GRADUATE
FELLOWSHIPS

\$50,000

AWARDED
each year to
GRADUATE
STUDENTS

60

ENVIRONMENT
SEMINARS

21

ENVIRONMENTAL
FINANCE ADVISORY
COMMITTEE EVENTS

30

ENVIRONMENT
AND HEALTH
SEMINARS

15

MEMORIAL
LECTURES



2017-18 ALUMNI OF THE GRADUATE COLLABORATIVE SPECIALIZATIONS (CS)

Graduate	Department	Degree/ Specialization	Supervisor	Research Topic
Andrew Hakes	Global Affairs	MGA/ES	Scott Aquanno and Matthew Hoffmann	Examining the Future of China's State-Owned Enterprises in the Investment and Development of Renewable Energy Technologies
Mark Hathaway	AECD/OISE	PhD/ES	Stephen Scharper	Cultivating Ecological Wisdom: Worldviews, Transformative Learning, and Engagement for Sustainability
Thao Hoang	Geography	MA/ES	Amrita Daniere	Green for Whom? Exploring Ecotourism as a Climate Adaptation Strategy in Trang An, Vietnam
Kirsten Hoedlmoser	Chemical Engineering	MEng/ES	Arthur Chan	Wildland-Urban Interface Fires
Tiffany Mee Young Jung	Chemical Engineering	PhD/ES	Yu-Ling Cheng	Neighbourhood Sanitation and Children's Diarrhea in Developing Countries
Parag Kadam	Forestry	MFC/ES	Shashi Kant	Ecosystem-Service Based Offset Program (ESBOP) and its Governance Structure for Canadian Parks and Protected Areas (PPAs)
Shannon Nicole Kainula	Forestry	MFC/ES	John Caspersen	An Examination of the Relationship Between Stand History and Composition, and American Beech (<i>Fagus Grandifolia</i>) Regeneration in Tolerant Hardwood Forests in Ontario, Canada
Melissa Lavigne	DPES	MEnvSc/EH	George Arhonditsis	Extreme Hydrological Events and Human Health in Canada
HyunWoo (Peter) Lee	Chemical Engineering	MASc/ES	Elizabeth Edwards	Characterization of the Microbial Community in a Sequentially Fed Anaerobic Digester Treating Solid Organic Waste
Lukas Ley	Anthropology	PhD/ES	Tania Li and Joshua Barker	Building on Borrowed Time – The Temporal Horizons of Infrastructural Breakdown in the Delta of Semarang
Elisse Magnuson	Chemical Engineering	MASc/ES	Elizabeth Edwards	Characterization of the Microbial Community and Activity of Nitrate-Reducing, Benzene-Degrading Enrichment Cultures

2017-18 ALUMNI OF THE GRADUATE COLLABORATIVE SPECIALIZATIONS (CS)

Graduate	Department	Degree/ Specialization	Supervisor	Research Topic
Mandy Man Ying Poon	AECD/LHAE OISE	MEd/EH	N/A	Environment and Health Conditions Relevant to Displaced Populations in Urban Areas
Anamika Ray	Forestry	MFC/ES	Sandy Smith, Janice Gilbert and Claire Paller	Should Herbicide Be Used in Wetlands to Control Canada's Worst Invasive Plant: Invasive Phragmites?
Stephanie Anne Robinson	Forestry	MFC/ES	Tat Smith	An Analysis of Ontario Forest Governance Systems and their Ability to Effectively Include Indigenous People
Anna-Kay Patrice Russell	Public Policy	MPP/ES	Barry Goodwin	MPP Intern Report: The Social Context of Policy-Making
Alexandra Simpson	Drama, Theatre & Performance Studies	MA/ES	Antje Budde	Stories Of Transformation: Bugs, Pigs, and Snakes!
Fatin Atif Tawfig	Political Science	MA/ES	Victor Falkenheim	The People Versus the Climate? What the Rise of Populism Means for EU Climate Action
Caitlin Valentine	Geography	MA/ES	Andrea Olive	Oil Development in North Dakota and Saskatchewan: The Role of Local and Provincial NGOs as Resources for Land-owners with Questions About How Oil Development Will Impact Them
Heather Lynne Wheeler	Cell & Systems Biology	PhD/ES	Malcolm Campbell	Cellulose Biosynthesis has Extensive Impacts on Overall Plant Metabolism Potentially Mediated, in part, by Peptide Signals
Meng Xiao	Social Justice Education	MEd/ES	Terezia Zoric	How Can Social Justice Education and Technology Cooperate to Address Environmental and Socio-Economic Issues in the Three-Gorges Project?
Zi Jun (Johnny) Xiao	Chemical Engineering	MASc/ES	Elizabeth Edwards	Investigating the Heterologous Expression of Benzene Degrading Enzymes
JieLan Xu	Planning	PhD/ES	Andre Sorensen and Paul Hess	A Good Place to Age in Place? Exploring the Relationships Between the Built Environment, Activity Participation and Healthy Aging

2017-18 ALUMNI OF THE GRADUATE COLLABORATIVE SPECIALIZATIONS (CS)

Graduate	Department	Degree/ Specialization	Supervisor	Research Topic
Yu-Ki Yung	Forestry	MFC/ES	Danijela Puric-Mladenovic	State of Urban Forest Policy and By-laws across Ontario Municipalities
Stephanie Ziembicki	Public Health	MPH/EH	TBA	Environmental and Industrial Toxicology, Chronic Disease Development from Environmental Exposures, Carcinogenesis

GRADUATE ENVIRONMENTAL STUDENTS' ASSOCIATION (GESA) 2017/2018 YEAR IN REVIEW

The Graduate Environmental Students' Association (GESA) represents graduate students enrolled in the School of the Environment Graduate Collaborative Specializations. They organize social and academic events to bring light to relevant environmental issues in an informal setting with an aim to foster collaborative dialogue on a range of topics, and to liaise with other environmental groups on campus.

GESA had a very productive year in 2017-2018, holding a variety of events to help environmental students to connect outside of the classroom, including a student-faculty lunch, a mentoring night with our undergraduate counterparts in the Environmental Students' Union, a table at the Environmental Career Day, a workshop on making "seedbombs" to fill the city's vacant lots with wildflowers, and several pub nights!

On the academic side of things, they partnered with Planet in Focus Film Festival to hold a screening of "BLUE", a film documenting ocean conservation efforts, hosted talks on topics including Canada's official environmental petitions process, and the concept of "sustainable happiness".

We look forward to another great year for graduate students at the School of the Environment. For more information on GESA please visit our website (gesa.sa.utoronto.ca) or Facebook page (facebook.com/GESAatUofT). We are also available by email: gesa@utoronto.ca.

The members of the 2017-2018 GESA Executive are:
 Janina Kowalski, Co-President
 Charlie White, Co-President
 Lynessa Darko, Vice President
 Courtney Hopper, Vice President
 Edward Kim, Treasurer
 Jennifer Langill, GSU Representative
 Samantha Stead, Member-at-large
 Brianna Botchwey, Member-at-large



GESA pub night.



Environmental Career Day.



Making "seed-bombs".

GRADUATE AWARDS AND FELLOWSHIPS

The School of the Environment announced the winners of its Graduate Student Awards for the 2017-18 academic year at **Research Day** on April 18, 2018 and at the **Eric Krause Memorial Lecture**, held on April 10, 2018. This year we were delighted to introduce a new graduate scholarship: the **Marjorie Gillespie Bolton and Mabel Gillespie Norris Memorial Scholarship**.

Many of our graduate students are already excelling in research in science, social policy, global development, and law. Their projects encompass ecology and conservation; environmental and social issues confronting First Nation communities; implementing sustainable initiatives into corporate frameworks; and research campaigns that span the globe from Israel, South Africa, and Cambodia, to the Arctic. Below are the students who clearly stood out this past year.



(L-R) Samantha Stead and Vin Bolton.
Photo: Dan Weaver

MARJORIE GILLESPIE BOLTON AND MABEL GILLESPIE NORRIS MEMORIAL SCHOLARSHIP

This is a new graduate scholarship established by **Kevin (Vin) Bolton** through the generosity of the Estate of **Marjorie Bolton**. It is awarded annually to a graduate student at the University of Toronto with demonstrated financial need with an academic focus in the area of sustainability, environmental justice, biodiversity, and/or conservation. Preference will be given to a student enrolled in the School of the Environment's graduate programs. The first scholarship was awarded in spring 2018.

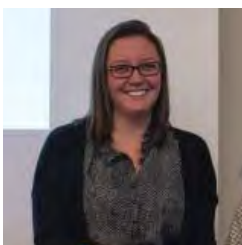
The inaugural recipient, **Samantha Stead**, is completing her Masters in the Department of Anthropology and the Environmental Studies Collaborative Specialization, with plans to begin her PhD next year. Her research interests focus on primate social behavior in response to ecological changes. Her field area is the Albertine Graben region of central Uganda where oil extraction activities have led to declines in environmental and social wellbeing. Samantha's research offers practical conservation science to assist land use planning and species protection in a contested region and biodiversity hotspot.



Leandra Rhodes Dicker. Photo: Dan Weaver

JOHN R. BROWN AWARD

This prize is in memory of the late **John R. Brown**, Professor of Environmental Health and Medicine. It was awarded to **Leandra Rhodes Dicker**, in the second-year of the Master of Applied Science in the Department of Chemical Engineering and Applied Chemistry and the Collaborative Specialization in Environmental Studies. Her research focuses on bioretention cells, or rain gardens, as a method to remove an emerging contaminant associated with a corrosion inhibitor commonly found in vehicle fluids and antifreeze liquids, from urban stormwater runoff.



Jennifer Langill. Photo: Dan Weaver

GEORGE BURWASH LANGFORD PRIZE

This is awarded to a School of the Environment graduate student who best combines excellence in research and contribution to the work of the School. This year's recipients are:

Jennifer Langill, a second-year MA student in the in the Department of Geography & Planning and the Environmental Studies Collaborative Specialization. Her research seeks to understand the implication of global environmental change on some of the most vulnerable and affected people in the Peruvian Amazon.

GRADUATE AWARDS AND FELLOWSHIPS

GEORGE BURWASH LANGFORD PRIZE (Continued)

Janina Kowalski, a second-year PhD student in the Department of Geography & Planning and the Environmental Studies Collaborative Specialization where she is conducting a comparative study on urban food forests (aka community orchards) in Canada. Her research contributes to a growing interest in urban ecology, agriculture, and community place making.

ERIC DAVID BAKER KRAUSE GRADUATE FELLOWSHIP



This fellowship is in memory of the late **Eric Krause**, a U of T Master's graduate of Geography and Environmental Studies. This year's recipient is **Anna Kay Russell**. She is currently completing her Master of Public Policy at the School of Public Policy & Governance in tandem with the School of Environment's Environmental Studies Collaborative Specialization. In 2016, she worked at the Ministry of Indigenous Relations and Reconciliation and more recently she has worked with Dr. Kate Neville of the School of the Environment and the Political Science Department as a research assistant co-developing a grant proposal for an environmental politics focused-project.

L-R Prof. Liat Margolis, Katy Krause, Arnold Krause, Anna Kay Russell and Prof. Kimberly Strong. Photo: Lauren Differ

ARTHUR AND SONIA LABATT GRADUATE FELLOWSHIPS

These fellowships were established through a generous donation from **Arthur and Sonia Labatt** and are given to students enrolled in one of the graduate programs of the School of the Environment or in the JD/Certificate Program offered by the Faculty of Law and the School of the Environment. Preference is given to students who are exploring practical solutions to environmental issues. This year, six scholars received this award.

Dolon Chakravartty is a PhD candidate in the Department of Public Health Sciences and the School's Collaborative Specialization in Environment and Health. The focus of her research is on the unequal burden of environmental exposures in lead, mercury, and cadmium and potential health adverse outcomes among newcomer and racialized women.



L-R Prof. Kimberly Strong, Laila Strazds, Brian Pentz, Andrew Hakes, Dolon Chakravartty, Fernando Mercado and Prof. Karen Ing. Photo: Dan Weaver.

GRADUATE AWARDS AND FELLOWSHIPS

ARTHUR AND SONIA LABATT GRADUATE FELLOWSHIPS (Continued)

Cristian Ches is a PhD candidate in the Department of Geography and the School's Collaborative Specialization in Environmental Studies. His research focuses on urban climate governance and sustainability: a quest for tools and ways to measure and compare performance.

Andrew Hakes is in the Master of Global Affairs program at the Munk School of Global Affairs, and concurrently in the Collaborative Specialization in Environmental Studies. His research paper submission was focused on examining the future of China's State-Owned Enterprises in the Investment and Development of Renewable Energy Technologies.

Fernando Mercado-Malabet is in the first year of a PhD in the Department of Anthropology, and the Collaborative Specialization in Environmental Studies. His research is situated in Madagascar, working with lemur species to provide better understanding of factors that threaten species with extinction.

Brian Pentz is in the third year of a PhD program in the Department of Physical and Environmental Sciences at Scarborough, and in the School's Collaborative Specialization in Environmental Studies. His research is focused on issues of fisheries management and the challenge of sustainability as climate change influences the marine environment.

Laila Stratz is a Master of Education candidate in the Adult Education and Community Development program at OISE, as well as in the Environmental Studies Collaborative Specialization. Her submitted paper presented a preliminary think tank model with a goal to generate momentum for a social movement of sustainability. The proposal identified that we need to gather people together to think in revolutionary ways to generate revolutionary new approaches.



L-R Ingrid Sefanovic and Lindsay Lucato. Photo: Dan Weaver

ALEXANDER B. LEMAN MEMORIAL AWARD

This award was established by the Leman family, friends and colleagues of **Alexander B. Leman**, an architect and urban planner who founded his own architectural firm (as well as Leman Group Inc., an urban development and planning consulting company). It is awarded to a graduate student enrolled in a collaborative specialization at the School of the Environment and the Department of Geography's Program in Planning, and is based on academic merit and financial need. This year's recipient, **Lindsay Lucato**, is working on her Masters in the Department of Geography & Planning and the Environmental Studies Collaborative Specialization. Lindsay's MA research looks to provide a better context and greater understanding for Canadian companies to incorporate and implement sustainable initiatives into their corporate frameworks.

BEATRICE AND ARTHUR MINDEN GRADUATE RESEARCH FELLOWSHIP

This award was established by the four Minden siblings George, Robert, Jo-Ann and Cynthia in memory of their parents Beatrice and Arthur Minden. This fellowship is awarded annually to one or more PhD students enrolled in the School of the Environment's Graduate Specializations to provide them with support during the research stage of their dissertations, including enabling their involvement in conferences, summer schools, field work and collaborative visits to research groups across Canada and around the world. The four exceptional students who received the Minden Graduate Research Fellowship demonstrate the outstanding breadth of environmental research happening at U of T and at the School of the Environment.

GRADUATE AWARDS AND FELLOWSHIPS

BEATRICE AND ARTHUR MINDEN GRADUATE RESEARCH FELLOWSHIP (Continued)



Esmerelda Bukuroshi is a third year PhD student in the Department of Chemical Engineering and Applied Chemistry, and the Environmental Studies Collaborative Specialization. Her research is in the area of emerging solar energy technologies, specifically new environmentally friendly materials for organic solar cells. The Minden Fellowship will allow Esmerelda to participate in a student exchange collaboration with the Technion Laboratory in Israel, which will provide her experience in developing materials for organic solar cells and will guide the design of future materials for solar cell applications.

Esmerelda Bukuroshi and Jo-Ann Minden. Photo: Dan Weaver



Courtney Hopper is in the second year of her PhD in Biological Anthropology/Archaeology and the Environmental Studies Collaborative Specialization. Courtney's research analyzes archaeological signatures to help identify when food production and the associated social/ideological changes arrived in South Africa. The Minden Fellowship will be used to help fund Courtney's field work in South Africa and associated laboratory analyses work at the University of Cape Town's isotope laboratory.

Courtney Hopper and Jo-Ann Minden. Photo: Dan Weaver



Leah-Marie Marajh just completed the first year of her PhD in the Department of Geography and the Environmental Studies Collaborative Specialization. Her research is situated in the Angkor region in northwestern Cambodia, which is experiencing growth both geographically and demographically. She seeks to understand how the cultural heritage of Angkor produces both vulnerable and resilient places in this region. The Minden Fellowship will assist in field work expenses including archival research and mapping of changes over time, questionnaires, semi structured interviews and focus groups.

Leah-Marie Marajh and Jo-Ann Minden. Photo: Dan Weaver

Tim Rodgers is a second year PhD student in the Department of Chemical Engineering and Applied Chemistry and the Environmental Studies Collaborative Specialization. His research is focused on investigating the presence of compounds associated with flame retardants and plasticizers (organophosphate esters) in the Arctic as evidence of long-range transport. The Minden Fellowship will be used to help support a sampling campaign aboard the Canadian Coast Guard Ship Amundsen.

ALAN H. WEATHERLEY GRADUATE FELLOWSHIP IN ENVIRONMENTAL LEADERSHIP



*L-R Meaghan Weatherdon and Robena Weatherley.
Photo: Dan Weaver*

The **Alan H. Weatherley** Graduate Fellowship in Environmental Leadership is awarded annually to one PhD student enrolled in a School of the Environment graduate specialization who demonstrates exceptional academic and/or practical leadership related to environmental issues. This year, the award was presented to **Meaghan Weatherdon** who is currently in the fifth year of her doctoral studies in the Department for the Study of Religion and the Collaborative Specialization in Environmental Studies. Her dissertation examines a grass roots social movement in which Cree and Inuit youth walked 1600 km from Great Whale River, Quebec to Parliament Hill in Ottawa, during the winter of 2013 in order to raise awareness about a variety of environmental and social issues confronting First Nation communities.

LECTURES AND SEMINARS

MEMORIAL LECTURES



Robert Hunter Memorial Lecture - Climate Change Despair Got You Down? Get Over It. We Can Win This.

L-R Dalton McGuinty and Prof. Kimberly Strong. Photo: Lisa Sakulensky

On April 5, 2018 the School of the Environment welcomed **Dalton McGuinty**, the 24th Premier of Ontario, as this year's Robert Hunter Memorial Lecture keynote speaker. Mr. McGuinty was Premier from 2003 to 2013 and during that time, he made the environment one of his priorities, resulting in his being named "Canada's greenest Premier ever" by **Stewart Elgie**, founder of the Sierra Legal Defence Fund.

Having known **Robert (Bob) Hunter** for many years, it was fitting for Mr. McGuinty to celebrate and remember Bob Hunter, well-known environmentalist, journalist, co-founder of Greenpeace, and one of the ten eco-heroes of the 20th century, according to Time magazine.

Speaking passionately about Bob Hunter's legacy, Mr. McGuinty emphasized the importance of continuing the work that Bob Hunter started and the importance of hope during challenging times. In attendance were the family and friends of Bob Hunter, including the newest member of the family, 6-week-old **Robert Rocket Hunter**.

Lloyd Rang, Director of Communications at the Ontario Ministry of Economic Development and Growth, introduced Mr. McGuinty. Mr. Rang was Mr. McGuinty's long-time speechwriter and also knew Bob Hunter many years ago.

This event was also an opportunity to recognize the accomplishments of this year's three recipients of the Robert Hunter Undergraduate Scholarship. Professor **Kimberly Strong**, Director of the School of the Environment introduced this year's recipients **Amanda Harvey Sanchez**, **Jaden Phillips** and **Emily Shaw**.

MEMORIAL LECTURES

Eric Krause Memorial Lecture - True Grit: How 'Green' Are Green Roofs

Prof. **Liat Margolis**, Associate Professor, Director of the Master of Landscape Architecture Program, and Associate Dean Research, Daniels Faculty of Architecture, Landscape, and Design, University of Toronto delivered this year's **Eric Krause** Memorial Lecture on April 10, 2018. Prof. Margolis introduced the University of Toronto's Green Roof Innovation Testing Laboratory (GRIT Lab) and discussed the potential of data-driven landscape research for teaching and engagement with industry and policy makers.

Prof. Margolis emphasized that while environmental performance has become a fundamental principle for the design of urban landscapes, research shows that in some cases a gap exists between intended and actual performance. New methods for empirical and multi-disciplinary research are emerging in both academic and professional practice to bridge this so called 'performance gap'. These involve sensor technologies, continuous monitoring and feedback processes throughout the design phase and lifetime of a project.



Liat Margolis. Photo: Lauren Differ.

Prof. Margolis is the Founding Director of the Green Roof Innovation Testing Laboratory (GRIT Lab), an interdisciplinary research initiative dedicated to evaluating the environmental performance of green roof and green wall technologies. This research has been contributing to the development of metrics for urban water management and green building standards at the City of Toronto and has been recognized internationally. The GRIT Lab represents a new mode of design practice which draws government and industry, the professions, and the academy together to undertake experimental research focused on discovering sustainable ways of building cities.

Douglas Pimlott Memorial Lecture - Cities and the Future of the Environmental Movement: Lessons from Toronto City Hall



Franz Hartmann. Photo: Dan Weaver

This year's **Douglas Pimlott** Memorial Lecture, which took place on March 21, 2018, focused on the changing nature of Canada's Environmental Movement. The keynote address was delivered by **Franz Hartmann**, Executive Director of the Toronto Environmental Alliance (TEA).

Dr. Hartmann discussed the shift in priorities happening within the environment movement and how, in the past, conservation groups dominated the movement with a focus on preserving so-called natural spaces, while today an increasing number of groups are focused on what is happening in cities. Reflecting on almost 30 years of environmental activism, he outlined some of the tensions and opportunities he sees with this shift. In addition to identifying key lessons learned from his experiences in urban environmental activism in Toronto, Dr. Hartmann reflected on the future, with a focus on Toronto's new climate action

plan – TransformTO – and what all environmentalists can do to help create a more livable city and planet.

Dr. Hartmann became TEA's Executive Director in 2007 and has been advocating for a green Toronto since 1990 when he first volunteered at TEA. In 1998, after 8 years of studying and participating in urban environmental politics in Toronto, he received his PhD in Environmental Politics from York University. In 1998, he also became the Environmental Advisor to Councillor Jack Layton. Since then, Dr. Hartmann has been involved in advocating green energy, and solutions for smog, waste management and a green economy at the municipal and federal levels - highlights include helping write the City of Toronto's first ever Environmental Plan and helping develop a Kyoto Implementation Strategy for Canada. He has also taught courses in the Environmental Studies program at Innis College.

Following the lecture, WWF-Canada President Emeritus **Monte Hummel** spoke about Douglas Pimlott and introduced the Douglas Pimlott Award and Scholarship recipients.

Douglas Pimlott was the first Director of the former Environmental Studies Program and Innis College.

2017-2018 ENVIRONMENT AND ENVIRONMENT & HEALTH SEMINAR SERIES

FRANK ACKERMAN, Principal Economist, Synapse Energy Economics, Cambridge MA, USA; and Research Fellow at the Global Economic Governance Institute, Boston University and at the Global Development and Environment Institute, Tufts University
Worst-Case Economics: Extreme Events in Climate and Finance

SATYENDRA BHAVSAR, Ontario Ministry of the Environment and Climate Change
What Fish Tell Us About Contaminants In Our Environment

RAY COPES, Chief, Environmental and Occupational Health, Public Health Ontario, Associate Professor, DLSPH, University of Toronto, Clinical Professor, University of British Columbia
Air Pollution and Human Health Research: Generating Actionable Evidence

AMRITA DANIERE, Professor of Geography and Planning, Vice-Principal Academic and Dean at University of Toronto Mississauga
Urban Governance in the Face of a Changing Climate: Complexity, Political Ecology, and Reality in Southeast Asia

JESSICA D'EON, Assistant Professor, Teaching Stream, Department of Chemistry, University of Toronto
Can You Use an Undergraduate Laboratory to Perform Research?

ADAM DICKINSON, Associate Professor, Department of English Language & Literature, Brock University
Metabolism, Writing, and the Anthropocene

MÉLISSA GÉNÉREUX, Public Health Director, Eastern Townships Integrated University Center in Health and Social Services - Sherbrooke Hospital University Center; Associate Professor, Department of Community Health Sciences, Faculty of Medicine and Health Sciences, Université de Sherbrooke
Long-Term Impacts and Public Health Response to the Lac-Mégantic Tragedy (Quebec, Canada)

MELANIE GOODCHILD, Research Associate & Fellow, Waterloo Institute for Social Innovation and Resilience, University of Waterloo
Anishinaabe Inendamowin (thought): Relationships on Turtle Island

RYAN JANZEN, Co-Founder and Chief Technology Officer, TransPod Inc.
The Future of Ultra-High-Speed Transportation: Social and Environmental Change through Tube Transportation

JENNIFER KOROSI, Assistant Professor, Department of Geography, York University
Paleo-ecotoxicology: What Can Lake Sediments Tell Us About Ecosystem Responses to Arsenic Contamination in Yellowknife (Northwest Territories) Lakes?

DONNA MERGLER, Professor Emerita, Department of Biological Sciences, Université du Québec à Montréal (UQAM)

JUDY DA SILVA, Grassy Narrows community member
Mercury Contamination in the Grassy Narrows Community (Asubpeeschoseewagong First Nation)

FAISAL MOOLA, PhD, Director General, David Suzuki Foundation; Adjunct Professor, Faculty of Forestry, University of Toronto; Adjunct Professor, Faculty of Environmental Studies, York University
The Protection of Nature in Highly Urbanized Landscapes: The case of Rouge National Urban Park

HUI PENG, Assistant Professor, Department of Chemistry and School of the Environment, University of Toronto
Going Beyond Single-Chemical Risk Assessment

CAROL STRIKE, Professor, Dalla Lana School of Public Health, University of Toronto Affiliate Scientist, Centre for Addiction and Mental Health

GILLIAN KOLLA, PhD candidate in Social and Behavioural Health Sciences, Dalla Lana School of Public Health, University of Toronto

KATHERINE RUDZINSKI, PhD candidate in Social and Behavioural Health Sciences, Dalla Lana School of Public Health, University of Toronto

Harm Reduction Programs and Resilience Among People Who Use Drugs: New Approaches and Perspectives

PETER TIMMERMAN, Associate Professor, Faculty of Environmental Studies, York University
Implosion of Sensibility: Learning How to Live in a Finite World

KAREN TRAVERS, Independent Researcher and Consultant
Rights, Claims and Demands: Indigenous Treaties and the Evolution of Water Policy in Ontario to 1900

ENVIRONMENTAL FINANCE COMMITTEE EVENTS

The School's Environmental Finance Advisory Committee (EFAC) consists of members of the business and university community. It provides a forum for the exchange of innovative ideas in environmental finance between the University and the commercial sector. It organizes educational workshops and programs on topics within the field of environmental finance to promote dialogue among business, industry, government, academia and the private sector

October 20, 2017 – “Blockchain: Building the Environmental Link”



Iliana Oris Valiente (CPA, CA, Founder, ColliderX) introduced the event with “Blockchain 101 – What is it? Why should we care?”. **Jessica Butts** (Director, Delphi Group) then described the “Latest on Global & Canadian Carbon Markets” and **Tom Baumann** (Co-Founder ClimateCHECK, Collaborase, Xpansiv, GHG Management Institute; Chair ISO Climate Change Standards Committee; Faculty, Blockchain Research Institute) spoke about “Blockchain and Climate Actions-Carbon Markets”. This event was jointly hosted by the School of the Environment’s Environmental Finance Advisory Committee and Chartered Professional Accountants Canada (CPA Canada). It was held at the CPA Canada office in Toronto.

December 11, 2017 – Fifth Annual Willis & White Thought Leadership Event: “The Financial Implications of Climate Science”



Richard Nesbitt, pictured left, (President and CEO of the Global Risk Institute) gave the keynote address and then participated in a panel discussion moderated by **Laura Zizzo** (Founder and CEO of Zizzo Strategy). He was joined by panelists **Chris Snyder** (Senior Director, Environmental Risk Management, CIBC), **Gord Beal** (CPA Canada Vice-President, Research, Guidance and Support), and **Sandra Odendahl** (President and CEO of CMC Research Institutes). The event also included presentations of the **Rodney White** Environmental Studies Scholarship and the **Skip Willis** Undergraduate Scholarship (page 22), and was followed by a networking reception. This event was hosted by **Kimberly Strong** (Director of the School of the Environment) and held in the Debates Room at Hart House.

Financing Cleantech, A Conversation Between Capital Seekers and Providers



March 22, 2018 – “Financing Cleantech, A Conversation Between Capital Seekers and Providers”

Panelists: **David Brennan** (CFO, ecobee), **Peter McArthur** (Senior Account Manager Lead, RBC’s Clean Tech practice in the GTA), **Nic Morgan** (VP Business Development and Co-founder, Morgan Solar), and **Michelle McBane** (Senior Investment Director at the MaRS Investment Accelerator Fund), with moderator **Kathryn Wortsman** (Fund Manager for the MaRS Catalyst Fund). This event was hosted at Torsys LLP.

ENVIRONMENTAL FINANCE COMMITTEE EVENTS

June 19, 2018 – “Carbon Markets and Climate Finance: Alternative-Financing Paths to a Low-Carbon Future; The University of Toronto’s Path Forward”

This event served as the University of Toronto’s inaugural University Climate Change Coalition (UC3) climate change forum. It examined financing options and market mechanisms currently and prospectively available to fund greenhouse gas emission reduction commitments of organizations such as U of T. The event was hosted by **Kimberly Strong** (Director, School of the Environment), with welcoming remarks provided by Meric Gertler (President, University of Toronto).

The morning session began with **Tiff Macklem** (Dean, Rotman School of Management), who spoke about the Canadian government’s recently-formed Expert Panel on Sustainable Finance, which he chairs.

Katie Sullivan (Managing Director, IETA) and **Xiaolu Zhao** (China Climate Initiative Program Manager, Environmental Defense Fund) gave a “Carbon Market Overview” and **Patricia Koval** (EFAC member) addressed Challenges and Opportunities within the regulatory carbon market with a focus on Ontario and linked markets.

Gray Taylor (General Counsel and Principal, The Climate Solutions Group Limited) moderated a panel on “Climate Finance: Practical Levers to Deploy Capital to reduce GHG Emissions” with panelists **Paul Martin** (CPA, Director of Business Operations, Western University) and **Bill Murphy** (National Leader, Climate Change & Sustainability Services, KPMG).

Jim Baxter (Director, Environment & Energy Division, City of Toronto) described how Toronto is implementing and financing GHG emission reduction programs.

The lunchtime speaker was **Matt St. Clair** (Director of Sustainability, University of California, Office of the President), who spoke on “The UC3 Challenge – What is it and how UC and others are responding, including the UC 2025 carbon neutral commitment”.

The afternoon began with an overview by **Paul Leitch** (Director of Sustainability, U of T) of U of T’s commitment to achieve a 37% reduction in greenhouse gas emissions from 1990 levels by 2030. This was followed by a panel on “Creative Finance: An Overview of the Financing Instruments available for use by organizations”, with moderator **Jennifer Reynolds** (Manager, Strategic Alliances, Toronto Financial Services Alliance) and panelists **Rob Keen** (Executive Director, Forests Ontario), **Tim Stoate** (Vice-President, Impact Investing, The Atmospheric Fund), **Shaaj Vijay** (Vice-President, Debt Capital Markets, RBC Capital Markets), and **Gray Taylor**.

A “Town Hall” Discussion on recommendations to achieve U of T’s goals was then moderated by **John Robinson** (Professor, Munk School of Global Affairs and the School of the Environment; Presidential Advisor on the Environment, Climate Change and Sustainability, U of T). The final speaker was **Scott Mabury** (Vice President, University Operations, U of T), who provided a “Response to Discussions and Recommended Paths Forward”.

The organizing committee for this event included **Patricia Koval**, **Paul Leitch**, **Donna Nielsen**, **John Robinson**, **Kimberly Strong**, **Gray Taylor**, and **Rob Wilson**.



U of T’s John Robinson (left) speaks to another conference organizer, lawyer Patricia Koval, a member of the School of the Environment’s Environmental Finance Advisory Committee and participants. Photo: Noreen Ahmed-Ullah

2017-2018 ENVIRONMENTAL FINANCE COMMITTEE MEMBERS

Amanda Ackerman (Managing Consultant, Energy, Navigant Consulting and 2018 Committee Co-Chair)

David Berliner (Co-founder and CEO, CoPower)

Richard Blundell (Adjunct Professor, Executive-in-Residence, Business Sustainability, Rotman School of Management)

Jessica Butts (Director, The Delphi Group)

Samantha Cameron (Junior Analyst, Sustainable Investing, Addenda Capital)

Lisa DeMarco (Senior Partner, DeMarco Allan LLP)

Julie Desjardins (President, Desjardins & Associates Consulting Inc.)

Toby Heaps (President and Co-Founder, Corporate Knights)

Peter Johnson (Senior Manager Environmental and Social Risk, Scotiabank)

Sarah Keyes (Sustainability Principal, Research, Guidance & Support; Chartered Professional Accountants of Canada)

Hyewon Kong (Associate Portfolio Manager, AGF Investments Inc.)

Patricia Koval (former Partner, Torys LLP)

Sonia Labatt (School of the Environment, Dean's Advisory Board Member, Faculty of Arts and Science)

Todd Latham (President, Actual Media)

Rosemary Martin (former Chief Sustainability Officer, First Capital Realty)

Susan McGeachie (Global Director, Climate Change and Sustainability Services at Hatch)

Andrea Moffat (Vice President, Ivey Foundation)

Donna Nielsen (Manager, Program & Partnership Development, School of the Environment)

Sandra Odendahl (President & CEO, CMC Research Institutes)

John Robinson (Professor, Munk School of Global Affairs and the School of the Environment; Presidential Advisor on the Environment, Climate Change and Sustainability, U of T)

Susan Sheehan (Vice President, Sustainability Consulting, G&S Business Communications; Founder, President & CEO, Getcleantech)

Chris Snyder (Senior Director, Environmental Risk Management, Corporate Credit Canada, CIBC)

Kimberly Strong (Director, School of the Environment)

Katie Sullivan (Director, North America Policy and International Climate Finance, International Emissions Trading Association)

Gray Taylor (Barrister and Solicitor, Gray Taylor Law; General Counsel and Principal, The Climate Solutions Group Limited; and Distinguished Visiting Fellow, School of the Environment)

Bill Tharp (CEO, Climate Change Infrastructure Corporation)

Rob Wilson (Director, Carbon Finance, The Nature Conservancy of Canada and 2018 Committee Co-Chair)

Laura Zizzo (Founder and CEO, Zizzo Strategy Inc.)

PROFESSIONAL DEVELOPMENT

The School of the Environment offers high-quality professional development opportunities through in-class and on-line certificate programs. In January of 2018, The School of the Environment in collaboration with The University of Toronto's School of Continuing Studies announced their partnership to offer two online certificates for professionals working in environmental and related fields.

The two Certificates: Geographic Information Systems (GIS) for Environmental Management and Advanced Study in GIS for Environmental Management were developed in collaboration with industry experts and will continue to be taught by current professional practitioners and instructors from the School of the Environment's Distance Learning Program.

Building on the success of that collaboration, we are pleased to announce that the Certificate and Advanced Certificate in Environmental Management as well as the Certificate in Climate Change Policy and Practice will be offered through SCS for the 2019 winter term.

Learners can now register through the School of Continuing Studies (SCS) and will benefit from the support and ease of registration that the School of Continuing Studies affords, while continuing to leverage the scholarship and expertise from the School of the Environment. The course instructors and academic rigour of these courses will remain the same.

ONLINE CERTIFICATE PROGRAMS AND COURSES

- **Geographic Information Systems (GIS) for Environmental Management**
- **Advanced Study in GIS for Environmental Management**
- **Climate Change Policy and Practice**
- **Environmental Management**
- **Advanced Study in Environmental Management**
- **Renewable Energy**
- **Water Resource Management**

IN-CLASS CERTIFICATE PROGRAMS AND COURSES

- **GHG Inventory, Accounting and Reporting**
- **GHG Project Quantification, Monitoring and Reporting**
- **Greenhouse Gas Validation and Verification**
- **Renewable Energy Technologies**
- **Implementing Energy Systems Management**
- **Sustainability Reporting**
- **Water Auditing**

Learn more: <https://www.environment.utoronto.ca/professional-development>

PROFESSIONAL DEVELOPMENT INSTRUCTORS



Oliver Bussler

Climate Change Policy and Practice Program (DE)

Mr. Bussler is a distance education (DE) instructor who developed the materials for the Climate Policy and Corporate Responses course, co-developed and instructs the Sustainability Reporting course, and is an expert in climate change policy and sustainability reporting. He holds an MSc in Agricultural Economics from the University of Saskatchewan and an undergraduate degree from the Royal Military College of Canada.

PROFESSIONAL DEVELOPMENT INSTRUCTORS



Michael Govorov

GIS for Environmental Management Certificate Program (DE)

Dr. Govorov has instructed in the School's GIS (geographic information systems) in Environment Management distance program since its advent and was instrumental in its initial development. He has been teaching GIS and remote sensing in the online environment for over 15 years and currently teaches and prepares undergraduate and postgraduate courses at the Vancouver Island University.



Gennady Gienko

GIS for Environmental Management Certificate Program (DE)

Dr. Gienko is a School DE instructor, and Professor in the Department of Geomatics, College of Engineering at the University of Alaska, Anchorage, where he develops and teaches undergraduate and graduate courses in geographic information systems, geospatial image analysis, remote sensing and photogrammetry. He has extensive international experience in geospatial science, geomatics and photogrammetry.



Rosemary Martin

Sustainability Reporting (In-Class)

Ms. Martin has 20 years' experience identifying environmental opportunities and risks, developing environmental strategies and implementing environmental programs in the steel, chemical, R & D, financial, real estate and consulting sectors. She is a former Vice-President and the Chief Sustainability Officer at First Capital Realty Inc. She wrote the first Global Reporting Initiative (GRI)-compliant, externally assured, Corporate Responsibility and Sustainability (CRS) Report in the Canadian real estate sector.



Aaron Schroeder

Climate Change Policy and Practice Certificate Program (DE and In-Class courses)

Mr. Schroeder has eleven years of professional experience analyzing, quantifying and auditing greenhouse gas emissions in North America. Prior to forming Brightspot Climate Inc. in 2015, Aaron worked for several years leading a team of greenhouse gas verification and policy analysts across Canada. His verification experience exceeds 150 greenhouse gas project and facility verifications.



David Sider

Environmental Management and Water Resources Management certificate programs (DE)

Dr. Sider is a DE instructor and also teaches in the undergraduate program at the School. He received his PhD in Geography and Environmental Studies from U of T and did his doctoral research in India, investigating community-based environmental management in low-income urban settlements. He has worked with environmental organizations in Nicaragua, Malaysia and Canada.



Ian Sinclair

Terrestrial Energy Systems (DE and In-Class courses)

Ian has worked in the energy and water management field since immigrating to Canada from the UK in 1997, focusing on the built environment. He has worked on a full range of building types: industrial to commercial, campus-wide to multi-residential, in a wide range of service types. These have included energy and water audits, building retrofits, recommissioning, renewable energy studies, measurement and verification, green certification, engineering and project management.



Lucy Sportza

Environmental Management, Renewable Energy, and Water Resource Management Certificate Programs (DE)

Dr. Sportza is a DE instructor who also teaches in the online environment and undergraduate program at the University of Guelph. She has an MA and PhD in Planning from the University of Waterloo. Her current interests focus on the use of parks and protected areas as part of urban sustainability.

APPOINTED AND ADMINISTRATIVE FACULTY



Christian Abizaid

Associate Professor, Department of Geography & Planning and School of the Environment

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<https://www.environment.utoronto.ca/staff-members/christian-abizaid/>
<https://parlap.geog.mcgill.ca/>

Licenciatura (International Relations) Iberoamericana, Mexico; MA and PhD (Geography), McGill

On research leave 2017-18

Research Interests: Environment and development; Indigenous and peasant livelihoods and resource use in Latin America; Vulnerability and resilience; Rural poverty; Forest and biodiversity conservation; Social networks; Neotropical forests; mainly Amazonia and Mexico



Jessica D'eon

Assistant Professor, Teaching Stream, Department of Chemistry

Undergraduate Associate Director, School of the Environment (effective July 1, 2018)

Office: Lash Miller Chemical Laboratories, Room 119, 80 St. George Street, M5S 3H6

jessica.deon@utoronto.ca
https://www.chem.utoronto.ca/pp/faculty_profile.php?id=201

BSc Dalhousie, PhD University of Toronto.

2017-2018 Instructor of:

ENV 233H Earth System Chemistry

Research Interests:

My interests lie in providing students with authentic learning experiences throughout their undergraduate degree. These efforts include providing undergraduate students with research opportunities where they perform fundamental studies investigating the fate of fluorinated organics in the environment and biological systems.



Jessica F. Green

Associate Professor, Department of Political Science and School of the Environment

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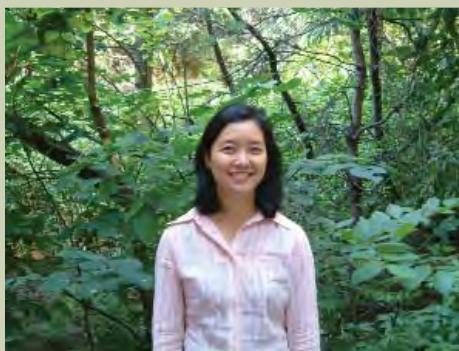
BA Brown University, Master of Public Affairs, Columbia; PhD Princeton.

Research Interests:

Climate governance, non-state actors, private authority, global governance, transnational

regulation. Publications include: Rethinking Private Authority: Agents and Entrepreneurs in Global Environmental Governance (Princeton University Press, 2014), articles on carbon markets, delegation to non-state actors, transnational regulation, regime complexity, and organizational ecology. She has published in journals including Nature, International Organization, Global Environmental Politics, International Interactions, Regulation and Governance, Business and Politics, and blogs regularly for the Washington Post.

APPOINTED FACULTY



Karen Ing
Associate Professor, Teaching
Stream, School of the
Environment

**Interim Academic Associate
Director, School of the
Environment (Dec. 2017 to June
2018)**

**Interim Director, School of the
Environment (July to August 2018)**

Office: ES 2098, 33 Willcocks St.,
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MSc (Zoology), Toronto

2017-18 Instructor of:

ENV/SII 199H Debating and
Understanding Current
Environmental Issues, ENV 200H
Assessing Global Change: Science
and the Environment, ENV 221H
Multidisciplinary Perspectives on
Environment, ENV 432H Urban
Ecology.

Research Interests:

Environmental education,
interdisciplinary team teaching,
urban ecology.



Douglas Macdonald
Senior Lecturer Emeritus, School
of the Environment

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entrance.
Mailing address: 33 Willcocks St.,
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Hon. BA, MA, Toronto; PhD
(Environmental Studies), York

Retired effective July 1, 2017.

Research Interests:

Politics of Canadian environmental
policy making; business as an
environmental policy actor,
Canadian national, federal-
provincial climate-change policy;
distributive effects of climate policy
and associated political resistance;
theoretical approaches to
interdisciplinary environmental
studies.



Kate Neville
Assistant Professor, Department
of Political Science and School of
the Environment

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profile/337/](https://politics.utoronto.ca/faculty/profile/337/)

BScH, Queen's; MEd, Yale; PhD,
British Columbia

2017-18 Instructor of:

ENV 322H International
Environmental Policy and
Co-Instructor of ENV 1001H
Environmental Decision Making

Research Interests:

Global environmental politics,
with a focus on energy politics
and resource governance,
environmental activism, and the
intersection of global markets and
local places.

APPOINTED FACULTY



Hui Peng

Assistant Professor, Department of Chemistry and School of the Environment

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BSc and PhD (Environmental Science), Peking University

2017-18 Instructor of:

ENV 452H Environmental Science Seminar

Research Interests:

Research in our group relies on the interface between chemistry and

biology to answer fundamental environmental questions. We focus on the development of novel techniques to address the following bottlenecks of current environmental science research: i) the limited capacity of traditional targeted chemical analysis strategies to monitor the growing number of known and unknown environmental chemicals introduced into commerce ; ii) limited information is available regarding toxic mechanisms (i.e., protein targets) for the vast majority of environmental chemicals.



W. Scott Prudham

Professor, Department of Geography and School of the Environment

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BA & BSc, McMaster; MA (Geography), Victoria; PhD (Energy and Resources), California, Berkeley

2017-18 Instructor of:

JGE 331H Resource and Environmental Theory, ENV1444H Capitalist Nature

Research Interests:

The commodification of nature; market-based and neoliberal mechanisms for dealing with environmental problems; political ecology, political economy and environmental change; industrial and alternative forestry in western North America; social regulation of commercial biotechnology in agriculture and forestry.



John Robinson

**Professor, Munk School of Global Affairs and Public Policy
Professor, School of the Environment**

Presidential Advisor on the Environment, Climate Change and Sustainability

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Devonshire Place, Toronto, ON, M5S 3K7

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BA, U of T; MES, York; PhD (Geography), U of T

2017-18 Instructor of:

JSE 1708 The Development of Sustainability Thought
ENV 461H/ ENV 1103H The U of T Campus as a Living Lab of Sustainability
GLA 2000H Munk MGA Capstone (sustainability module)

Research Interests:

Climate change and sustainability, urban sustainability, building sustainability, community engagement processes, transdisciplinary co-production of knowledge, university sustainability programming, environmental philosophy.

APPOINTED FACULTY



Njal Rollinson

Assistant Professor, Department of Ecology & Evolutionary Biology and School of the Environment

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<http://www.njalrollinson.com>

BScT, Nipissing; MSc, Guelph; PhD Biology, Dalhousie

2017-18 Instructor of:

ENV 316H Laboratory & Field Methods in Environmental Science

Research Interests:

Evolutionary ecology and conservation; use of long-term monitoring data and metadata to test theory, understand ecological and adaptive processes, and to inform conservation decisions; evolutionary ecology of reptiles, amphibians, and cold-water fishes near their northern range limits.



Stephen B. Scharper

Associate Professor, Department of Anthropology, UTM and School of the Environment

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<http://religion.utoronto.ca/people/cross-appointed-faculty/stephen-scharper/>

BA Hons., Toronto; MA (Theology), Toronto; PhD (Religious Studies), McGill

2017-18 Instructor of:

ENV 100H Introduction to Environment and ENV 1008H Worldviews and Ecology

Research Interests:

Environmental ethics, environmental worldviews, liberation theology and ecology, religions and environmentalism, ecological worldviews.



Kimberly Strong

**Professor, Department of Physics
Director, School of the Environment (to June 30, 2018)**

Office: Department of Physics, Room MP710A, 60 St. George St., Toronto,
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<http://www.atmosp.physics.utoronto.ca/people/strong/strong.html>

B.Sc. Hons. (Physics), Memorial; D. Phil. (Atmospheric Physics), Oxford.

Research Interests:

Atmospheric remote sounding using ground-based, balloon-borne, and satellite instruments for studies of ozone chemistry, climate, and air quality. Founder of the U of T Atmospheric Observatory; Deputy Principal Investigator (PI) of Probing the Atmosphere of the High Arctic program, which runs the PEARL facility on Ellesmere Island; Co-I on the ACE and Odin satellite missions; PI of the AVATARS project.

APPOINTED FACULTY



Clare Wiseman
Associate Professor and
Graduate Associate Director
School of the Environment
(effective July 1, 2018)

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B.E.S. Hons., Waterloo; M.Nat.Res.
Mgmt., Simon Fraser; Dr. phil.nat.,
Frankfurt

2017-18 Instructor of:
ENV 341H Environment and Human
Health

Research Interests:

Metal exposures in urban
environments and their human
health impacts; road dust sources,
emissions and fate; in vitro
methods for assessing metal
bioaccessibility.



Debra Wunch
Assistant Professor, Department
of Physics and School of the
Environment

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ca
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BSc, MSc, PhD (Physics), U of T

2017-18 Instructor of:
ENV 231/238H Physics of the
Changing Environment, ENV 316H
Laboratory & Field Methods in
Environmental Science

Research Interests:

Experimental atmospheric physics,
carbon cycle, remote-sensing
measurements of trace gases in
the atmosphere.



Tanhum Yoreh
Assistant Professor, School of
the Environment

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BA (Environmental Studies) McGill
University; MA (Geography) Hebrew
University; PhD (Humanities) York
University

2017-2018 Instructor of:
ENV1001H Environmental Decision
Making, ENV 382H Special Topics
in the Environment: Waste Not,

Want Not. Stories of Wastefulness
in Religion and Society, ENV 421
Environmental Research

Research Interests:

Religion and environment, religious
legal approaches to environmental
protection, religious values and
environmental behaviour,
faith-based environmentalism.

ADJUNCT PROFESSORS



Jane Ambachtsheer

Partner and Chair, Responsible Investment at Mercer Investments. She is consultant to the UN through the development of the Principles for Responsible Investment; Trustee of the Carbon Disclosure Project; member of the Financial Stability Board's Task Force on Climate-related Financial Disclosures. She has previously taught the School of the Environment's graduate course ENV 1707H Environmental Finance and Sustainable Investing.



Brad Bass

Dr. Brad Bass works with the Great Lakes Harmful Pollutants Section in Environment and Climate Change Canada, the Foundation for Student Science and Technology and the School as the Instructor for the Research Opportunity Program courses, ENV299/399H. His current work includes socioeconomic influences on the adoption of innovation, green infrastructure and water quality, and agent-based simulation.



Satyendra Bhavsar

Dr. Bhavsar is a Research Scientist in the Environmental Monitoring & Reporting Branch at the Ontario Ministry of the Environment and Climate Change. His research interests include environmental behaviour of contaminants, monitoring, fate and transport in a multimedia environment, exposure and risk assessment, mathematical modelling, and identification and understanding of contaminant patterns. He is currently assessing the status of Fish Consumption Beneficial Use Impairment at two Areas of Concern in the Great Lakes in a School of the Environment research project.



Paul Helm

Dr. Helm is a Senior Research Scientist for contaminant issues in the Great Lakes with the Ontario Ministry of the Environment in the Water Monitoring Section of the Environmental Monitoring & Reporting Branch. His research interests include: fate and transport of emerging organic contaminants in aquatic and urban environments; sources and impacts of microplastics in the Great Lakes; passive sampling approaches for contaminant monitoring, reconnaissance, and assessment; and, non-target mass spectrometric analysis and screening for unknown contaminants/transformation products. He is also a member of the School's graduate faculty.



Susan McGeachie

Ms. McGeachie is the Global Director, Climate Change and Sustainability Services at Hatch. She is a member and former chair of the School of the Environment's Environmental Finance Advisory Committee and is Instructor (Sessional Lecturer) of the graduate course ENV 1707H Environmental Finance and Sustainable Investing.



Paul Muldoon

Mr. Muldoon is Associate Chair, Assessment Review Board. He is the former Executive Director of the Canadian Environmental Law Association. He has graduate degrees from McMaster University and McGill University (MA, LL.M) and has written and co-written books and articles on Canadian environmental law and policy including the textbook *An Introduction to Environmental Law and Policy in Canada*. He is also Instructor (Sessional Lecturer) of the School of the Environment's graduate and undergraduate course ENV 1701H / ENV 422H Environmental Law.



Namrata Shrestha

Dr. Shrestha is a Landscape Ecologist, Research & Development at the Toronto and Region Conservation Authority (TRCA). She holds a PhD in Geography with expertise in landscape and urban ecology, and conservation planning. Her appointment at the School offers an opportunity for research collaboration with TRCA in the area of integrating science into policy and practice, especially in urban ecosystems management.



Gray Taylor

Mr. Taylor is the School's inaugural Distinguished Visiting Fellow in Environment. He practices business law including climate change and emission trading, environmental and sustainability law at Gray Taylor Law after decades of Bay Street practice in the same areas. He has been making a significant contribution to the School through his membership in its Environmental Finance Advisory Committee, playing a major role in planning events and raising funds for scholarships.

GRADUATE INSTRUCTORS AND SESSIONAL LECTURERS



Christopher Ollson
Sessional Lecturer
ENV 1704H Risk Analysis & Management

Dr. Ollson is Owner of Ollson Environmental Health Sciences. He has been practicing in the field of environmental risk and toxicology for almost 20 years and has an active research program in the field of Health Impact Assessment and health issues associated with living in proximity to Renewable Energy projects. He also teaches in the Department of Physical and Environmental Sciences at

Susan McGeachie (bio page 48)

Tania Oncica
Sessional Lecturer
ENV 4001H Graduate Seminars in Environment and Health
JNC 2503 Environmental Pathways
Tania Onica is Senior Regulatory Toxicologist with Environment and Climate Change Canada.

Paul Muldoon (bio page 48)

UNDERGRADUATE INSTRUCTORS AND SESSIONAL LECTURERS



Ben Akrigg
Associate Professor, Department of Classics, U of T
ENV 362H Energy & Environment: Transitions in History

Dr. Akrigg's principal area of research is the economic history of archaic and classical Greece. Current projects include the historical demography of Athens in the fifth and fourth centuries BC, Athens' fuel supply, and the mobility of labour in antiquity.



Simon Appolloni
Sessional Lecturer
ENV 100H Introduction to Environmental Studies

Dr. Appolloni received his PhD in the Study of Religion with the Collaborative Program in Environmental Studies, School of the Environment (Toronto). His focus is on the intersection of religion, science, environmental and social ethics. He has taught an array of courses on ethics, worldviews, religion and environment, world religions, religion-science, and cultural heritage, at Brock University, Humber College and U of T.



Carlos Avendano
Sessional Lecturer
ENV 337H Human Interactions with the Environment

Dr. Avendano is an Associate Professor, School of Biology, San Carlos University, Guatemala. His research interests integrate earth sciences, landscape ecology and rural development. He has developed research projects with Mayan Villages in the tropical lowlands and cloud forest highlands of Guatemala. He is developing a research laboratory in Guatemala by bringing together a group of international collaborators.



Hélène Cyr
Associate Professor, Department of Ecology and Evolutionary Biology, U of T
ENV 234H Environmental Biology
ENV 334H Environmental Biology: Applied Ecology

Dr. Cyr's interests are in the ecology of littoral areas in lakes (spatial and temporal distribution of habitats and benthic communities), foodwebs (feeding interactions in planktonic and benthic communities, especially between invertebrates and algae), and macroecology.



Miriam Diamond
Professor, Department of Earth Sciences, U of T
On Leave 2017-2018

Dr. Diamond earned a PhD in Chemical Engineering and Applied Chemistry and a BSc from Toronto, an MScEng. in Mining Engineering (Queen's) and an MSc in Zoology (Alberta). She examines chemical contaminants from emission, to transport indoors, and on human and ecological exposure to inform regulation, policy and public health.



Steve Easterbrook
Professor, Department of Computer Science, U of T
ENV 361H Social Media and Environmentalism

Dr. Easterbrook received his PhD from Imperial College, London. He studies the development of computational models for understanding climate change, along with the role of models and data visualizations for sharing that knowledge about climate and sustainability with other communities. He teaches courses on Systems Thinking, Climate Literacy, and Software Design.

UNDERGRADUATE INSTRUCTORS AND SESSIONAL LECTURERS



Monika Havelka

Senior Lecturer, Environment Programs, UTM

ENV 395H Special Topics Field Course: Ecology and Conservation in the Andes, Western Amazonia & Galápagos

Dr. Havelka received her PhD in Zoology at the University of Western Ontario. She has taught a wide variety of courses in evolutionary biology, ecology and environmental science, and field courses in Ecuador, Ontario, and the Arctic. She was twice a semi-finalist and once a finalist in the TVO Best Lecturer Competition.



Anastasia Hervas

**Course Instructor
ENV 222H Interdisciplinary
Environmental Studies**

Ms. Hervas earned a B.Sc. Physical Geography, Statistics, Economics and M.Sc. Physical Geography (Climate and Vegetation Modeling) from the University of Toronto. Her research interests include, climate change policy (Kyoto, CDM, REDD+), bio-fuels – socio-economic and environmental impacts of feedstock production and trade, rural livelihoods and development, Latin America, and political ecology.



Russ Houldin

Sessional Lecturer

**ENV 323H Ontario Environmental Policy
ENV 347H Power of Economic Ideas**

Mr. Houldin has worked in the Ontario Public Service for over 30 years. He recently retired as senior adviser to the Ontario Energy Board. He continues to work as an energy and environment consultant. His interests include environmental and ecological economics, sustainable electricity systems, environmental and economic regulation, and Ontario environmental policy.



Donald Jackson

**Professor & Chair, Department of
Ecology & Evolutionary Biology, U of T
ENV 432H Urban Ecology**

Dr. Jackson is former Interim Director of the School of the Environment. His research examines the structure and composition of ecological communities in aquatic ecosystems. His work focuses on comparing fish communities in lakes and streams to determine the relative importance of environmental factors in determining the species composition. His current work looks at the colonization and extinction of fish species in lakes and connecting waterways.



Karen Morrison

Sessional Lecturer

ENV 223H Fundamental Environmental Skills

Dr. Morrison is Vice-President of the International Association for Ecology and Health and a member of the Steering Committees of Ecohealth Ontario and the Ontario Biodiversity Council. Her work focuses on the intersection of ecology and public health, with a particular focus on watersheds as settings for health and well-being. She is an adjunct professor in the Faculty of Environmental Studies at York University.



Jennifer Murphy

**Associate Professor, Dept. of
Chemistry, U of T
ENV 452H Environmental Science
Seminar**

Dr. Murphy's research group applies state-of-the-science analytical techniques to address issues including urban air quality, climate change, acid precipitation, and ecosystem function. Their focus is on field measurements, particularly of reactive nitrogen compounds, that can be used to evaluate our understanding of the rates and mechanisms of chemical transformations in the environment.



Stephen W. Morris

**Professor, Department of Physics, U of T
ENV 262H The Science of Energy in the
Environment**

Dr. Morris is the J. Tuzo Wilson Professor of Geophysics. Prof. Morris research interests are in the area of experimental nonlinear physics and pattern formation, especially in fluids, icicles, mud cracks and other geomorphological systems. He has appeared frequently on the Discovery Channel. He sometimes passes his scientific photographs off as art.



Barbara Murck

**Senior Lecturer, Department of
Geography, UTM
ENV 395Y Special Topics Field Course:
Ecology and Conservation in the Andes, Western Amazonia & Galápagos**

Dr. Murck received her undergraduate degree from Princeton and her PhD in Geology from U of T. She has focused on international development, through environmental management projects in Africa, China, and SE Asia. She is an award-winning lecturer (President's Teaching Award 2010) and has written many books in geology and environmental science.

Paul Muldoon (bio page 48)

UNDERGRADUATE INSTRUCTOR AND SESSIONAL LECTURERS



David Pond

Sessional Lecturer

**ENV 320H National Environmental Policy;
ENV 221H Multidisciplinary Perspectives
on Environment**

Dr. Pond teaches environmental politics and public policy in the Department of Political Science at U of T. He has published a comparative study of the federal Commissioner of the Environment and Sustainable Development and the Environmental Commissioner of Ontario (Canadian Study of Parliament Group, 2010).



Keith Stewart

Sessional Lecturer

ENV 350H Energy Policy and Environment

Mr. Stewart has worked as an energy policy analyst and advocate for various non-profit groups for over a decade and currently works for Greenpeace Canada where he promotes the efficient use of renewable energy. He is the co-author of the book *Hydro: The Decline and Fall of Ontario's Electric Empire* and author of numerous articles, reports and op-eds on climate change policy and politics.



Erich Vogt

Sessional Lecturer

ENV 451H Current Environmental Debates

Dr. Vogt's interests address the policies and politics of climate change, contemporary international environmental issues and global governance innovations. He has taught at George Washington University and American University in Washington, D.C. and was IUCN's senior multilateral policy advisor and managing editor of World Bank-incubated Development Gateway.



Sheila Waite-Chuah

Sessional Lecturer

ENV 335H Environmental Design

Ms. Waite-Chuah has been teaching environmental/sustainable design for 15 years. Her interest in sustainable design is intimately linked with sustainable development, in both local and global contexts. She received a Masters in Environmental Studies from York University. She also teaches sustainable design at the Ontario College of Arts and Design University.

Christine Wong

Sessional Lecturer

**JEH455H Current Issues in Environment
and Health**



David Sider

Sessional Lecturer

**ENV 307H Urban Sustainability
ENV 440H Professional Experience Course**

Dr. Sider is an instructor in the Environmental Management and Water Resources Management certificate programs and teaches in the undergraduate program at the School. He completed his PhD in Geography and Environmental Studies (Toronto), doctoral research on community-based environmental management in low-income urban settlements in India, and worked with environmental groups in Nicaragua, Malaysia and Canada.

J. Squire

Course Instructor

**JGE 321H Multicultural Perspectives on
Environmental Management**



Romila Verma

Sessional Lecturer

**ENV 200H Assessing Global Change: Science
& the Environment**

Dr. Verma is an Environmental and Physical Geographer. She has worked on Canadian and International issues including Ontario's source water protection plan, impact of weather variables on municipal water use, indicators of environmental change in Lake Simcoe, and hydrological parameters in the Mahanadi river basin in India. Her current interest is finding a sustainable solution to the water crisis in the Sahel region of Africa.



Oliver Warr

Instructor, Department of Earth Sciences

ENV 233H Earth Systems Chemistry

Dr. Warr is a postdoctoral fellow in the Department of Earth Sciences. He uses noble gases to date the residence times of ancient Precambrian fracture fluids in the Canadian Shield. The results from this study, combined with carbon, hydrogen, oxygen isotopic analyses, will significantly increase our understanding of these ancient crustal systems and allow us to understand the role these systems may play on the Earth's biosphere over geological, if not planetary, timescales.



Adonis Yatchew

**Professor, Department of Economics,
U of T**

**ENV 462H Energy and Environment:
Economics, Politics, and Sustainability**

Dr. Yatchew's research focuses on energy and regulatory economics, and econometrics. Since completing his PhD (Harvard) he has taught at U of T and has held visiting appointments at Trinity College, Cambridge, Australian National University and the University of Chicago. His work on semiparametric regression techniques has been published by Cambridge University Press.



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Spring Dusting - Chit Lake Trail.
(Photo: P.D. Moldowan)