# CAGONT 2018 FINAL PROGRAM
## Department of Geography & Planning, University of Toronto (St. George)

***Posted on October 16. Please let us know at cagont2018@geog.utoronto.ca if you have any concerns or questions.***

## Friday, October 19

**4:00-5:00pm: CAGONT Executive Meeting (University College 255)**

**5:00-7:00pm: Registration** (Victoria College ['Old Vic'] foyer, 91 Charles St. W.)

**5:00-6:00pm: Welcome Reception** (Victoria College foyer)

**6:00-7:30pm: 1st Plenary Panel – "Urbanism in a Time of Turmoil"**
(Alumni Hall, Victoria College)

Chairs: Deborah Cowen and Beyhan Farhadi (University of Toronto)
1. Alexandra Flynn (University of Toronto)
2. Kanishka Goonewardena (University of Toronto)
3. Suzanne Narain (University of Toronto / Jane Finch Action Against Poverty)
4. Alan Walks (University of Toronto)

**8:00pm-??: GGAPSS CAGONT Social** (Duke of Cornwall, 400 University Ave.)

## Saturday, October 20
All paper/poster sessions will be on the 2nd floor (classroom wing) of Sidney Smith Hall, 100 St. George St. (SS)

(*Please note: Abstracts have not been systematically edited and may contain typos)*

**Registration: 8:00am-12:00pm** (SS lobby)

**Session 1: 8:30-10:00am**

**A1: Remote Sensing and Biogeography** (SS 2105)
Chair: Anna Shadrova

1. **Investigating burn severity and post-fire regrowth in Alberta Canada following the 2016 Fort McMurray wildfire using Landsat 8**

Anna Shadrova and Yuhong He (University of Toronto)

Forest fires are the main disturbance and driver of ecological succession in boreal forests. With global climate change, it is expected that the frequency, intensity, and size of wildfires will increase, with significant economic and ecological consequences. Monitoring, assessing, and learning about the wildfire spatial variation will provide insights to reduce fire risk and improve post-fire management. Remote sensing is a suitable, cost effective, and efficient technique for monitoring wildfires. This study investigates a large wildfire, which affected the city of Fort McMurray, Alberta in May 2016. Using remote sensing, the extent of the fire was delineated, burn severity and regrowth were assessed, and drivers behind burn severity and vegetation recovery were investigated. The results indicate that the burn extent within the study area was approximately 200,000 hectares and that landcover type and elevation significantly impacted burn severity and recovery.

2. **Examining wetland changes and oil spills impacts in the Eastern Region of the Niger Delta using historical satellite imagery**

Brianne Doyle and John M. Kovacs (Nipissing University)

The mangrove forests of the Niger Delta are located in one of the most important oil producing regions of Africa as well as one of the most heavily polluted estuaries in the world. The purpose of this investigation was to examine the potential relationships between historical changes in these coastal forested wetlands and known oil spills. The mangrove forests in the Eastern region of the Niger Delta region were mapped for the years 1986 and 2016 using historical Landsat imagery. A post-classification change detection procedure was then applied to determine both losses and gains in the mangrove forest cover. Further, edge detection techniques were applied so that pipeline right of ways could be identified and used in conjunction with point data from an open source oil spill monitoring database. Preliminary results suggest that the majority of change in the mangrove forest can be linked to spills incurred by oil extraction activities and that the extent of the damage may indicate that the oil spill volumes and quantities from the open source database may be severely underestimated.

3. **Hyperspectral Remote Sensing for Ecosystem Health Monitoring and Assessment: Image Spectral Analysis and Numerical Modelling**

Phuong D. Dao and Yuhong He (University of Toronto)

Hyperspectral sensors collect information at a range of narrow and contiguous spectral bands across the entire spectrum. The advances in hyperspectral remote sensing (HRS) offer the opportunities to identify, distinguish, and extract spectrally similar features and subtle changes on the earth surface in various applications. For vegetative ecosystems, variations in spectral curves in different wavelength regions represent changes in different leaf biochemical and biophysical properties, and in canopy structural parameters. These optical changes can be used as indicators of vegetation health under environmental stress or disease infestations. Furthermore, radiative transfer modelling (RTM), a physically based modelling approach, has been widely used to simulate plant's spectral curves from known biochemical and biophysical properties. The inversion of these models allows the retrieval of the above properties, using remotely sensed spectral information, in a non-destructive manner without the need of conducting laboratory experiments. The sensitivity of the RTM to stress-induced changes in vegetation has been evaluated in several studies. In this paper, we discuss the

advantages and latest developments of HRS and RTM, and their applications in ecosystem health monitoring and assessment. Two case studies were conducted to evaluate the utility of the combination of HRS and RTM in detecting drought impacts on grassland including: (1) a growth chamber drought experiment in a research greenhouse; (2) a field rain-exclusion shelter drought experiment in Koffler Scientific Reserve, University of Toronto, in 2017 and 2018. The results show that HRS and RTM can be combined to detect and monitor changes in vegetative ecosystems under different stress conditions.

4. **Close Range Hyperspectral Imaging of Vegetation Decomposition**

   Cameron Proctor, Yuhong He, and Phuong Dao (University of Toronto)

   Ecosystems where monocots are the dominant vegetation consist of a mixed canopy of green vegetation and litter in various stages of decomposition. Depending upon the biomass, decay stage, and orientation of the litter component, quantification of green vegetation biophysical and biochemical traits can be obfuscated. Plant senescence and subsequent decomposition can be quite variable within the canopy, yet few efforts are undertaken to spatially resolve the progression of decay and understand its influence on the spectral evolution of the entire canopy at higher spatial scales. In this study, using a pushbroom hyperspectral imaging system mounted on a linear stage, we examine the potential to spatially resolve decomposition over time. Hyperspectral images of a mixed green vegetation and litter canopy are scanned at close range at high spatial resolution, and the resulting spectra matched to the output of a modified PROSAIL radiative transfer model. Preliminary results regarding the construction, operation, and workflow for the hyperspectral linear stage are presented.

**B1: Agrarian Livelihoods** (SS 2117)
Chair: Christian Abizaid

1. **A bitter pill: Smallholders perceptions of Green Revolution prescriptions and climate change adaptation in northern Ghana**

   Siera Vercillo, Isaac Luginaah, and Tony Weis (Western University)

   This paper examines smallholders' perceptions of Green Revolution prescriptions promoted by foreign donors, NGOs, and the Ghanaian state, which are aimed at commercializing and intensifying their production through increasing use of chemical fertilizers, pesticides, tractors, and faster-growing seed varieties. Drawing on six months of ethnographic immersion in the Northern Region of Ghana, this paper argues that many smallholders are adopting this program in response to erratic rainfall, shortened growing seasons, and drier soil with diminished fertility, and that there are pre-existing gender and class differences affecting who can access the new technologies used to cope with environmental changes, with female farmers especially disadvantaged. Yet while this package is actively widening disparities, even those farmers who have adopted it are not uncritical of its impacts and they commonly described this decision as a short-term trade-off to meet subsistence needs at the expense of worsening soil health and increasing debt.

2. **Cheap Chinese motors, information and communication technologies (ICT), and livelihoods in the Peruvian Amazon**

Christian Abizaid (University of Toronto), Oliver T. Coomes (McGill University), and Yoshito Takasaki (University of Tokyo)

Research on livelihoods in the Amazon has documented multiple ways in which Amazonian peoples make a living in the context of environmental and socioeconomic change. This paper reports on preliminary findings from a recent reconnaissance boat trip along the Ucayali-Amazon River conducted as part of an ongoing study on rural livelihoods and poverty in the Peruvian Amazon, known as PARLAP. Specifically, we draw on observations and conversations with local residents in more than 25 communities between Pucallpa and Iquitos, to analyse the ways in which cheap Chinese motors and cell phones are reshaping labor, transportation, marketing and finance in the region. Implications for conservation and development are discussed.

**3. Contested cycles of agrarian change in Guatemala's Polochic Valley**

Lazar Konforti (University of Toronto)

The establishment of a sugarcane plantation in the Polochic valley in north-eastern Guatemala gave rise to what is now a decade-long conflict with landless indigenous Q'eqchi' peasants. Using archival and ethnographic data, this paper shows how historical land and labour relations have been reconfigured in accordance with the dominant capital accumulation regime of each period. These transformations both shaped and were shaped by class struggle between indigenous peasants and (proto)capitalist landowners. In the early 1990s, peasant mobilisation precipitated the downfall of the valley's indentured labour regime and opened small but meaningful land access opportunities for indigenous communities. I argue these gains were made possible because the Polochic valley's inward-oriented cattle-maize-rice industry became unattractive as an accumulation strategy in the context of economic liberalisation, thus weakening landowners' willingness to defend their control over land and the labour process. As a new "agrarian extractivist" regime – tied to global markets and fuelled by the 2000s commodity boom – took root in Guatemala, the Polochic valley once again became attractive to capital. The sugarcane plantation's arrival, in 2005-07, proved to be particularly explosive because it re-ignited lingering land disputes left over from the previous cycle of contestation and reversed some of the material gains made by peasants during the previous decade. The materialist analysis provided in this paper does not aim to negate peasant agency but rather to provide a complementary analysis by situating peasant politics within the historical structures of exploitation and domination and collective memories of previous cycles of contestation that inform it.

**4. How does weather and seasonality affect smallholders in Uganda? Mapping agricultural cycles and stressors using local knowledge**

Emma Windfeld (McGill University, University of Toronto)

The impacts of climate change are especially difficult to project for poor countries in the Global South due to a lack of climate data and observational records. Local knowledge represents an important and underused data source that can provide the basis for climate change impact projections. In this study, we characterized community-level agricultural vulnerabilities to climate change using participatory methods to capture place-based knowledge. Through focus groups and interviews with 50 smallholder farmers and four local agricultural experts, we created a calendar documenting local knowledge about the agricultural cycles of six key subsistence crops alongside

seasonal and weather thresholds that are associated with good or bad crop outcomes throughout the year. Respondents also identified context-specific environmental and socioeconomic barriers to subsistence crop production. Smallholders practiced a variety of adaptations to cope with stressors, including techniques based in traditional agriculture and modern or technological methods delivered through intervention programs. Socially-patterned disparities in subsistence crop production methods and outcomes were apparent between smallholder communities with different levels of poverty and intergenerational farming experience.

**C1: Community, Sustainability, and Critical Urban Theory** (SS 2111)
Chair: Lindsay Stephens

1. **Environmental policy-making through the lens of discourse: Case study on the Toronto Green Standard**

   Danielle Tessaro (University of Toronto)

   The proposed presentation will address a major finding of my doctoral dissertation: that the ideas behind policy production are transformed through the institutional policy-making process. Namely, by exploring the environmental discourses that influence and are reproduced by the Toronto Green Standard (TGS), I have found that the ideas of more radical, structural changes towards environmental sustainability, which sparked the creation of the TGS, were later transformed into ideas centred on economic prosperity through environmental means, and that this transition took place at key moments throughout the policy making process. Ideas and knowledge centred on economic development in turn become what is reproduced by the TGS.

   My doctoral research uses a Foucauldian theoretical framework. As such, the presentation will begin with a brief overview of Foucault's (1972) "discourse," and major discourses that are argued to have affected mainstream environmental politics/policy. The remainder of the presentation will outline the major finding as noted above, how I arrived at that finding, and its implications.

2. **Affective relations and 'composite' subjectivity in environmental stewardship and community care-work on the Toronto Islands**

   Lindsay Stephens (University of Toronto Scarborough)

   This paper explores the micropolitics of stewardship and community care work in the residential community of the Toronto Islands as part of a feminist cultural political analysis and the 'ontological turn' in political theory (Widder, 2014). The existence of this residential community is governed by a unique piece of legislation, The Toronto Islands Residential Community Stewardship Act (1993), and this alongside other elements of island life make it a productive site for this exploration. Concern over environmental management around the world has led to renewed interest in the relationship between social and ecological systems, and the "interwoven care and concern about place and community" (Baldwin, Smith, & Jacobson, 2017 p38; Singh, 2015), with some scholars identifying the limitations of relying on information/education and rational-reflective decision making for motivating behavior change (Duffy, Gallagher, & Waitt, 2018). Affect theory, in particular the strands that utilize a relational ontology, have something to offer this problem. This paper considers tending to 'public' or 'environmentally sensitive' spaces or caring for neighbours in poor health, less as the rational choices of informed altruistic individuals, and rather as emerging

from affective relations of varying intensities, and shifting 'becomings', relations which can just at easily produce less generous actions. This paper draws from several different conceptualizations of what Ruddick (2017) after Spinoza calls 'composite' subjectivity, variations of which have been proposed by others (Ahmed, 2015; Braidotti, 2017; Singh, 2013). These approaches guide the exploration of affect/emotion, aesthetics and more-than-human relations in the micropolitics of the Toronto Islands.

3. **The surplus Other: ethics of urban planning and the neoliberal governance of diversity under austerity -- the case of Athens, Greece**

Mantha Katsikana (York University)

Drawing from the case of Athens Greece, this paper will focus on the ethics of urban planning practices and (inter)national strategies of neoliberal governance, as well as the discourses and representations of diversity, difference, and embodiment in urban planning. Specifically, the paper explores the ways difference and diversity are perceived in the various planning strategies and practices, especially the ones targeting the inner city of Athens, post-2008, in relation to the experiences of the city's minorities and vulnerable groups. While diversity appears as a positive element of the image and branding of the city on an international level, the participatory practices of planning as well as the body politics implied by the regulation of public space, reveal that certain vulnerable social groups are perceived as 'undesired', problematic and often blamed for what is usually called the 'ghettoisation' of the city's historical centre. The gradual spatial de-centralisation of related infrastructure away from the inner city, as well as the politics of 'zero-tolerance', combined with the recent humanitarian crisis and the rise of the far-right have resulted to a revanchist public and political discourse and intense social antagonisms. These complex entanglements of power and domination manifest in urban planning practices through the governance of the surplus Others, of the undesired, of the threatening. The paper explores the above through a critical mapping of discourses, policies and city planning practises, as well as through empirical research and interviews, drawing from critical feminist and post-colonial approaches.

4. **Optimizing Wellbeing Toronto for Sustainable Development Planning: An Applied Critical Assessment**

Richard Ross Shaker (Ryerson University)

I analyzed the 2011 indicators from the web application Wellbeing Toronto for the City's 140 neighborhoods and asked: (i) Are the Wellbeing Toronto indicators offered in an appropriate format for spatial decision-making? (ii) What are the hidden development dimensions within the Wellbeing Toronto indicators, and are the three major spheres of sustainability (economic growth, social equity, environmental integrity) equally represented? (iii) Where are areas of high and low development, and are these areas spatially concordant across the latent development dimensions? First, most Wellbeing Toronto data should be normalized before they are used. Second, through a factor analysis, eight dimensions (axes) were uncovered that captured over 75% of the total variation of 50 well-being indicators. The eight development dimensions expressed: (F1) affluence, equity, and improved healthcare; (F2) population density; (F3) crime and fire risk; (F4) advantaged non-visible minority to disadvantaged immigrant tradeoff; (F5) high-rise and mid-century housing and population; (F6) social services to air pollution tradeoff; (F7) construction value; and (F8) road volume. Third, using Local Moran's I-test, statistically significant high and low areas of development

were illustrated across Toronto neighborhoods. The results revealed that the environmental sphere of sustainability is drastically underrepresented within Wellbeing Toronto. Spatial patterns of favorable development for multiple dimensions were often not coincident; locations where three or more high development dimensions occurred in only seven neighborhoods. In sum, I found different areas of the City supplied different suites of development, and the lack of spatial concordance will make attaining urban sustainability a very difficult task.

**D1: Economic Geographies** (SS 2110)
Chair: Evan Cleave

1. **Debt Geographies: Looking Within and Beyond Financialization of Daily Life**

   Esra Alkim Karaagac (University of Waterloo)

   This paper is a critical literature review on debt to understand the meanings, functions, and relations of the concept and to further address a feminist research avenue in debt geographies. First, the paper provides a brief genealogy of debt, then discusses its functions within the political economy and finally examines the relations of debt in the context of the financialization of daily life. Debt is an understudied concept in economic geography and existing literature prevalently looks at financial regulations and austerity measures in the aftermath of the global financial crisis. Still, an emerging body of literature focuses on the financialization of daily life and examines people's experiences within a financial inclusion and financial citizenship framework. These qualitative approaches provide insights for understanding the interconnectedness of the global finance and everyday practices. Yet, there is a limit to the financialization of daily life when debts are cared for at the expense of social reproduction. Indeed, feminist scholars have long been drawing attention on the crisis of social reproduction and calling for integrating feminist politics and methodologies in economic geography. This paper argues that research on debt in economic geography should go beyond financialization of daily life and address the relationship between debt and social reproduction. Accordingly, the paper aims to contribute to the broader literature on debt geographies in decolonizing the financial narrative of daily life and understanding the intimate, situated and intersectional aspects of indebtedness.

2. **Football Club Ownership as Predatory Capitalism: Accumulation through Community Asset Alienation**

   Daniel Evans (York University)

   Supporter ownership of sports teams is often discussed as a means to protect clubs from the hyper commercialized game that is professional football in the UK. The one-member, one-vote model of cooperative management encourages community ownership retention and hopes to prevent unsustainable expenses that frequently trouble privately held clubs. While for many of the "owners" the emphasis is the prestige on holding a piece of their leisure entertainment, there is also the actual financial investment in the asset that is the club itself – both the tangible physical assets of the club and the brand. Monopoly rents are taken by David Harvey (Harvey 2002) in two directions: one is the more straightforward rentiership that arises from owning real estate or land, the second through the acknowledgement that particular cultural commodities, such as art, can also be monopolized. In the current London football environment there is a growing conflict between the two forms of monopoly rents being extracted: the cultural monopoly of fan loyalty, and the monopoly rentiership

of large pieces of prime London real estate dedicated to sporting grounds. The conflict between owners and their own club or the fans highlights for many the importance of community control of assets, such as stadiums, to protect these private/public spaces from redevelopment. This paper considers the role of monopoly rentiership in London football clubs and the extent to which a community owned football club challenges that economic model.

3. **Is there Innovation in Economic Development? Examining approaches to innovation in Ontario through city economic development strategies**

   Selina Phan (University of Western Ontario), Evan Cleave (University of Toronto Mississauga), and Godwin Arku (University of Western Ontario)

   Within local economic development, innovation has become a prevalent buzzword with a plethora of strategies having emerged. Within this context, there is increasing emphasis on fostering local innovation as an approach to drive future economic growth. However, there is considerable uncertainty of what innovation specifically means. To date, there has been no systematic review of the economic development policies currently in place to drive innovation. To investigate innovations within local economic development, this study undertook a systematic examination of the economic development policy documents for the 51 cities in the Province of Ontario, Canada (a policy document was identified in 41 of 51 cities). This research undertook a systematic content analysis of the most recent economic development strategy documents for each city. Specific codes related to innovation were developed for the analysis of these documents. The findings of the analysis show that strategies for innovation are prevalent across most cities in Ontario, demonstrating the importance of the concept within local governments. While many cities claim to have some form of innovation in their economic development strategies, the more specific approaches appear to be scattershot 'shoot anything that flies, claim anything that falls' rather than coherent and well organized. The implication of this is that cities may not be taking the most efficient approach to fostering local innovation, which is critical in rise of knowledge-based economic development.

**E1: Geographies of Health** (SS 2125)
Chair: Sophie Lachapelle

1. **Changing aid models: how emergency food services and food security organizations in Ontario are incorporating fresh food**

   Morgan Sage (Queen's University)

   Food Banks Canada (2016) reported a 28 percent increase in the number of people receiving food from Canadian food banks between 2008 and 2016, and they are now assisting over 800,000 Canadians per month. What was intended to be an emergency response four decades ago has become a permanent part of our foodscape, with ever increasing demands being placed on the charitable assistance system. Food banks have been highly criticized in Canadian literature for their lack of nutritional food and their ineffectiveness at meeting the needs of the hungry (Loopstra & Tarasuk, 2012; Power, 2011). However, food-related organizations are evolving. Food banks across Ontario have shifted their aid model from the hand-out based, "band-aid" solution to incorporate other services for their members, such as housing services, financial services, and skill building programs. Emergency food services have started to innovate and evolve from the old non-perishable, hand-out model of food aid, to incorporate and facilitate fresh food access in a variety of

ways, including good food boxes, gardening, and gleaning. There has also been the rise of food security and food justice organizations that are working on long-term local food projects that build community, develop local food systems, and end hunger in their regions. This presentation will explore the range of activities of emergency food services and food security organizations in Ontario's small- to medium-sized cities and their potential for community development, capacity building and long-term elimination of food insecurity.

2. **Not just 'from here to here': The unseen health trajectories of post-carceral (im)mobilities in Kingston, Ontario**

   Sophie Lachapelle and Dr. Jeffrey Masuda (Queen's University)

   Prisons, the justice system, and the community organizations that support formerly incarcerated people are not widely recognized as part of public health systems in Canada, yet these institutions are inextricably tied to health and wellbeing. At the community level, the availability of supports for people released from prison and their families may be an important determinant of successful reintegration, as well as of health and wellbeing more generally. Yet, there is very little attention given to this sector, including the important role of geography, within public health practice. This study sought to address this gap in public health research and practice by ascertaining several sectoral perspectives on community reintegration. I interviewed service providers working within non-profit, charitable, and government sectors in Kingston, Ontario in order to gain their perspectives on the challenges faced by people experiencing reintegration from prison into the local community. The results of this study reveal that notions of 'health' extend far beyond the confines of the prison walls and the traditional health care system, with available supports incapable of meeting the range of needs of formerly incarcerated people and their families due fragmented geographies of care that work to 'immobilize' support seekers. My research suggests that public health can play a stronger role in recognizing the importance of incarceration and post-incarceration as an important determinant of health.

3. **Physical Activity and Sedentary Behaviors in Adolescence**

   Susan Yousufzai (University of Ontario Institute of Technology), Marilia Silva Paulo (United Arab Emirates University), Tom Loney (Mohammed Bin Rashid University of Medicine and Health Sciences), and Caroline Barakat-Haddad (University of Ontario Institute of Technology)

   This research highlights patterns of health risk behaviors among adolescents from Arab regions. We synthesize the literature on existing data on diverse health-risk behaviors mainly, physical activity (PA) and sedentary behaviors. Arab nations are composed of the 22 states of the Arab League. Despite their commonalities revolving around language and some cultural or religious practices, there are major sociodemographic and economic differences. These differences, among other factors affect the health and behaviors of adolescence living in Arab nations. A large population of youth reside in Arab nations, with approximately 20% aged 10-19 years. Recently, a shift from a more traditional active and outdoor physical lifestyle to a modern, indoor, and technology-driven lifestyle has changed the level of PA amongst adolescents. We present findings of a cross-sectional research on PA levels in the UAE. The majority of UAE children are not achieving the daily recommendations for PA and screen time. The low prevalence of PA amongst UAE adolescents is a major concern, as physical inactivity is an independent risk factor for future chronic disease. Although research on physical activity and sedentary behaviors have been documented, more

research is required to address the disparities across age, gender, and nationality in relation to health risk behaviors related to physical inactivity and the rise in sedentary behavior among adolescents from Arab nations.

**F1: Historical Geographies** (SS 2127)
Chair: Riley Cormier

1. **Developing historical aerial photo mosaics to map colonial encroachment on the Dokis First Nations following the timber surrender of 1908**

   Riley J. Cormier, John M. Kovacs, Kirsten Greer (all Nipissing University), and Randy Restoule (Dokis First Nation)

   In the early 1900's, after much pressure, the Canadian government acquired the timber rights on the Dokis First Nation lands after the passing of Chief Dokis in 1908. The timber was sold at auction for $1.1 million based on the sale to both Canadian and American private companies of eight separate berths that divided the Dokis territory. Using aerial photos from 1928, 1929 and 1935 we are creating digital mosaics that will be used to map the forest clearing practices for each of the berths in order to better understand the forest clearing dynamics which impacted the current status of the Dokis First Nation's forests.

2. **Radiation, risk and uncertainty: community legacies of the Cosmos 954 satellite crash**

   Ellen Power (University of Toronto)

   On January 24, 1978, the nuclear-powered Soviet satellite Cosmos 954 crashed on the barrens of the Northwest Territories. Radioactive satellite debris was scattered across hundreds of square kilometres, including several communities. The Canadian military undertook a months-long clean-up operation to remove this hazardous debris from the landscape. The mission, Operation Morning Light, was the only such radiation clean-up in Canada's history; the incident is also the only example to date of large-scale radioactive contamination caused by space debris.

   Government accounts of Operation Morning Light focused on the operation's successes in removing the most harmful radioactive debris from the environment, emphasizing the negligible risk that most of the satellite debris posed to the affected communities. The authoritative military and scientific accounts left little space in the archival records for the ways that these predominantly Indigenous communities experienced the crash and clean-up operation firsthand. This has obscured the legacies of Cosmos 954 and Operation Morning Light in the memories of northern Indigenous communities and also obscured community members' continuing interpretations of the environmental risks of Cosmos 954 debris on their traditional land.

3. **Denudation Rates of Battle, UK**

   Christopher Macdonald Hewitt (Western University)

   In 1066, English and Norman forces engaged in a decisive battle near Hastings. The battlefield itself provides an example of the way in which physical geography can contribute to our understanding of historical events. According to historical accounts, the rolling landscape of the Hastings battle site

was unquestionably an important factor in understanding the conflict. Yet surprisingly few analyses of the local terrain exist to test this proposition. In part, this is because historians of the battle have largely affirmed that the current battle site bears little to no physical resemblance to that present in 1066, and thus is unsuitable for contemporary analysis that might shed light on the outcome of the battle itself. By examining the basins which drain the battle site through quantitative geomorphic statistics, sediment rating curves, denudation rates, the RUSLE model and sediment delivery ratios, this study demonstrates that there is in fact considerable evidence to suggest that a limited amount of sediment was removed, hence the battlefield and surrounding landscape have in fact changed very little since the battle. This finding is significant, insofar as it opens the door to new research on the battle of Hastings which may shed additional light on the events that occurred there and the factors that influenced the outcome of this key conflict in British history.

4. **Symbolic landscape and power: Belarusian urban toponymic system as palimpsest**

   Sergei Basik (Conestoga College)

   As a geographical theoretical concept, the term palimpsest reflects the vision of the landscape as a multilayered structure that emphasizes the coexistence of multiple visions and impacts of different cultures on the landscape (Mitin, 2010). The aim of the paper is to apply the conceptual model of place as palimpsest for studying the regional patterns of the Belarusian urban toponymic landscapes and their symbolical transformations using critical toponymy approach. The study reveals that the urban place names as palimpsest can be characterized by multiplicity of layers, complex interrelationships between the various historical toponymic components, and polyphony. The findings show that the process of (re)writing of urban symbolic landscape is based on erasing, reconstruction, and coexistence of the past layers of palimpsest. Because the street names can be considered as an instrument of political power, some elements of these layers can be restored or completely deleted several times depending on the ideological preferences of the ruling political regimes.

**G1: Media and Communication** (SS 2108)
Chair: Natalie Drope

1. **Detecting Local Events using Geosocial Media Data: A Case Study of Toronto International Film Festival**

   Shishuo Xu (Ryerson University)

   Geosocial media platforms allow users to post what they are involved in with location information in a real-time manner. Topics relevant to local events are frequently discussed on these platforms, since they are closely linked to our daily life. It is possible to extract a huge number of local event-related information from the abundant messages generated by existing geosocial media platforms. Interpreting the extracted information for local events identification helps users and organizations to be aware of what is going on within a certain region so that they can make responsive plans. Recently a number of researches have been conducted to detect local events using geosocial media data, but they do not summarize the event in an efficient way and/or do not investigate the correlation between abnormally neighbouring regions. In this work, a spatial-temporal-sematic approach is proposed to capture local events from geosocial media data. Spatiotemporal outliers are first extracted by measuring geographical regularities. A topic modeling-based method is used to

automatically describe outlier tweets. The correlation between outliers is investigated with considering their spatial adjacency and sematic similarity. A case study of 2014 Toronto International Film Festival (TIFF) is utilized to evaluate the approach using Twitter data. Up to 87% of the detected events positively refer to TIFF events through comparing to the official schedule. This approach can be generally applied to detect other types of local events with spatiotemporal burstiness. This work will benefit urban management for emergency response, which helps build smart cities by understanding human behaviors.

2. **The Changing Spaces of Racialized Contestation in Brampton, Ontario: A Multimedia Analysis**

Stuart McHenry (Western University)

Demographic changes, most notably changes in ethnic composition, can have major implications for the successful functioning of a community. Brampton, Ontario, is an example of one of these changing communities. Using two media sources: one traditional—the local newspaper—and the other emergent—online news—this thesis answers several key questions: is demographic change from a predominantly European-descent population in 1991 to today's majority 'visible minority' population related to changes in the manifestations of racialized incidents in Brampton as reported in The Brampton Guardian? Has the emergence of online news impacted the geographic scope and nature of racialized incidents?

Content analysis of one-hundred and twenty-two articles collected from *The Brampton Guardian* from 1991 to 2016 evidences substantial changes in the types of racialized incidents and the spaces in which they manifest in the community. Analysis of the top fifty comments from three distinct online news sites surrounding a viral, racialized incident in Brampton from 2017 demonstrates that online discourse is less geographically circumscribed, less censored and more politically-charged, than discourse in print media.

3. **Media Representations and Shellfish Farmer Perceptions of Ocean Acidification in The British Columbia Shellfish Aquaculture Sector**

Natalie Drope (University of Guelph)

Oceans support human food security, economic activity, leisure, and cultural and aesthetic values. However, oceans have also absorbed approximately one third of the carbon dioxide released by anthropogenic activities. Ocean Acidification (OA) is an emerging outcome and it is driving changes to marine biology and chemistry. It has also attracted significant scientific and media attention. In the Pacific Northwest, attention intensified in 2007 after shellfish hatcheries experienced OA related die-offs that resulted in sizable financial losses and production setbacks for shellfish farmers. Coastal communities in this region face a range of challenges, and it is unclear if adaptation activities should isolate and focus in on OA specifically or should be planned in the context of longer and broader sets of change. This presentation will describe a research project that has surveyed shellfish farmers in British Columbia about their perceptions of OA, priorities for adaptation, and where they gain information about these topics from. It has also gathered a dataset of newsprint stories to piece together a timeline of local OA events and support a discourse analysis that explores how events have been described and what responses have been proposed. Preliminary findings will be discussed.

## 10:00-10:15am: Refreshment Break (SS 2nd floor)

## 10:15-11:45am: Session 2

**A2: Urban Physical Geography** (SS 2105)
Chair: Matthew Adams

1. **Attributing drivers to fine-scale changes in tree distribution across a suburbanizing landscape since 1944 using aerial photography**

   Mitchell T. Bonney, Yuhong He, and Muhamad Roslihuddin (University of Toronto Mississauga)

   Since the mid-1900s, humans have had a drastic impact on the landscape, especially in urban, suburban and rural fringe areas. Population growth, infrastructure development and the overall human dominance of the natural environment have accelerated during this time, leading to a total land-use shift in many formally rural areas near cities. Landscape changes have led to corresponding changes in trees, which are important natural resources that provide enormous societal benefits and ecosystem services. The City of Mississauga, in southern Ontario near Toronto, provides a case study for observing these changes over time. Aerial photography has been collected over areas in Mississauga since 1944. These photographs were used to identify individual tree and forested areas in six current contexts: University of Toronto Mississauga, farmland, high-density residential, low-density residential, industrial and commercial landscapes. These landscapes, which were predominantly farmland in 1944, have undergone varying levels of tree change in response to anthropogenic and natural drivers. Aerial photographs were thus further interpreted to identify drivers behind changes in tree distribution and abundance over time. Results indicate that construction projects, at varying scales, have been responsible for much of the tree changes observed, especially between 1980 and 2000. However, natural drivers, such as the naturalization of abandoned plantations, forest expansion and river movement, also play important roles and are observable with the aerial photography record. These findings will interest urban forest managers and city planners concerned with the natural impacts of environmental management plans and other relevant policies.

2. **Locating Air Pollution Monitors for Land Use Regression Models**

   Matthew Adams (University of Toronto Mississauga)

   Land use regression (LUR) modelling associates measured pollution levels to land cover characteristics for spatial interpolation. Model outputs can be applied to estimate human or environmental exposure. The model's predictor variables include land use attributes, such as land cover and transportation network characteristics that are calculated within spatial buffers of the monitoring locations. LUR models can be used to predict values at unobserved locations.

   The application of spatial interpolation attempts to ensure that data are not extrapolated beyond the bounds of the observed values. However, our research identifies that without guaranteeing monitoring data be collected in all land use classes and conditions, it is possible with LUR to actually be extrapolating data and still be within the 2-dimensional spatial boundaries of the monitoring

locations. This potential extrapolation occurs because the interpolation is based on a multi-dimensional space that sits upon the 2-D plane, which creates a new set of boundaries for the interpolation.

In this paper, we define and demonstrate the potential problem of ensuring LUR models interpolate within both the 2-D spatial domain and the multi-dimensional space that is applied in LUR modelling. We then demonstrate a solution to this problem in a simulated dataset and in an empirical dataset. First, we identify all possible monitoring locations. Second, the objective function is defined with the goal of selecting monitoring locations to maximize the variation across land use conditions. The location of monitors is identified using an ensemble of potential optimum solutions.

3. **Seasonal Water Quality Dynamics in a Stormwater Management Pond**

Tal Litmanovitch and Tim P. Duval (University of Toronto Mississauga)

Stormwater ponds (SWPs) were built to reduce flooding and riverbank erosion by retaining particulate-laden stormflow, and are also believed to detain excess pollutants in urban runoff. However, recent work has shown that fine scale pond processes may decrease pond seston retention, compromising downstream water quality. This study investigated the biogeochemical interactions of a SWP in Mississauga, Canada. The pond was sampled weekly and measured for in-situ temperature, dissolved oxygen, pH, and specific conductivity. Surface water samples were analyzed for total suspended solids (TSS), and total phosphorus (TP) in dissolved inorganic (SRP), organic (DOP), and particulate (PP) forms. Outflow TP was composed of 60% PP, 35% DOP and 5% SRP, and was 100μg/L greater than the inflow from October to January during baseflow periods. During these months, TP in the pond ranged from 2-8X the Ontario Ministry of Environment and Energy's standard of 30 μg/L in lake water. Internal loading of P in the pond implies that outflows may influence downstream nutrient cycling. TSS had a 4X enrichment factor in between inflow and outflow in October, and <1 between Nov-Jan. Factors <1 indicate inflow TSS>outflow TSS, therefore sediment retention. Seasonal patterns in autumn resuspension and winter sediment loading could lead to variable particulate retention. Oxic surface waters in the fall (>10mg/L) were contrasted by hypoxia (<1mg/L) during ice-over conditions. These conditions could alter sediment chemistry, and thus nutrient balances in the water column. Fine scale knowledge of biogeochemical interactions in SWPs may improve the management of these facilities in the future.

**B2: Sexual Health** (SS 2117)
Chair: Clio Fregoli

1. **"Where is the space for us?" Everyday challenges of Heterosexual African, Caribbean and Black (ACB) men in accessing HIV/AIDS Services in London, Ontario**

Roger Antabe, Irenius Konkor (both Western University), Martin McIntosh (Regional HIV/AIDS Connection, London), and Isaac Luginaah (Western University)

In Ontario, Canada, heterosexual African, Caribbean and Blacks (ACBs) are at heightened risk of HIV infection relative to the general population. Among reasons assigned for their increased HIV risk is the suggestion that they are highly secretive about their health needs including HIV. Thus, the prevailing discourse about Heterosexual ACB men's exclusion from health care spaces, mainly

access to HIV services is framed as self-inflicted, justifying the lack of policy focus on their rising HIV risk. As part of the weSpeak research on HIV vulnerability and resilience among heterosexual ACB men in Ontario, we examined the underlying factors limiting access to health services among heterosexual ACB men in London Ontario. Analysis of interviews (n=13) and focus group discussions (n=4) revealed that despite being aware of their heightened risk to HIV infection, heterosexual ACB men lacked information on availability and mode of accessing health services, and were disconnect with HIV resource spaces and services. The study also found that systemic stereotypes, racism and microaggressions were significant barriers to heterosexual ACB men's access to health services. Based on our findings, there is an urgent need for health policy stakeholders in Canada to engage the heterosexual ACB community in the design and implementation of policies aimed at addressing their vulnerability to HIV infection.

**2. Alternative Spaces of Sex Education: A Look into the Lived Experiences of Queer Women**

Clio Fregoli (University of Toronto)

The high school classroom is a formative space for young women in Canada to learn about sexuality and sexual health. However, sexual health education is often engrained in heteronormative expectations of sexuality, which exclude the experiences and health concerns of young queer women. This provokes the question of where, and how, young women who are outside of normative concepts of gender and sexuality, learn about sexual health. In this paper, I will analyse how queer women in Toronto experience sexual health education in school, and how alternative educational spaces contribute to their sexual health education growing up. This paper will draw on 29 in-depth, semi-structured, qualitative interviews with queer women who attended public high school in Toronto. These interviews illustrate the exclusion of queer sexual health in Ontario's sex education curriculum, and both the benefits and drawbacks of learning about sex and sexuality from friends, family, books, media and online. This analysis of spaces of education will expand our knowledge of how and where queer women learn about sexual health, with the hope to ultimately improve sexual health education for queer women.

**3. Evaluation on the Sexual Health Education (SHE) Curriculum: Challenges that Ontario educators Face and Future Resource Implementation**

Shaieree Cottar (University of Waterloo)

In 2015, the Ontario Ministry of Education released a revised Heath and Physical Education Curriculum (HPE) for students from Kindergarten through grade 12 including the Sexual Health Education (SHE) component. Educators are at the forefront of planning, enacting and implementing the curriculum within primary and secondary school environments. Research studies have not examined how teachers' teaching experiences have changed due to changes in the curriculum, which are primarily dependent on the sensitivity of the topic, type of school board, demographics and availability of teaching resources. My central research question was: What support resources are needed for Greater Toronto Area (GTA) teachers' to better implement the sexual education curriculum within the classroom environment? Six Ontario (Rural vs. Urban) teachers who taught varying grades from one to twelve in Toronto were interviewed about their experiences implementing the new sexual education curriculum. The data for this paper is inclusive of a qualitative study that explored the experiences, challenges, strategies and responsibilities teachers faced with teaching sex education to youth in Ontario. The findings from this study highlight the

tendency for educators to be fairly content with the curriculum changes; however they have found difficulties in implementation because of the lack of resources and formal training that could have been provided by the Ministry and school board administrations. These findings suggest that the Ontario Ministry of Education, along with the public school boards, should invest in funded training programs, workshops and sample lessons as resources for SHE implementation.

4. **Correlates of exposure to media family planning messages among post-delivery women in Nigeria**

   Irenius Konkor, Yujiro Sano, Roger Antabe, Moses Kansanga, and Isaac Luginaah (all Western University)

   While media campaigns are documented to be useful for increasing the uptake of family planning, very little is known about the population prevalence and correlates of mass media exposure to family planning messages among post-delivery women in Nigeria.

   Drawing on the structural influence model of health communication, we aim to address this void by exploring the underlying factors that explain disparities in exposure to family planning messages on mass media among post-delivery women in Nigeria.

   Using the Nigeria Demographic and Health Survey, we employed univariate, bivariate, and multivariate analyses. For bivariate and multivariate analyses, we applied the logistic regression technique.

   Muslim and unmarried women were more likely to be exposed to media family planning messages than Christian and married women. Richer and more educated women were also more likely to be exposed to media family planning messages than their poorer and less educated counterparts. Moreover, living in South West region was positively associated with higher odds of being exposed to such messages.

   Findings were largely consistent with the structural influence model of health communication, as highlighted by inequalities in exposure to media messages. Based on these findings, we provided several important suggestions for policymakers.

**C2: Climate Change: Resilience and Adaptation** (SS 2111)
Chair: Try Thuon

1. **Dissecting collaborative environmental processes: examining qualities, outcomes, interactions, and relationships**

   Alison Feist, Ryan Plummer, and Julia Baird (Brock University)

   Collaboration is proposed as a means to overcome limitations of conventional approaches to environmental and/or natural resource management and governance, as well as help address wicked environmental problems (e.g., Plummer et al., 2017; Holling & Meffe, 1996). As a highly complex concept, this research aimed to better understand collaboration in terms of how qualities, or key characteristics of the process (e.g. trust, social learning, shared understanding) interact and relate to outcomes. The first stage of this study involved conducting a systematic mapping review to unpack

collaborative environmental processes in the scholarly literature in terms of qualities, outcomes, interactions between qualities, and their relationship to outcomes. These results informed the second stage of the research, which involved exploring these qualities, outcomes, and relationships in empirical settings of multiparty collaborative environmental processes. Three case studies of collaborative groups working on climate change adaptation in New Brunswick, Canada were explored. Through a mixed methods approach, a questionnaire instrument and key informant interviews highlighted which qualities, outcomes, and relationships were most important to group members, as well as how these were enacted in practice. Bringing both the scholarly and empirical findings together provides important insights into addressing gaps of understanding in collaborative environmental processes. The research contributes both conceptually and empirically to the scholarly literature by synthesizing how collaborative environmental processes occur. It also contributes to collaboration in practice, to aid in determining how collaborative strategies can be understood to be more effective as an alternative approach in the environmental domain.

2. **Strategic group formation and capital accumulation in shaping urban climate resilience: Case study from Cambodia**

Try Thuon (University of Toronto and Chiang Mai University, Thailand)

Recent scholarship on urban climate resilience dominantly focuses on technical and architectural dimensions, paying less attention to power dynamics, ethnic relations, and social injustice. Key factors such as urban land ownership, strategic groups, and ethnic relations, indicate the rooted forces in shaping urbanization, capital accumulation and spatial relations. However, such factors are under-studied, especially in the context of Southeast Asian cities. Drawing on a case study from Battambang in Cambodia through a political ecology lens, this research argues that urban climate resilience is influenced by multiple risk factors, embedded in the political structures and social systems. As an important node along the Greater Mekong Subregion economic corridor, Battambang is a rapidly developing urban center, with new infrastructures and residential areas transformed from wetlands and floodplains. The study shows how different social groups are competing for spaces, resources and power in the transitioning urban context. While urban poor and vulnerable migrants have been evicted and/or framed as informal or illegal squatters, some have responded by forming new communities from former public gardens, drainage systems and other available public spaces. Others have resettled on marginal lands with the help of local NGOs, while families of military personnels have used their authority and power to attain prime sites. In addition, wealthy urban residents have continuously expanded their residential zones. As a consequence of this unfettered urban expansion, seasonal flooding – which formerly lasted no more than three weeks – now probably occurs over a period of up to six months. The study concludes that urban climate resilience cannot be achieved without addressing unequal power relations among strategic groups and the socio-spatial injustice. In fostering urban resilience, we need to look at how the Strategic Groups are formed in contesting, resisting, shaping and negotiating urban space, and urban development agenda while a country is in transition toward modernization, democratization and urbanization process.

3. **The Importance of Indigenous-Led Initiatives and Government Partnerships for First Nations Community Building and Climate Change Adaptation in Canada**

Shyra Barberstock, Ryan Barberstock, Paul Chaput (all Queen's University), Aviva Shiller (Crown-Indigenous Relations and Northern Affairs Canada), and Mark Rosenberg (Queen's University)

The First Nation (FN) Adapt Program (CIRNAC) provides funding to First Nation communities located below the 60th parallel to assess and respond to climate change impacts on community infrastructure and emergency management (CIRNAC, 2018). Projects vary depending on First Nation regional needs but deal primarily with impacts due to communities affected most by sea level rise, flooding, forest fires, drought and winter road failures (CIRNAC, 2018). In 2018, the FN Adapt program identified a need for a national gathering to bring together First Nations climate change leaders to share knowledge, including challenges and best practices, relating to their climate change adaptation projects in their respective First Nation communities. After the Truth and Reconciliation Commission (TRC) and a government mandate to work closely with First Nations peoples, CIRNAC recognized the importance of having the national gathering as an Indigenous-led initiative. This case study examines the process that was created to ensure that the gathering was Indigenous-led, including: early planning sessions with CIRNAC (including Indigenous-relations training for CIRNAC staff); the incorporation of First Nations cultural practices and protocols at the gathering; and relationship building strategies between the CIRNAC staff and the First Nations participants. In addition, film was incorporated into the project to honour the tradition of oral culture and knowledge sharing. The event was successful in gathering pertinent information on First Nations climate change adaptation initiatives across Canada, including reported climate change impacts, best practices for adaptation, challenges, and resources needed by First Nations communities for the sustainability of climate change initiatives.

**D2: Gentrification** (SS 2110)
Chair: Sean Grisdale

1. **Displacement by Disruption: Airbnb and the Political Economy of "Belonging Anywhere" in Toronto**

   Sean Grisdale (University of Toronto)

   The increasing centrality of smart phones and internet connectivity to urban life has led to the rapid expansion of digital platforms, like Airbnb, a company which facilitates short-term rental hosting in residential properties. Using data from the consulting firm Airdna, I map Airbnb listing activity in the City of Toronto between June 2016 to May 2017 to assess the platform's impacts on the local rental market and thereby its implication in displacing local renter communities. I find that the majority of the platform's revenue derives from full-time, commercially oriented hosts operating in select downtown neighbourhoods. I note that these findings run up against discourses of sharing and community frequently advanced by sharing economy platforms like Airbnb. Without considered regulation the platform will continue to create significant incentives for investors and landlords to eschew stable tenants for the more profitable tourism market. Drawing on gentrification theory I argue these impacts stem from the platform's capacity to unlock new rent gaps in the city by opening up the local rental market to a global level of demand. I contextualize these findings by considering the wider emergence of platforms companies amid the financialization and condo-ization of cities like Toronto.

2. **Rent-striking the REIT: Reflections on tenant organizing against financialized rental housing in Hamilton, Ontario, Canada**

Emily Power (Hamilton Tenants Solidarity Network) & Bjarke Skærlund Risager (University of Toronto and Hamilton Tenants Solidarity Network)

In May, 2018, tenants from four high-rise apartment buildings in Hamilton, Ontario, launched a rent strike against their landlord, a real estate investment trust (REIT). Tenants are demanding that the landlord drop an application for an Above Guide rent Increase, and make necessary repairs to their homes. Recent studies have documented how REITs and other 'financialized landlords' are seen as key actors in restoring faith in and 're-equitizing' real-estate markets in post-crisis contexts. REITs provide a vehicle for high-net-worth individuals and institutional investors to make diversified investments in real estate without having to manage properties themselves. With a strategy of, what we call, 'accumulation by repositioning', REITs put severe pressure on working-class tenants by extracting ever more rent or displacing them in favour of more affluent tenants. The main part of this paper focuses on the ongoing East Hamilton Rent Strike. It contributes to the burgeoning literature on the financialization of rental housing by discussing how working-class communities can organize and resist 'financialized displacement' – a discussion that is largely absent in this literature. We reflect on our experiences as members and researchers with the Hamilton Tenants Solidarity Network – the organization that has supported tenants in organizing the strike. We describe the actions tenants and organizers have taken so far, reflect on what has gone well and what has gone poorly, and consider the potentials and challenges of engaging in a battle against a multi-billion dollar REIT.

3. **Women are "sensitive to security" and "guys like the keg parties": Gender and studentification in Waterloo**

Nick Revington (University of Waterloo)

Recent debates in urban studies have highlighted the need to incorporate more fully a diversity of perspectives into the way urban phenomena are theorized. Winifred Curran (2018) in particular has recently laid out the argument that gentrification is an inherently gendered process, yet this fact has gone largely unacknowledged at worst and underappreciated at best in the so-called canon of gentrification literature. The same can be said of the literature on "studentification," or the process by which university students become concentrated in particular off-campus neighbourhoods. Studentification is often conceptualized as either a subset of, or partially overlapping with, processes of gentrification, and may include anything from the shared rental of run-down housing stock to newer forms of high-amenity purpose-built student housing. Yet, existing literature on studentification has largely neglected analyses of gender or other forms of difference. In this paper, I begin to address this gap. I draw on semi-structured interviews with key informants in Waterloo, Ontario – Canada's most advanced purpose-built student housing market. I show that like gentrification, studentification is inherently gendered and serves to reproduce traditional gender roles. However, while this mirrors the gendered dimensions of gentrification in many ways, the specificities of the student housing submarket also produce novel elements in the gendering of urban space. Moreover, I point to an urgent need to revisit studentification and other concepts in urban research through the lens of gender.

4. **Transit Oriented Development Without Gentrification: Toronto and Washington, DC -- A Comparative Evaluation**

Charles Hostovsky (Brock University and McMaster University)

Based on 5 years of the author's observations, research and teaching in Metro DC, major revitalization planning projects in the US capitol will be overviewed along with data about the significant ethnic demographic shifts. The communities East of the Anacostia River are in the center of the next substantial transformation in DC. Attention will be paid to one case study - the highly controversial, 15 year, $400 million transformation of the Barry Farm neighborhood, which is presently almost entirely occupied by public housing projects. The plan calls for the African American neighborhood of public housing to be redeveloped from single-use, low-income community to a mixed-use, mixed-income neighborhood designed to complement its historic setting and close access to the Metro Station. Public meetings by developers of their plans have been called off because of angry protests from neighbors and activists such as Empower DC opposed to the redevelopment. The Toronto case for the comparative evaluation is Regent Park, Canada's oldest and largest social housing complex dating to the 1940s. This area of Toronto has a long history of government housing, poverty, and higher crime rates. The area is in process of transformation where the old apartments have been demolished but all subsided renters are guaranteed a new accommodations at the same rate and have been integrated into a new, intensified, mixed use community plan with new, incoming, market rate housing. The presentation reviews planning strategies that can revitalize communities without gentrification.

**E2: Special Session -- Unbound and Abound: Exploring Socio-Spatial Processes, Representation, and Futurities in the Black Geographies Subfield** (SS 2125)
Chair: Symon James-Wilson

1. **Reconciling Meritocracy and Anti-Black Racism in Schooling**

   Beyhan Farhadi (University of Toronto)

   The provision of online education (e-Learning) in the Toronto District School Board (TDSB) hinges on commitments to provide students access to high-quality education and to alleviate the shortcomings of face-to-face schooling, which include the constraints of timetables as well as the limitations of physical infrastructure and school-time; however, my dissertation research reveals inequities not only in access granted to so-called 21st century global education, but also as an intensification of meritocratic culture, within which Anti-Black racism, as an ideology and institutional practice are further entrenched. Critical geographies of (online) education, I argue, must be read against such a history and politics of institutional practice, which produces Black subjectivity. By drawing on a 10-month long ethnographic study on e-Learning in the TDSB, I demonstrate how online classrooms normalize a system of schooling within which racial and cultural hierarchies endure. The provision of e-Learning in the TDSB, instead of alleviating systemic inequities, entrenches the conditions under which they are exacerbated. I highlight interviews with young Black women to illustrate the divergent, contextual, and nuanced ways that anti-Black racism and meritocratic culture are reconciled in the routine schooling.

2. **Contesting Genres of Man in Plantation Geographies: The Power and Promise of Hip Hop as Provision Ground Ideology**

   Cynthia Malone (University of Toronto)

Typically adjacent to plantations on land suboptimal for planting, provision grounds were sites of cultivation that sustained enslaved peoples on plantations across the Caribbean and the Americas. In addition to cultivating and sharing diverse foods and medicinal plants in polyculture plots, provision grounds were critical sites for various ceremonial practices connecting spirituality, dance, and music. Provision ground ideology, as originally described by Sylvia Wynter, asserts that these practices create material and symbolic space for the sustenance of Black life while disrupting what Wynter describes as ""genres of Man"", exclusive categorizations of Man as human that reinscribe capitalist relations to land.

This paper considers the socio-spatial processes integral to the origins of hip hop music in New York as a case study of the utility of provision ground ideology for emancipatory practice in contemporary urban geographies. As the logics of a plantation economy dependent on the dehumanization and material subjugation of Black peoples extended plantation geographies across space and time, spaces of Black life in New York – the street, housing project, subway, and more – can be read as provision grounds. Tracing the origins of hip hop on and through these grounds, we will read hip hop as archive for Black peoples' contestations of white supremacist domination of landscapes and bodies.

3. **'M' is for the Mammy outside: The spatial politics of Toronto Early Learning Centres and Black Registered ECEs in Toronto**

Rachel Ewan (Wilfrid Laurier University)

The purpose of this paper is to analyze the spatial politics within Toronto Early Learning and Childcare service (TELCCS) centres, and how this particular space is reified by the (mis)treatment of Black Registered Early Childhood Educators (R.E.C.E.) and Early Childhood Assistants (ECA). I argue that the historical domination and exploitation of Black women in their roles of caregivers during slavery times has established its way into these very centres via oppressive systems and the social construction of Black women stereotypes. I discuss the intersection of race, space, and gender relative to TELCCS centres and how the interaction of these three concepts reinforce ideas of the Black Mammy. This paper will highlight the intricate relationship that Black RECEs and ECAs have to the caregiving role, in hopes to raise consciousness of Black RECEs about the implication of their interactions within these spaces. A case study presented to illustrate the experience of Black R.E.C.Es will be deconstructed to elucidate and delineate the focus of Black spatial politics within TELCCs. I conclude this paper by providing suggestions on how to resist the underlying and fundamentally Eurocentric, racist and patriarchal nature of Toronto Early Learning spaces.

4. **Mobilizing Confinement: Carceral Urban Geographies of Education and the School-to-Prison Pipeline**

Symon James-Wilson (University of Toronto)

Rashad Shabazz's (2015) *Spatializing Blackness: Architectures of confinement and Black masculinity in Chicago* is a dynamic textual catalyst for analyzing carceral urban geographies through new theoretical terms of engagement. Using *Spatializing Blackness* as a conceptual springboard, this paper makes a paradoxical choice to frame confinement in terms of its mobilities. Examining schools as vital spaces for both hegemonic and oppositional exercises of political pedagogy, power, and social control, the comorbid 'decline' of St. Louis public schools and the proliferation of school-police partnerships

draws attention to the contested politics of scale and multiple human territorial strategies that exist within uneven geographies of education.

While the national War on Drugs campaign is often slated as the central engineer of mass incarceration in the US, local and state government's measured construction of everyday architectures of confinement have arguably had some of the most lethal consequences. Much like the strategic 'blighting' of St. Louis' predominantly Black communities following speculative, profit-driven developers' targeted interest in urban renewal projects, the tremendous disinvestment and quasi-corporatization of American public education systems has persisted alongside massive fiscal incentives for school-police partnerships by no coincidence. The following discussion explores the ways in which the mobilization of recalcitrant place-(un)making practices in St. Louis' predominately Black communities has been essential to their creative cultivations and transformations of carceral power. This analysis invites further consideration of the ways in which this case study offers an important re-imagination of 'declining' cities and classrooms as fertile grounds for socio-spatial justice, self-determination, and more transformative twenty-first century urbanisms.

**F2: Access, Mobility, and Public Space** (SS 2127)
Chair: Naomi Adiv

1. **Evaluating the Social Inclusivity of Toronto's Privately-Owned Publicly Accessible Spaces**

   Brenton Nader (University of Waterloo)

   Municipalities struggling to accommodate intense urban growth are increasingly turning to private sector developers to create publicly accessible urban spaces, often in exchange for height and density bonuses. Scholarly literature reveals a growing awareness of physical and social barriers within these spaces that encourage only conforming uses and users. This paper uses a rubric to evaluate active and passive means of exclusion present in twenty-nine privately-owned publicly accessible spaces in Toronto. It also examines the planning processes that create these spaces, revealing that these processes are not based upon existing guidelines or established bonusing standards and are highly susceptible to political opportunism. Although current economic circumstances may favour the continued creation of privately-owned publicly accessible spaces in Toronto and elsewhere, this paper concludes that there are actions that municipalities can take to increase the social inclusivity of these spaces and the accountability and transparency of the attendant planning processes.

2. **Everyday Struggles: Nepali Women's Mobility and Access to Public Spaces in Kathmandu Valley**

   Sujata Thapa-Bhattarai (University of Toronto)

   There has been a proliferation of research on informality including on livelihood activities in the cities of the Global South (Bayat & Denis 2000; Roy & AlSayyad 2004). However, much less attention has been directed towards exploring the intersectionality among these livelihood activities, mobility, access to urban livelihood spaces, and women's experiences of everyday life in these cities. Through a case study of women-managed street vending in Kathmandu valley, I examine women's struggle for everyday mobility, access to urban livelihood spaces, and acts of solidarity in the context of rapidly eroding public spaces and marginalization of women's livelihood.

This paper draws upon 30 in-depth interviews, participant observations, and 156 surveys conducted with women vendors in 2017 and 2018 in two locations in Kathmandu Valley. This paper utilizes the idea of 'right to the city' to theoretically contribute to the debates on informality, transportation planning, and public space in the cities of the Global South. The framework of right to the city is important in two ways: to understand the participation of women in decision-making processes in the city; and to relate their everyday actions and imaginations for asserting their claims over the use public spaces (Lefevbre 1996, 1991).

This paper also culls out practical lessons for building gender just mobility and urban livelihood in the cities of Global South.

**3. Municipal toilets and public space in Seattle and San Francisco -- conflicts and policy mobilities**

Naomi Adiv (University of Toronto)

In 1996, JC deCeaux - a French street furniture and advertising company – outfitted the city of San Francisco with self-cleaning toilets in exchange for the right the right to construct advertising infrastructure in the major thoroughfares of the city. But from the time of construction, the city struggled with mis-use of the toilets, particularly in drug use and sex trade. Today, those toilets are attended full time in order to monitor the behavior. In 2004, Seattle invested $5 million in similar toilets that were torn out and auctioned off within four years.

Archival research to demonstrates that the two cities were engaged in parallel decision-making processes about public toilets throughout the 1990s and 2000s in terms of funding, construction and maintenance as proxies for larger social questions. Decision-makers were also in close communication with one another, particularly regarding private contracts. In this paper, I will examine the variations in municipal discourses and policies around public toilet provision (and their subsequent removal) as they relate to the public spaces of the city, and what the ideas surrounding toilet provision mean for the ability of different groups of people to dwell in public.

**4. Public park usage in Toronto: How are different parks being used?**

Basil Southey (Queen's University)

It has been widely recognized that access to greenspace benefits the residents of urban centres in many ways. Correlations between access to greenspace and lowered rates of both mental and physical health issues have been shown in several studies. The health benefits of public greenspace are more notable in lower income areas where residents have less access to private greenspace. While there is a great deal of scholarship showing that higher income areas have greater access to greenspace, there has been little quantitative research on how much parks are used and how parks are used. This study will 1) measure the amount of usage in parks located in areas across the socio-economic spectrum of Toronto and 2) record how people are using these parks. The study will approach parks from a political ecology perspective and attempt to discern potential factors that may impact park usage. These factors will include, socio-economic status of the neighbourhood, park facilities (benches, sports facilities, washrooms, playgrounds, etc), tree canopy coverage, weather, and seasonality. Four parks have been selected for surveys to be conducted over the next year. Each park is roughly the same size and is located in a differing socio-economic status area of

Toronto. This data can be used to provide quantitative support to studies of urban park usage which can be used by both academic researchers and city-planners.

**G2: Water, Waste, and Governance** (SS 2108)
Chair: Jo-Tzu Huang

1. **Ambivalent Water: The making of the semi-privatized water infrastructure in Kaohsiung City of Taiwan**
   Jo-Tzu Huang (University of Toronto)

   The paper explores the formation of the semi-privatized water infrastructure—water vending stations—in Kaohsiung City of Taiwan. First, the article discusses the historical trajectories of industrialization that deeply shaped the city's socio-ecological metabolism and led to the degradation of water quality. Second, drawing on the idea of 'assemblage urbanism', I examine how a semi-privatized water infrastructure—water vending stations— had been assembled and formed through the entrepreneurial practice of water vendors; the regulation and formalization by the state; the everyday practice of water consumers; as well as the temporal and spatial patterns of urban mobility. I argue that the lens of 'assemblage urbanism' could offer a more situated angle for urban political ecologists to investigate the heterogenous urban waterscape in the global South. It enables Urban Political Ecologists to think beyond the oversimplified binary of 'public-private', revealing the ambivalent nature of the meaning of water in everyday urban life. Second, the formation of urban waterscape in Kaohsiung also indicated the necessity for Urban Political Ecology to pay attention to water 'quality' given that 'quantity' has been the solo focus in UPE over the past decades. In the case of Kaohsiung, 'quality' played a critical role in shaping the socio-ecological metabolism of the city, and the pursuit of 'good quality' was also a key driver that shaped the city's semi-privatised waterscape. This also aligns with Rusca's (2017) call for a Political Ecology of water quality.

2. **Swachh and the city: women waste pickers' experiences of the 'new waste governance regime' in Ahmedabad, India**

   Josie Wittmer (University of Guelph)

   Recent governance approaches that target waste management in India (e.g. Swachh Bharat Abhiyan; 2015 Solid Waste Management Rules; privatization of municipal waste collection) indicate the emergence of a 'new waste governance regime' in Indian cities. This new approach to the governance of waste features a rhetoric of cleanliness, development, and modernization which unequally affects urban residents and has a particularly adverse effect on the livelihoods of women waste pickers who make a living recovering and selling recyclable materials from the waste stream. Women waste pickers in India occupy a marginalized position in society due to multiple systemic disadvantages they encounter as women, 'informal' sector workers, impoverished urban residents, and because of their occupational affiliation with waste.

   This presentation will explore women waste pickers' everyday experiences in the city of Ahmedabad, India in the context of these on-going changes to the governance of waste at multiple scales. It draws on a survey (n=401) and semi-structured interviews (n=47) with women waste pickers in Ahmedabad in 2017 and 2018 and investigates various ways that waste management policies and practices are unevenly experienced in the city. Further, it will explore some of the strategies that the women employ to cope with and resist changes to their livelihoods and to maintain access to waste

materials and urban space. This work prioritizes the voices of women waste pickers as knowledge holders with important insights to offer on the ways that structural processes affect the lives of marginal urban workers in the Indian context.

3. **Desert Treatise: Undermining State Borders Across the Lithium Hinterlands of the Andes**

   Hernan Bianchi Benguria (University of Toronto)

   Framed by the Andean Plateau and as the most arid biome in the world, the Atacama Desert has hosted human settlements along its fertile river valleys and high wetlands for thousands of years. Subtle ecologies live off underground interconnected hydrologic systems carrying water hundreds of kilometers from the seasonal-rainy Altiplano to the Desert's lower basins.

   This region has been historically mined and disputed by nation-states. Wars have been fought, laws changed, and boundaries drawn and re-drawn upon shifting interests over its resources; generating friction among republics militarizing their territory, while breeding new structures of power within and in-between states. This continuous rendering of the Atacama as an extraction hinterland has simultaneously erased its Native living systems.

   As the world's primary source of copper and lithium, this Desert is expected to supply the base elements for the "green" electric future. Speculation adds to institutional conservation areas and policies—freezing ecological assets and adding to the green-wash cloak for corporate extraction—while transforming local labor flows and feeding luxury tourism.

   International borders and the mining grid, both dividing and displacing Indigenous peoples, must be turned inside out through a paradigm different from nation-state enclosure. This will be achieved through a territorial reorganization based on traditional herding and agricultural time-cycles, operating across the ecological strata of the Andes. If the power of the state relies on bounding the extraction hinterland, the subversion of colonial histories requires redrawing maps and treaties through the lens of Andean life, and a re-figuring of desert ecologies.

## **11:45am-12:45pm: Lunch** (foyer outside Earth Sciences [ES] 1050, 33 Willcocks Street)

## **12:15-12:45pm: CAGONT Annual General Meeting** (ES 1050)

## **12:45-2:15pm: 2nd Plenary Panel – "Justice, Nature & the Futures of Geography"** (ES 1050)

Chair: Scott Prudham (University of Toronto)
1. Nicole Latulippe (University of Toronto)
2. Sue Ruddick (University of Toronto)
3. Neera Singh (University of Toronto)

## **2:15-3:45pm: Session 3**

**A3: Spatial Dynamics of Physical Environments** (SS 2105)

Chair: Laura Neary

1. **Sources, bioaccumulation, and biomagnification of PFASs in the ringed seal foodweb of Lake Melville, Northern Labrador**

   Dingyi Xiong, Igor Lehnherr (both University of Toronto), Amila De Silva, Jane Kirk, Derek Muir (all Environment and Climate Change Canada), Elsie Sunderland (Harvard University), Isabella Borea, Amber Gleason (both Environment and Climate Change Canada), Rodd Laing (Nunatsiavut Government), Miling Li (University of British Columbia), Liz Pijogge (Nunatsiavut Government), Tom Sheldon (Nunatsiavut Government), Christine Spencer, and Mary Williamson (both Environment and Climate Change Canada)

   Perfluoroalkyl substances (PFASs) are a class of synthetic organic contaminants that are highly persistent in the environment. They were first manufactured in the 1950s and are mainly used in fire-fighting foams, food packaging, paper making, and aircraft hydraulic fluids. PFASs can cause adverse health effects such as endocrine disruption, immunosuppression, and cancer in humans and wildlife. These contaminants can be transported to polar regions via atmospheric oxidation of volatile precursors and ocean circulation. Due to their hydrophobic, lipophobic, and hydrophilic properties, PFASs may bioaccumulate in protein-rich tissues of organisms and biomagnify in foodwebs of remote ecosystems. One such remote ecosystem is Lake Melville, an estuarine fjord in northern Labrador that receives both freshwater inputs (e.g., from the lower Churchill River) and marine water from the Labrador Sea. This region is currently undergoing environmental changes including climate warming and reservoir creation for hydroelectric power development at Muskrat Falls on the lower Churchill River. Consequently, PFASs levels to the local ringed seal (Phoca hispida) foodweb may increase, posing potential health concerns for local indigenous people who consume ringed seals, fish, and other traditional country foods on a daily basis. The objectives of this research are to identify environmental sources of PFASs and assess their movement (i.e. bioaccumulation and biomagnification) to the Lake Melville foodweb. In particular, seal samples were collected between 2013-2017 by hunters during local harvests. Lower foodweb and water samples were collected between 2014-2017. Samples of seal and fish muscle and liver, water, and plankton were chemically extracted then analyzed for PFAS concentrations using UPLC-MS/MS. Principal Component Analysis (PCA) of PFASs concentrations in water samples was used to identify possible sources of PFASs to this region, with results suggesting that short-chain and long-chain PFASs in Lake Melville may come from different sources. Calculated Bioaccumulation factors (BAF) with values over 1 for PFASs in zooplankton, fish, and ringed seals may indicate that certain PFASs bioaccumulate in the local foodweb. Stable isotope ratios ($\delta$13C and $\delta$15N) of foodweb samples and trophic biomagnification factor (TMF) calculated with values over 1 may indicate biomagnification of PFASs in the ringed seal foodweb. This study is the first to examine PFASs in the ringed seal foodweb in Labrador and imply whether the levels of PFASs in ringed seals and other biota are of potential health concern for Northern Indigenous people.

2. **Effects of spring flooding and primary productivity on lake carbon balance in the Peace-Athabasca Delta, Alberta (Canada)**

   Laura Neary, Casey Remmer, Wynona Klemt (all University of Waterloo), Brent Wolfe (Wilfrid Laurier University), and Roland Hall (University of Waterloo)

The Peace-Athabasca Delta (PAD), northern Alberta, is designated as a Ramsar Wetland of International Importance and UNESCO World Heritage Site in recognition of its ecological, cultural, and historical value. Numerous dynamic shallow lakes are reliant on episodic river floodwater to maintain water levels and aquatic habitats. Lake water levels have declined in recent decades, but the effect of shifting hydrological conditions on lake carbon balance remain unknown. Using measurements of pH, CO2 saturation and carbon isotope composition of dissolved inorganic carbon (DIC) and particulate organic carbon (POC), we assess the carbon balance of 62 lakes in the PAD during the ice-free seasons of a non-flooded year (2017) and a flooded year (2018). Results identify hydrological processes and aquatic productivity as two main influences on lake carbon balance. In the absence of river floodwater, evaporation and primary production in closed-drainage lakes lead to high pH, under-saturation of CO2, and low δ13C-DIC values in mid-summer. These patterns are consistent with strong kinetic carbon isotope fractionation that occurs during chemically-enhanced CO2 invasion. Under flooded conditions, lakes possessed similar δ13C-DIC values as river water, whereas non-flooded lakes had substantially higher values. Analyses are in progress, but we predict input of river floodwater will lead to oversaturation of CO2 and reduce mid-summer demand for CO2 invasion from the atmosphere to support aquatic productivity. Results highlight the dynamic and heterogeneous lake carbon balances present in the PAD and generate new regionally and globally significant knowledge about the effects of hydrological and biological processes on shallow lake carbon budgets.

**3. Temporal and Spatial Evolution of Hudson Strait Sea Ice (1971-2017)**

Slawomir Kowal, William A. Gough, and Ken Butler (University of Toronto Scarborough)

Previous research has found Hudson Bay seasonal sea ice particularly sensitive to climate change with a strong signal of earlier breakup, later freeze-up and a longer ice free season. The work presented here focuses on the nearby region of Hudson Strait in order to determine whether the same phenomenon, and its observed patterns, holds true for this region during the 1971 to 2017 time period by utilizing the same methodologies applied to the Hudson Bay data sets consisting of 3 metrics. These methodologies currently focus on the temporal trends and spatial patterns of sea ice through the use of a superimposed grid of 24 sampling locations spread uniformly across Hudson Strait. The analysis of the temporal trends reveals that 23 locations show statistically significant trends for the breakup metric, 24 for the freeze-up metric and 23 for the ice free metric. The average magnitude of the trend for all 24 locations for an earlier breakup is 0.84 days per year, for later a freeze-up it is 0.52 days per year and for a longer ice free period it is 1.22 days per year. Lastly, accelerating temporal trends have been observed in specific regions of the Strait for the two metrics, while for the third metric it is less clear. Thirteen points for the ice free season, 8 points for the breakup period, and 2 points for the freeze-up period have accelerating temporal trends. The spatial analysis was performed using clustering statistics by employing two clustering methods (Ward's and K-means').

**4. Effects of landcover class characteristics on forest-breeding bird richness across and within five Ontario ecoregions**

Rachel Wasson and Ryan Danby (Queen's University)

Species respond to external cues when selecting habitat, often selecting specific habitat components that positively impact fitness. Bird species respond to habitat components at multiple scales and

landscape ecology provides a framework to examine these components and their relationship to bird species occurrence across a landscape. The goal of this study was to identify which landcover classes are significant to a guild of forest-breeding birds that includes 51 species across 137 sample landscapes in five ecoregions in Ontario. This was accomplished by correlating forest-breeding bird richness extracted from Ontario Breeding Bird Atlas data to landcover class metrics derived using Fragstats across and between the ecoregions being considered. As expected the forest landcover class was found to be significant to forest-breeding bird richness, however the most significant landcover class varied between ecoregions and differed from the results when all ecoregions were considered together. Furthermore, a higher level of landcover classification (e.g., a single forest class versus sparse, intermediate and dense forest classes) was useful in some ecoregions to accurately identify which type of forest is more important to forest-breeding bird species. The results could be explained by the characteristics of an ecoregion; for instance, if the forest landcover class was limited (i.e., overall lesser amount of this landcover) it may be more important compared to an ecoregion where it is plentiful.

**B3: Special Session – Agroecology 1** (SS 2117)
Chair: Kira Borden

1. **Cash cropping worms: understanding why southern Ontario farmers allow worm-picking on their land**

   Joshua Steckley (University of Toronto)

   Each year, 700 million "nightcrawler" worms (lumbricus terrestris) are sold by the dozens in bait and tackle shops across North America, making them the most popular live bait for freshwater recreational fishermen. Unlike the "red wiggler" worm that can be commercially grown (think vermicomposting schemes), nearly all of the 700 million nightcrawler worms are hand-picked from a single region of fertile farm land that stretches between Toronto and Windsor, Ontario. Knowing the science behind earthworm activity — nutrient rich castings, burrows for aeration and water filtration — why would any farmer in their right mind allow worms to be plucked from their fields by the millions?

   This paper interrogates how farmers in southern Ontario understand the relationship between earthworms and the health of their soil. Based on interviews with 25 farmers, my research shows that the decision to allow the removal of nightcrawlers depends less on the the empirically observed impacts on their soil and more on the intuition and conceptions of earthworms as an indicator of soil health. Framed within political ecology, the nightcrawler industry reveals how the introduction of earthworms into our environment (and our subsequent conceptualizations) has been an inter-twinning of biophysical and social processes that involves worm physiology, dairy-farming cropping patterns, waves of immigrant labour, and post-WWII leisure time activities. Such an understanding complicates the long-held conceptions that earthworms are an indicator of environmental health, organic agriculture, and ""good"" soil structures."

2. **Multi-species interactions and pathogenic transmission in agroecological systems**

   Stephanie Gagliardi (University of Toronto)

Coffee leaf rust (CLR) has become an economically significant pathogenic disease in major coffee-growing regions, especially Central and South America, after recent intense epidemics resulted in significant coffee yield losses. CLR is caused by the obligate parasitic fungus Hemileia vastatrix Berk. et Br., which infects new leaves via dispersed uredospores from already infected leaves. This dispersal is often facilitated by abiotic factors, especially rainfall and wind dynamics, which can promote plot-level through to landscape scale dispersal. However, when coffee is planted in multi-species agroecological systems, overstory trees can modify CLR dispersal mechanisms, such as by varying the throughfall kinetic energy of raindrops or shifting canopy-level wind speeds. Preliminary results suggest that these modifications depend on tree species, canopy strata composition, and canopy architectural and leaf traits. I hypothesize that these modifications to key abiotic dispersal mechanisms ultimately result in distinct patterns of CLR intensity and incidence in associated coffee plants. This research will advance our understanding of pathogenic transmission in managed multi-species agroecosystems, further informing coffee farmers of sustainable and economical management options to combat CLR and other pathogen risks.

**3. Provisioning of ecosystem services within riparian agroforestry systems of Southern Ontario**

Serra Willow Buchanan (University of Toronto Scarborough)

Riparian zones are broadly defined as the interface between terrestrial and aquatic systems, composed of a variety of herbaceous and woody species (agroforestry systems) which differ greatly in width, age and topography. While riparian systems are known to contribute to watershed health, little is known on how they contribute to ecosystem provisioning based on plant species composition and diversity in these vegetated zones. Plant functional traits are able to categorize how communities will acquire or conserve resources, with community ecology studies indicating higher levels of functional diversity leading to systems which use resources more efficiently. To date, little to no research has investigated the functional diversity of riparian agroforestry systems and what this means for ecosystem processes, especially in the large tracks of buffer zones in southern Ontario. Focusing on plant functional diversity within i) grassland ii) undisturbed old-growth forest and iii) restored forest riparian buffer communities, I assessed their ability to mediate ecosystem processes, namely nitrogen (N) mineralization, carbon dioxide (CO2) and nitrous oxide (N2O) emissions. My results indicate that forest systems (undisturbed old-growth and restored) had significantly higher levels of functional diversity than grasslands. In addition, these increased levels of functional diversity were significantly linked with lower CO2 and N2O emissions. These preliminary results indicate that forests seem to provide higher levels of functional diversity and provisioning services. Therefore, future research will be focused within riparian forest systems that differ in stand age/composition and soil type in order to assess how these factors, in conjunction with functional diversity, influence ecosystem functioning.

**4. Farmer and scientific perspectives on the role of weeds in ecosystem service provisioning in coffee agroforestry systems**

Sarah Archibald and Marney Isaac (University of Toronto)

Shifts in approaches to coffee production have the potential to have significant impacts on ecosystems and in communities worldwide. Coffee is one of the most important global agricultural commodities and is grown on over 11 million hectares of intertropical land. The intensification of coffee production, which began in the 1970s, has led to a decline in biological diversity and

ecosystem resilience due to both deforestation and the reduction of herbaceous communities (HC) – ground plant cover and weeds - through the promotion of monoculture and the use of agro-chemicals. Over the past two decades, groups of producers have shifted back towards more diverse coffee agroforestry systems. While the effects of diversifying shade-tree composition in coffee agroforestry systems have been explored in depth, the impacts of herbaceous communities are poorly understood.

My research, conducted in the Turrialba region of Costa Rica, utilizes scientific and social methods to explore the ecosystem services provisioned by HC in coffee agroforestry systems. I aim to address the ecological role that HC plays by measuring the functional richness, abundance and divergence weed communities and the impacts of HC on soil nutrients and coffee yields. Through interviews and a cognitive mapping process, my research explores farmer approaches to weed management and the perceived ecosystem services and disservices of the HC.

Overall, my research aims to contribute to the growing field of agroecology and provide insight into low/no-chemical coffee systems.

5. **Farmer understanding of leaf functional trait spectra in cacao agroecosystems**

   Adam Dickinson (University of Toronto)

   The lens of local knowledge can provide valuable insight into agroecological phenomena, especially as they relate to issues of crop management and adaptation to environmental change. Research on within-species trait variation, or intraspecific trait variation, in crop species has shown that certain functional traits respond to ecological changes and management practices. This study seeks to explore the extent to which farmers' perceptions of their crops coincide with a trait-based understanding of agroecological processes. We worked with farmers of cacao (Theobroma cacao), a tropical tree crop that is often grown under the shade of overstory trees. We created a visual elicitation tool made up of leaves arranged along three traits: colour, texture (leaf thickness) and size (leaf area). For each trait, we included a spectrum of 5-7 leaves that encompassed the typical extent of each trait's variation. We asked 45 cacao farmers how they believed variation in each of these three traits was a reflection of crop yield or a response to shade level and plant health. Participants identified relationships between leaf area and yield, expressed as overall plant performance; they also identified relationships between leaf thickness and shade levels and between leaf colour and plant health. Within the leaf colour spectrum, farmers identified an additional contrast between the 'greenness' of leaves, noting that leaves with a deeper green colouration tended to indicate higher levels of shade. The patterns identified by farmers show a large degree of concordance, and some interesting contrasts, with a trait-based understanding of agroecological phenomena.

**C3: Decolonizing Geographical Knowledge** (SS 2111)
Chair: Zannah Matson

1. **Designing Spaces of Reconciliation**

   Elizabeth Nelson (Queen's University)

   This research engages with the Truth and Reconciliation Commission recommendations surrounding the creation of sites of public memory, and seeks to understand how these

recommendations come to be interpreted in the physical landscape of cities. Chapter 5 of the final volume of the Truth and Reconciliation Commission highlighted the importance of public memory to the reconciliation process. It emphasized that dialogue, produced through ceremony, stories, testimonies, and witnessing, is vital to proclaim the truth about residential schools and racism in Canada in public sites of memory (Truth and Reconciliation Commission, 2015). Euro-Canadian forms of commemoration tend to be static, material, and historical. This presentation will explore the emerging literature suggesting that traditional Euro-Canadian forms of commemoration might not be an adequate response in the context of reconciliation. It will engage with alternative commemorative practices to explore how they might be better suited to create more effective spaces for the purpose of reconciliation.

**2. "Just a small-town girl, Livin' in a colonial world"**

Stephanie Woodworth (University of Ottawa)

"Braided streams" are "spaces and flows" of fluid, divergent and convergent channels, intertwining together where there are no lateral banks (Fairbridge, 1968; Monk, 2015). As "braided streams" evolve with, through, and alongside each other, the shapes of their pathways are (re)created and entangled through their development and flooding. This research evolved from "braided streams" of critical self-reflection, scientific knowledge, and Indigenous Knowledges, and, is braided into three pathways for decolonizing. Based in a river of story-based methodologies (decolonizing autoethnography, storytelling, gathering, harvesting and mapping stories), this research demonstrates how "braided streams" of knowledge entangled together, shaping one another in their development and flooding, leading to woven pathways for decolonizing. Through this approach, I do not make "one-size-fits-all" claims or statements about decolonizing, but, rather, attempt to share pathways for decolonizing research through a critical self-reflection. By sharing stories through reflections, critiques, experiences, and actions, this research shows how decolonizing is a personal journey dependent on context (place, people, scale, relationality), requiring endless time and effort, through the building of reciprocal relationships of respect and responsibility with Indigenous peoples, for pathways of Indigenous sovereignty, self-determination, and futurities (Tuck & Yang, 2012). To begin decolonizing my own theories and methodologies (ways of knowing and doing), I had to trace back, critique, and openly reflect on my settler colonial history and complicity and learn my rights, roles, and responsibilities for the research. The focus of this presentation will be on critical self-reflexivity and the rights, roles and responsibilities of researchers for decolonizing research.

**3. Visuality and Landscape in the Afterlives of Coloniality**

Zannah Matson (University of Toronto)

While there is no commonly prescribed definition of landscape, throughout its evolution the term has involved the relationship between land, its social uses, and its visual interpretations. As part of a larger project that seeks to uncover the role of visuality in the afterlives of coloniality, this contribution specifically engages with the visual definitions of landscape and its inherent tension between observing and inhabiting. Visuality within the landscape tradition has been fundamentally linked to the projects of colonialism and modernity; subsequently, its legacy must be understood as a way that racial classification and limitations on belonging have been reinforced. These histories of visuality both underlay its role in landscape formation and must be made explicit to ensure the constitutive logics of coloniality are not replicated in contemporary landscape representation.

A growing body of work suggests that alternative understandings of landscape that renounce the visual interpretations of the term are necessary to move beyond the colonial legacies inherent within visual materials. While this work is important to centre the embodied experiences that are constitutive of landscape, they imply the necessity and possibility of a rupture with the visual dimensions of landscape. In contrast, through an examination of hegemonic ways of seeing in Colombia's eastern piedmont, this contribution examines the continued salience of visuality to definitions and interpretations of landscape. Recognizing that these afterlives of visuality operate in oblique relations not captured by work that has sought to re-define landscape, this contribution considers alternative interpretations of visuality that can construct landscapes of belonging.

**D3: Migration 1** (SS 2110)
Chair: Emmanuel Kyeremeh

1. **From Ghana to Canada, Canada to Ghana and back to Canada**

   Emmanuel Kyeremeh and Godwin Arku (Western University)

   Previous studies on international migration and return migration have properly documented the various dimensions of people moving to, as well as remaining in, one place or the other. Such studies have dominated the literature and enhanced our understanding of the migration process thus far. However, studies that focus on why immigrants voluntarily move from their host society, return to their country of origin, and then migrate a second time to the host society are scarce. This study attempts to fill this gap in the relevant literature on this aspect of international migration. In doing so, it draws on in-depth interviews with 15 Ghanaian immigrants in the Greater Toronto Area in Ontario, Canada, to understand the motivations for the first migration, return migration, and the second migration processes. The findings reveal that education and economic improvements were the dominant motivation for the initial migration; a love for one's country of origin and the opportunity to contribute meaningfully to its progress and development prompted return migration; and family ties, improvement in economic fortune, better health care and the quest to formalize immigration status in the host society spurred the second migration. In addition, and importantly, the study demonstrates that family ties and the desire for economic improvement are the two major motivations involved in the three-step process. The paper concludes that a broader discussion of the re-migration process is needed. Specifically, it calls for an examination of the process among various ethnic groups in order to contribute and move the debate on understanding the migration process in general.

2. **Social (im)mobility: Nigerian Trained Health Professionals In Canada**

   Sheri Adekola (Humber College)

   When migrating voluntarily, skilled migrants migrate to where they can optimize their potential and reduce their risks. The social (im)mobility migrants experience depends on their education, and social and professional networks before and after migration. Social mobility is a transformation of the distribution of resources or social position of individuals, families or groups within a given social structure or network.

In this paper I examine the case of Nigerian trained health professionals in Canada and draw from qualitative interview data to document how these skilled migrants interpret how their skills have translated between the Nigerian and Canadian labour markets. I also examine how the experiences of Nigerians in Canada is communicated to health workers in Nigeria, who actively construct a transnational opportunities framework to determine their decisions regarding training and migration options. I comment on how this process of value exchange and extraction is structured by the transnational connectivity migrants create.

**3. The Limits of Using Immigration Status as a Proxy for Circumstances**

Kathryn Tomko Dennler (York University)

Immigration status is a policy category that has powerful consequences for people's emotional and material circumstances. However, I argue against over-reliance on immigration status as an analytical category. To do so tacitly fuses a person with their status, thereby naturalizing status determinations despite that fact that they are at least partially subjective and subject to change, as well as masking the variation of experiences among people who share the same status. I use three empirical examples to make this argument. Firstly, I use recent changes to the live-in caregiver program that for many increased the amount of time until they were eligible to apply for permanent residence. Secondly, I argue that current immigration status is nested into a larger picture of status trajectory, in which people use past and anticipated future rights as resources, but also in which past and anticipated future struggles continue to loom. When referring to people in terms of current immigration status, the material and emotional impact of those resources and struggles may be lost. Finally, I argue that status intersects with other aspects of identity in variable ways. I compare the experiences of two study participants to show that using immigration status as a proxy for vulnerability misses how wider factors such as strength of social support networks, ability to access rights and services in practice, and protection concerns all shape how immigration status reverberates through everyday life.

**4. Wisdom and cross-cultural interaction: A geographical perspective**

Senanu K. Kutor (Brock University)

Migration and cross-cultural interaction are being increasingly studied and researched by social scientists from various perspectives. However, one aspect that is under-studied is the relationship among migration, cross-cultural interaction and wisdom development from a geographical perspective. Drawing on a qualitative study of Romanian immigrants in Ontario, Canada, this paper explores how the experiences acquired by the Romanian immigrants through migration and multiculturalism are conducive to the development of personal wisdom. It analyzes how Romanian immigrants perceived their experiences and encounters to account for personal wisdom through changes in perspective, learning of new things and the role of place in the development of wisdom. The paper highlights the boundary conditions that may determine whether wisdom develops in a migration and cross-cultural interaction context. The themes that have emerged from the analysis of in-depth interviews are: adaptation to the new environment and social system, the role of the host environment as a boundary condition, unmet expectations, cultural shocks, and the language barrier. Experiences acquired through geographical processes of migration and cross-cultural interaction, therefore can be understood and conceptualized as a 'conducive ground' for the attainment of personal wisdom.

**E3: Special Session -- Health Geography: Creation of Healthy Productive Workplaces in the Caregiving Landscape** (SS 2125)
Chair: Regina Ding

1. **Exploring Iranian immigrant caregiver-employees everyday tensions through camera lens: A Photovoice study**

   Zahra Akbari and Allison Williams (McMaster University)

   The growing number of seniors in Canada and worldwide has highlighted the role family caregivers provide in delivering unpaid care to family members, friends and neighbors. A great number of family caregivers are simultaneously employed in the paid labor market, and experience many challenges as a result of multiple time-space tensions in their daily lives. In multicultural nations such as Canada, a great number of caregiver-employees also belong to the immigrant community. While immigrant caregiver-employees (CEs) are faced with extra challenges when compared to other CEs, limited research is available to better understand this overlooked population. One particular group of immigrant CEs work from home while providing intensive care for their loved one. As a consequence, the home environment becomes a site of daily spatial and temporal tensions. The current paper aims to explore the experience and tensions of Iranian immigrant caregiver-employees in order to assist them in managing their ever-growing responsibilities in the home environment. A novel Photovoice methodology is implemented to illustrate these tensions exclusively through self-captured photos. Five major themes related to these tensions are identified: (i) personal, (ii) caregiving, (iii) spatial, (iv) family and social, and (v) temporal tensions.

2. **Evaluation of caregiver-friendly workplace policy (CFWPs) interventions on the health of full-time caregiver employees (CEs): a time series analysis of intervention effects**

   Regina Ding, Anastassios Dardas, Li Wang, and Allison Williams (McMaster University)

   Current demographic trends in Canada, such as growing labour force participation (the percentage of people aged 16-64 who are employed or unemployed but looking for work), declining average household family size, and rising retirement age have led to increased pressure on the working population to provide informal care to the growing elderly population. The purpose of this intervention study is to identify significant changes in the health of carer-employees' (CEs) by evaluating the effectiveness of caregiver-friendly workplace policies (CFWPs). Our present investigation is an attempt at expanding current understandings of the functionality of CFWP interventions within the work environment through analyzing its interaction with several health indices, specifically, depression (CES-D), psychosocial (CRA), and self-reported health (SF-12). A health condition score, which consists of the aggregation of three scales aforementioned scales, was used to measure changes in participant's pre-post intervention, as well as a final distant period 12-16 months after baseline assessment. Random intercept modelling, descriptive statistics, and data visualization was used to analyze response data.

3. **Employing Pragmatism in the Design of a Multisite Mixed Methods Intervention Case Study: the Canadian Standards Association (CSA) Carer-Inclusive and Accommodating Organizations Standard (CIAOS)**

Basant Mostafa and Allison Williams (McMaster University)

The Canadian Standards Association (CSA) Carer-Inclusive and Accommodating Organizations Standard (CIAOS) provides a set of guidelines for a workplace organizational program for carer-employees (CEs). CEs simultaneously carry out paid employment, often full time, in the labour market, whilst also providing unpaid care to adults, such as the aged, and/or children living with chronic illness or disabilities.

The purpose of this paper is to illustrate how pragmatism plays a vital role in designing a four-phase multisite mixed-methods intervention case study. The "inter-subjectivity" of pragmatism, as a philosophical paradigm, makes it practically suitable for designing mixed methods research (Greene & Hall, 2010). It overrides the endless "wars" between the quantitative and the qualitative methodological approaches (Feilzer, 2010). The four-phase multisite mixed-methods intervention case study methodology proposed recognizes the authors' primary goal of determining the practical impacts of implementing the intervention. These practical impacts will be determined through evaluating (CEs) health outcomes before and after the intervention; this, together with a comprehensive understanding of the intervention context, will enhance transferability while assuring effectiveness of implementation.

4. **Understanding and navigating barriers to sexual health services in the Niagara Region: a frontline worker's perspective**

   Claire Laurie (Brock University)

   My research seeks to understand the barriers to access sexual health services in the Niagara Region from a front-line worker perspective. Front-line workers hold a unique viewpoint on issues of accessibility because they can work closely with those accessing support while also understanding the complexities of social service delivery. Outside of major urban centres such as Vancouver, Toronto, and Montreal, marginalized women and trans people across Canada face higher barriers to access sexual health services. Little research has been done on this issue in the Niagara region. Research participants touched on the following themes: location of services; poor public transportation within and between cities; a climate of distrust between clients and service providers; lack of education of service providers; and clients' lack of social skills, many struggle to manage stress and problem solve. However, the most common theme that every participant discussed was lack of funding, interviewees repeatedly stressed that more programs could be created and some issues could be solved if more funding was allocated into social services. I suggest that some of the themes discussed by participants are the embodied consequences of marginalization. The constant discrimination of sex workers from service providers can result in distrust and apathy towards ones own sexual health needs. I do not offer solutions to these issues but seek to highlight the themes discovered for those living in the Niagara Region.

**F3: Housing** (SS 2127)
Chair: Thanh Tu Nguyen

1. **Opportunities and challenges encountered within immigrant and newcomer advocacy efforts to improve high-rise living environments and neighborhood change**

   Emily Brown and Sara Edge (Ryerson University)

The revitalization of built form has become an increasing priority in cities as a means to enhance health, environmental, life quality, and economic investment. If such efforts are to be just, inclusive and sustainable, they must encourage equitable access to associated benefits. Yet neighborhoods within Toronto's inner suburbs with high proportions of immigrants and visible minorities have received little investment relative to the city's core, and are characterized by aging high-rise neighborhoods with poor living conditions and less reliable transit. Despite historical patterns of disinvestment, signs of early neighborhood change and gentrification are emerging in this area, along with concerns about inequitable impacts and displacement. Much of the research on neighborhood change and newcomer communities takes a community deficit approach. Few studies have examined how immigrant communities are seeking to improve their living conditions or engage in related governance and advocacy processes. Drawing upon interviews and focus groups with residents, community organizers and service providers in the neighborhood of Rexdale, this paper examines the impact of substandard housing on immigrants, and how they are reacting or taking action to improve conditions in a high-rise neighborhood. Findings reveal barriers that are preventing immigrants from engaging in advocacy and other means of improving their housing conditions, in addition to opportunities for increasing newcomer participation in housing and neighborhood improvement efforts. "

**2. Perceptional barriers to the "green" urban housing development project in Vietnam**

Thanh Tu Nguyen (University of Toronto)

Urban housing development projects - a major momentum for the impressive growth of Vietnamese cities in the contemporary time is struggling with its 'Green' goal. Besides barriers including local socio-economic constraints, global climate change, and technical challenges, there are other perceptional obstacles which exist with insufficient attention. This paper aims to identify those challenges as well as their mechanisms. Both theoretical and empirical approaches are used, comprising literature and media review as well as 35 stakeholders surveys and 6 selective interviews. As one of the main results, there are prevailing misconceptions about green features in urban housing development in Vietnam. Many of different stakeholders find the usage of "green" vague and it has the mere direct relevance to natural and landscape aspects. It is also perceived that green urban housing development projects are considered as the 'high-end, luxury' sector and hence potentially face fiscal and technical challenges. Besides terminological and psychological rationales, fundamental ground of those limitations comes from the absence of a widely recognized comprehensive understanding of "green". The great variety of definitions and interpretations derived from various sustainability scholars, in fact, has led to confusion. The actual operation of urban housing development projects, forces of real estate market, and even media in Vietnam have also played a role in generating misled public awareness. From barriers and rationales identified, this research indicates that better performance of stakeholders are required, especially from scholars, governments and those are working on media.

**3. Housing Take-overs and Property Right Discourse in the Philippines**

Hazel M. Dizon (York University)

In 8 March 2017, 16,000 Filipino urban poor marched to Pandi, Bulacan, a suburban area immediately north of Manila, calling for their rights to housing. Dubbed "Occupy Bulacan" and lead

by the urban poor organization KADAMAY, 6,000 families ended up occupying six idle social housing projects in the area and have remained there ever since. While the urban poor claimed victory, there were negative responses from government officials and from the public. The take-over was called 'illegal' and 'Occupiers' were called 'thieves', 'anarchists', 'lazy', 'professional squatters', etc. The research will query the legitimacy of these opposing claims by looking into "counter-projects" and "counter-spaces" as conceptualized by Lefebvre. Nicholas Blomley's arguments on property and homelessness will reinforce the discussion on legitimacy and establish the rationalization of creating commons. Lastly, Occupy Bulacan's relation to and impact on social movements will be analyzed using Halvorsen's view on "occupation" as a place-based or territorially-based strategy of resistance. Semi-structured interviews and review of online news and social media on the take-over will be used to respond to the research aims. With the highly contested move of the urban poor occupying government-built housing units, my research claims that Occupy Bulacan signifies the claiming of rights to basic survival needs of housing and challenges the legitimacy of private property, advances the people's movement through organized, collective action, and contributes to social movements' narratives of strategies of resistance.

**G3:**

**Special Session - Thesis Proposals I** (SS 2108)
Chair: Yuhong He

1. **Quantifying chloride retention in urban stormwater management ponds using a mass balance approach**

   Wai Ying Lam and Claire Oswald (Ryerson University)

   In urban areas with cold winters, chloride in local waterways is largely derived from runoff containing de-icing salts. The chloride ion is not easily degraded, and can accumulate in freshwater systems for extended periods. On the watershed scale, chloride may be retained long after winter de-icing ends. It can have deleterious effects on aquatic biota and may pose a threat to drinking water. Stormwater management ponds (SWMPs), installed by municipalities to mitigate flow and sediment problems, can also impact the management of pollutants. But despite their widespread use, there is little information on what role SWMPs play in the timing and magnitude of chloride movement through urbanizing watersheds.

   This study employs a mass balance approach to quantify chloride retention in two SWMPs located in an urbanizing watershed in south-central Ontario. Continuous water level and conductivity data are collected from pond inlets, forebays, aftbays, and outlets, along with regular grab samples to calibrate the specific conductance-chloride concentration relationship. These data allow us to quantify the mass of chloride entering and leaving the ponds, and hence the mass that is retained. The in-pond data allow verification of any changes in chloride retention. Level and conductivity are monitored upstream and downstream of the intersection of the pond outflow and the receiving creek to quantify in-stream impacts of chloride from pond outflows. The results of this research are expected to inform predictive models of stream chloride concentration dynamics and provide information to watershed managers on the role that SWMPs play in downstream water quality.

2. **Forecasting exceedances of the Canadian Ambient Air Quality Standards for Particulate Matter in Vancouver, Canada**

Fatimah Taghdi and Matthew Adams (University of Toronto Mississauga)

Air quality is associated to a number of short-term and long-term health effects. Air quality forecasts are developed to provide residents with awareness of upcoming elevated conditions. Recently, Vancouver, British Colombia has been undergoing extreme air pollution events. Air pollutants that have known negative health outcomes. In this research, we are developing air pollution forecast models based on air pollution and meteorological conditions. The intent of the model is to forecast when air pollution concentrations are expected to exceed Environment Canada's 24-hour air quality standard for Particulate Matter air pollution. Models will be developed using machine learning techniques to predict the likelihood of an exceedance, 24, 48 and 72 hours in advance. Model performance will be evaluated using temporal hold-out cross-validation. A comparison will be made between models fit with individual monitoring data or combined data from the set of monitors observing air pollution in Vancouver.

3. **What Are the Spatial-temporal Effects of Emerald Ash Borer (Agrilus planipennis) on Ash Trees (Fraxinus) in a Mixed Forest Stand?**

Alexander Axiotis and Yuhong He (University of Toronto Mississauga)

The Emerald Ash Borer (EAB) (Agrilus planipennis) is an invasive species that has caused widespread disturbance of Ash (Fraxinus spp.) trees in Ontario. The EAB was first found in Windsor, Ontario in 2002, and has since spread as far as Sault Ste. Marie, Ottawa, and into Quebec. Once infested by EAB, Ash trees will typically die within 6 years and may have as high as a 99% mortality rate within a woodlot. It is hard to detect the presence of EAB in low densities, making it hard to employ preventative management efforts early. Hyperspectral sensors can collect information across the electromagnetic spectrum and can be an effective tool to detect subtle changes in biophysical and biochemical properties of infested Ash trees based on the variation in their spectral signatures. These biophysical and biochemical properties, such as chlorophyll and water content, can be used as indicators of overall ecosystem health, photosynthetic activity, and productivity. In this study, we will assess various levels of Ash tree health at both University of Toronto's Koffler Scientific Reserve, King City, ON, and Ken Willhans Resource Management Area, Caledon, ON, using the airborne Micro-Hyperspec VNIR sensor with 335 narrow spectral bands ranging from 380 to 1,000 nm. My research aims to evaluate: (1) the potential for hyperspectral sensors to detect changes in Ash tree health and (2) spatial and temporal patterns of Ash tree health related to EAB. This study will contribute to forest management, understanding ecological change and disturbance, and the development of remote sensing techniques.

4. **Modelling NO and NO2 Air Pollution in Mississauga with Land-Use Regression and Passive Samplers**

Melanie Maddix and Matthew Adams (University of Toronto Mississauga)

Air pollution exposure is a public health risk, especially for people who live in densely populated urban centres. As part of a regional plan to improve air quality, the province of Ontario is constructing a light rail transportation (LRT) project along the Hurontario Street corridor. In order to understand the effect of such a project on air pollution, it is first necessary to establish a baseline pollution level of the area.

This project will focus on the modelling of two air pollutants that are measurable with passive air samplers, nitrogen oxide (NO) and nitrogen dioxide (NO2). Concentrations of these pollutants show spatial variation depending on traffic, population density, land use, and a variety of other local factors. Air pollution observations will be conducted during three sampling campaigns of fourteen days each. Samples will be collected from thirty sites during each campaign. The observed air pollution values will be combined with the surrounding land use characteristics to form the basis of a land-use regression model for the city of Mississauga. The model can then be used to create a measurement-based air pollution surface that will serve as a baseline for monitoring the effect of LRT projects.

5. **Spatio-temporal Variability of Residence and Transit Time of Stormwater Management Ponds in Urbanizing Catchments**

Kayla Wong and Claire Oswald (Ryerson University)

The increase in impervious surfaces in urbanizing catchments impact local water networks by increasing the runoff volume and peak discharge into streams and larger waterbodies. To mitigate this response, stormwater control measures such as stormwater management ponds (SWMPs) are often engineered into drainage networks to slow water down. Considering the popularity of SWMPs in rapidly developing regions, there is little information on how they affect the transit time (or age) and residence time of the water traveling through them. This study aims to (1) estimate the mean residence time (RT) and mean transit time (TT) of water for multiple SWMPs, (2) assess the influence of pond and catchment characteristics on the spatial variability in mean RT and TT, and (3) compare isotope signatures of water exiting ponds to water in their receiving streams to evaluate whether or not the use of isotope methods are useful for assessing cumulative impacts in this watershed. The transit time and residence time of 2 SWMPs in the East Holland Watershed will be analyzed using the isotopes O18 and H2. These ponds were selected to represent varying catchment characteristics; pond area, catchment impervious area, directly connected impervious area, and total catchment area. Routine isotope sampling is done bi-weekly in addition to 10 event samples over a two year period. These samples will be used to determine the mean residence time and mean transit time in SWMPs which will ultimately provide a better understanding of their flow pathways and downstream impacts in urban watersheds.

6. **Understanding the impact of macro plastic pollution on coastal livelihoods in marine conservation areas in Vietnam (Phu Quoc, Ha Long Bay and Nui Chua)**

Alisa Nguyen and Robin Roth (University of Guelph)

Ocean based plastics have become a major global concern, with newsfeeds, vlogs, and social media alerting us to their presence. The predominant global discourse focuses on the impact of plastics on large marine species (turtles, birds, whales), while environmental groups focus on the presence and management of the great floating garbage patches. Invisible in this discourse is how the livelihoods of subsistence fishers on the coasts are being impacted by the presence of plastics. For my research, I will seek to understand how livelihoods are being reconfigured by the presence of plastics in three marine conservation areas in Vietnam: Phu Quoc, Ha Long Bay and Nui Chua. My methodologies will include key informant interviews, focus groups and fisher surveys, as well as transect walks to determine quantity and trends of visible macro plastics with the ultimate goal of attaining a

grounded understanding of the prevailing local attitude toward marine plastics, compared to national policy and public discourse surrounding marine plastic waste.

7. **Assessing Cognitive Validity of the Empowerment in Water, Sanitation and Hygiene Index (EWI) Instrument in the Ghana-Burkina Baseline Survey**

   Florence Dery (Queen's University)

   The Empowerment in Water, Sanitation and Hygiene Index (EWI) is designed to measure the empowerment, agency, and inclusion of women in the water sector. In most resource constrained settings of the global south, women compared to men have fewer opportunities to play key roles in shaping access to and governance of water resources. The EWI will be used to monitor performance and evaluate the gender impacts of WASH programs and projects in low income countries. It is a multidimensional index with three domains (Intrinsic Agency, Instrumental Agency and Collective Agency) that capture the roles and extent of women's engagement in WASH activities and decision making. The purpose of this proposal is to evaluate the cognitive validity of questions used in pilot-testing EWI in Ghana and Burkina Faso. The aim of carrying out cognitive validity is to identify and analyze sources of response errors and bias in the surveys, and to use such information to improve the quality and accuracy of the survey instrument. Results from the cognitive assessment will allow researchers to assess the ability of the EWI questions to elicit valid responses from survey participants, and the findings will go a long way to enhance the quality of the EWI tool.

8. **Analyzing social inequalities in flood risk exposure through assessing environmental justice implications for flood risk management, and valuing preferences for flood vulnerability reduction measures in Canada using discrete choice experiment**

   Liton Chakraborty (University of Waterloo)

   Flooding has been the greatest concern for Canadians over the past two decades due to a persistent increase in flood hazard events and corresponding heavy flood damages, which have substantially increased the liabilities of federal and provincial governments through the Disaster Financial Assistance Agreement transfer programs. In response, Canada has recently embraced a flood risk management (FRM) approach by initiating the 2015 National Disaster Mitigation Program (NDMP) to reduce, or even negate, the effects of flood events in Canada. Social justice scholars criticize that this initiative prioritizes 'Utilitarianism' (maximize utility) and 'Libertarianism' (individual responsibility) principles, as it fails to consider vulnerability-based justice principle – the 'Egalitarian's equality' and/or 'Rawlsian Difference' principle (Maximin rule) – which focuses on 'social vulnerability' reduction by directing scarce public resources to the greatest benefit of the least advantaged. Does Canadian FRM policies and practices perpetuate social vulnerability? It is often argued that an identification of both 'geographic flood disadvantaged' and 'systemic flood disadvantaged' groups of communities is a prerequisite for delivering a socially just (i.e. fair) approach to prioritizing FRM policies and funding structures. My doctoral research will investigate: (i) whether socially vulnerable group of communities are disproportionately located in the designated flood risk areas of Canada, (ii) whether the difference and/or similarities between the preferences of most vulnerable group of communities and responsible public officials for flood vulnerability reduction measures have any empirical support for a socially just approach to FRM policies in Canada, and (iii) what is a socially just FRM policy for Canada?

9. **Protecting place: Mobilizing adaptive capacity to respond to climate change in The Bahamas**

   Kearney Coupland (Wilfrid Laurier University)

   The vulnerability of small island developing states (SIDS) is characterized as a function of their high exposure to environmental change and their perceived limited adaptive capacity. To date, there has been limited research exploring the factors that support or impede the mobilization of adaptive capacity for in situ adaptation in the Caribbean.

   As the resilience of The Bahamas is threatened by the stresses of climate change and the related economic precarity of tourism, residents of the islands outside of New Providence and Paradise Island (NPI), where the capital, Nassau, is located, are realizing their capacity to adapt. Drawing upon theories of place attachment, this research will use a mixed methods approach including interviews, focus groups, participatory mapping, and ethnography-inspired techniques to explore the implementation of climate change adaptation strategies on Eleuthera, an island east of NPI. Using a vulnerability framework, the research will explore the exposure of the island to current and future impacts of climate change and will highlight how residents and small hotels are mobilizing adaptive capacity in response to these risks. The ultimate intention of this research is to inform future disaster risk reduction and climate change policy in The Bahamas through the identification of factors that have historically mobilized local capacity to adapt to climate change at the community level.

10. **Achieving household food security in Myanmar: a food systems approach to agroforestry food products among smallholder farmers**

    Tian Lin (Carleton University)

    This research will examine the role of agroforestry in household food security in Myanmar under shifting climate. Food security remains a growing problem in Myanmar, despite agriculture being the backbone of the national economy. One entry point to address this issue is through agroforestry, which refers to the integration of trees and crops on locally managed land. Given that most of the agricultural land in Myanmar is cultivated by smallholders owning less than two hectares of land, investment in agroforestry has the ability to improve food security at the household level, as it contributes to the efficient use of limited land. The dry zone and delta of Myanmar will be the regions of focus for this research, as both areas have one of the highest levels of malnutrition. By implementing agroforestry systems in these two regions, smallholder farmers may be able to diversify crop outputs, intensify food system activities, and secure land tenure to tackle environmental and market stressors to agriculture. This research will employ various participatory research tools including focus group discussions, transect walks, and resource mapping to collect primary data related to the production and consumption of agroforestry products. Based on the research findings, practical recommendations will be developed to assist the country in developing evidence-based policies to meet targets related to food security and poverty reduction.

*and*

**Posters 1** (SS 2nd floor hallways)
*(If possible, authors should be available for conversation about their posters during this session)*

1. **Linkages between sea ice, snow cover, and temperature in the Canadian Arctic from 2000 – 2017**

   Alicia Dauginis and Laura Brown (University of Toronto Mississauga)

   Arctic temperatures have been increasing at an accelerated rate since the early 2000s, resulting in reduced sea ice extent and snow cover duration. Research in the Arctic has focused on assessing components of the cryosphere at the pan-Arctic scale and has generally relied on the use of coarse-resolution satellites (i.e. passive microwave). This study investigates sea ice, snow cover, and temperature conditions from 2000 – 2017 in the Canadian Arctic, using finer spatial resolution satellite observations. The Interactive Multisensor Snow and Ice Mapping System (IMS), Sea Ice Index Version 3, and 8-day Moderate Resolution Imaging Spectroradiometer (MODIS) snow and ice products are used to examine changes in sea ice and snow cover in conjunction with ERA-Interim gridded climate data and weather station observations. Significant warming was identified in the Beaufort Sea (2.5˚C), western Parry Channel (1.8˚C), Baffin Bay (2.5˚C), and north of the Queen Elizabeth Islands (3.0˚C). Earlier open water and later freeze onset trends were identified in Baffin Bay and Beaufort Sea. Agreement between IMS and the Sea Ice Index increases with distance away from the coast, with the lowest agreement in coastal regions. Snow cover retreat follows latitudinal patterns, though snow-off dates are later in the eastern Arctic (~ 10 days). Comparisons of IMS and MODIS snow products revealed that IMS overestimates snow cover extent, limiting the use of IMS in local-scale snow applications. Finer resolution satellite products can provide better estimates of snow and ice conditions and can be used to understand changes to the global climate system.

2. **The occurrence of microplastics and microfibres in municipal water systems of the Niagara Region, Ontario, Canada**

   Emily Ham and Michael Pisaric (Brock University)

   Microplastics are now ubiquitous in freshwater and terrestrial environments across the globe. Undoubtedly, plastics are entering Niagara water systems as well; entering as microplastics and microfibres derived from household products and materials. Moreover, wastewater treatment plants (WWTPs) are not equipped to filter out these small particles. These microplastics are known to enter aquatic systems with the untreated municipal influent and exiting with the treated effluent, making their way into water bodies where they can accumulate or be taken up by aquatic organisms. Furthermore, wastewater sludge is applied to agricultural fields throughout the Niagara Region between May and November. Thus, microplastics may be making their way onto agricultural lands where runoff can transport microplastics in the sludge applied to fields into adjacent water bodies. The main objectives of this study are: (1) to determine the prevalence of microplastics in the Niagara wastewater treatment system and different pathways for microplastic pollution in urban areas; (2) to determine if microplastics are becoming concentrated in agricultural soils via biosolids application; and (3) to determine if microplastics are finding their way into local streams and creeks (surface waters of Niagara), via runoff from adjacent agricultural fields and effluent discharge. Monthly effluent sampling has yielded a suspected microplastic count of 3.9 particles/L as of August 2018, and 0.4 microplastics per cubic metre were found as a result of surface water sampling downstream of a Niagara wastewater treatment plant.

3. **Spatial Modelling of Particulate Matter Air Pollution in Charlotte NC with Citizen Science Monitoring**

Felix Massey, Haseeb Malik, Karl Chastko, and Matthew Adams (all University of Toronto Mississauga)

This study assessed the use of air pollution data collected through Citizen Science for developing a land use regression (LUR) model, which was used to estimate pollution concentrations at unobserved locations in Charlotte, NC. The pollutant that was monitored was PM2.5,-collected with air pollution sensors mounted to bicycles. First, observed air pollution values were adjusted with a neural network model derived from a sensor collocated with an EPA reference monitor. The lower cost sensors used in the study demonstrated bias that was corrected. A number of potential predictor variables were generated, that included: existing land use, population density, elevation, transportation network, vehicle count, and PM2.5 mobile monitor sites. A linear regression model was fit for each predictor to examine the strength of the relationship. A multi-variate linear regression model (LM) was developed using a manual step-wise approach, which began with the strongest predictor variable. The performance of the multi-variate linear regression model was evaluated with cross-validation data excluded in model developed. The LM performance was poor with a 0.24 R-squared. An artificial neural network was developed in an attempt to improve model performance and obtain higher predictive performance during cross-validation. The neural network based LUR model achieved an R-squared of 0.71, significant improvement from the LM model. The application of neural networks in a land use regression structure has proven useful as it acknowledges complex non-linear relationships that may be present in datasets. The analysis of the neural network model illustrated that it generally performs much better than linear regression models.

**4. Quantifying Aquatic Carbon and Nitrogen Dynamics and Greenhouse Gas Mitigation Potential in Riparian Agroforestry Zones**

H.K Hundal, N. De Carlo, M. Oelbermann (all University of Waterloo), and N. Thevathasan (University of Guelph)

In today's era of agriculture intensification, with respect to freshwater management, determining how to best preserve and improve the quality of our freshwater systems is an important question for the scientific community. Particularly in Canada, agricultural intensification has led to a loss of riparian areas, which has resulted in degradation of freshwater aquatic ecosystems. Riparian areas can be defined as a vegetation strips bordering a water body. An increasing amount of fertilizer and nutrients have been introduced from the upland vegetation as a consequence of the loss of riparian areas. Nutrient pollution causes eutrophication of water bodies, thereby lowering the water quality and the health of the aquatic ecosystems. And rehabilitation/restoration of the riparian areas has been shown to minimize these effects. Additionally, riparian zones have the potential to mitigate climate change through carbon (C) sequestration in vegetation biomass and soil. These two services of riparian zones guide my research. While, there is a wealth of information regarding the adverse effects of the nutrient runoff on water quality, information on greenhouse gas (GHG) emissions from the riparian zones is limited. Three different riparian areas, located along the same stream, will be monitored: a natural forest treatment; a rehabilitated forest treatment; and a grassland riparian treatment. The two main research questions that will guide this project are: (1) Which riparian treatment is the most effective at mitigating the GHG emission potential from the stream?; and (2) Which riparian treatment is the most effective at reducing the C and N inputs into the stream?

5. **Reporting Characteristics of Disease Maps: A Cross-Sectional Study of Maps Evaluating Zoonoses**

Inthuja Selvaratnam, Olaf Berke, Jan Sargeant, and Abhinand Thaivalappil (University of Guelph)

Objectives: The increasing availability of spatial data and mapping software makes the practice of disease mapping an easy task and even more popular. The present study seeks to characterize the overall reporting characteristics of disease maps and identify gaps in reporting. With a growing number of disease maps published daily, we will examine a cross-sectional sample of recently published disease maps in the zoonoses literature concerning the following questions: a) what are reporting characteristics of disease maps? b) how are they used? c) what are reported challenges?

Methods: Disease maps of zoonoses will be searched in Medline and appropriate databases. Two reviewers will conduct screening and data extraction of studies in duplicate. Any disagreements on study selection and data extraction will be cleared by discussion or by a third reviewer. Experts in the field (e.g. spatial epidemiologists, health geographers, public health decision makers) will also be consulted to inform data charting fields of interest. Study characteristics will be quantitatively and qualitatively summarized as informed by research questions and data charting.

Significance: The findings from this investigation are expected to identify gaps in the reporting of basic map information in the literature and support the development of an evidence-based reporting guideline for disease maps to facilitate best practices.

6. **Mapping mangrove forest cover changes along the coast of Guinea, West Africa, from 1986 to 2016 using multi-temporal Landsat imagery**

Ismael Kaba and John M. Kovacs (Nipissing University)

The mangrove forests of Guinea are quite extensive and serve as an integral part of both the biotic and abiotic components of this tropical coastal environment. Although an extremely important resource mangrove forests have succumbed to both natural and anthropogenic causes worldwide. Guinean mangroves are no exception and yet very little information regarding their extent and rates of change over the last few decades are available. The purpose of this investigation was to map these forests from the mouth of the Konkoure river eastward to the border of Sierra Leone using archived satellite imagery. Specifically, the mangrove forests for this region were classified for the years 1986 and 2016 and then a post-classification change detection was performed in order to show the net change in these wetlands over a 30-year span. The preliminary results indicate that the gains and losses of these forests are not random with the majority of decline occurring along the furthest edges of the coast and the majority of the gains observed in furthest inland margins of the forest. Moreover, there was major losses of mangrove recorded adjacent to the capital city of Conakry, mainly due to the conversion of these wetlands to rice paddies as the population more than doubled from about 6.2 million inhabitants in 1986 to 12.9 million in 2016.

7. **Tracking legacy pollution: assessing spatiotemporal patterns of arsenic and other metals in sub-arctic lakes using paleolimnology**

Izabela Jasiak (University of Waterloo), Mackenzie Schultz, James Telford (both Wilfrid Laurier University), Roland I. Hall (University of Waterloo), Brent B. Wolfe, Leah Mindorff, and James McGeer (all Wilfrid Laurier University)

Concerns persist about elevated concentrations of arsenic and other metals in the Northwest Territories due to legacy pollution from Giant Mine. While roasting operations ceased in the late 1990s, the possibility remains that lakes, wetlands, and soils have served as repositories, trapping much of the arsenic released in the 1950s via atmospheric deposition. Paleolimnological studies from far-field locations have shown evidence of arsenic enrichment that coincides with peak mine emissions, but systematic studies are needed to determine the spatial extent of emissions from Giant Mine. As part of the Sub-Arctic Metal Mobility Study, temporal patterns of contaminant deposition and hydrological conditions will be reconstructed from sediment cores collected from eight lakes along an 80-km transect northwest of Yellowknife. Study lakes are located at 10-km increments following the prevailing wind direction. Lake sediment cores will be dated using radiometric methods (210Pb, 137Cs) and analyzed for metal concentrations and a suite of paleohydrological parameters. Objectives include to 1) define pre-industrial baselines of metal concentrations, 2) identify periods and extent of pollution from Giant Mine and other sources, and 3) discern if climate change affects metal transport to aquatic ecosystems.

**8. Determining effects of climate change on arsenic mobility in peatlands: an experimental approach**

Jeremy Leathers, Jason Venkiteswaran, Michael English (all Wilfrid Laurier University), Sherry Schiff (University of Waterloo), Jennifer Hickman, and Mackenzie Schultz (both Wilfrid Laurier University)

Giant Mine, located in Yellowknife NWT, released a large amount of arsenic and other metals during the initial phase of its operation. These contaminants were then deposited on the landscape. Recent paleolimnological evidence has suggested that the pollution dispersed more than 100 km from the source. The landscape surrounding Yellowknife, like many subarctic systems, is dominated by peatlands with large quantities of organic matter that has built up over millennia. Peat and other forms of organic carbon can play important roles in the sequestration and mobility of arsenic, yet little is known about what controls these processes. Understanding these controls is important to anticipate the consequences of climate change on the release of pollutants to downstream ecosystems. Based on current paleolimnological research along an 80-km transect northwest of Yellowknife (see poster by Jasiak et al.), peat cores will be collected from locations of known arsenic pollution. The objectives of this project are to: (1) measure the concentration of metals in peat core samples and characterize the role of peat as a repository of metals, and (2) perform experimental manipulations that mimic wet-dry cycles and fire events to determine if these processes influence metal mobility within peat profiles. This research will provide insight into the potential hazard that remobilized metals pose to ecosystems.

**9. The Influence of Stratospheric Ozone Loss on Arctic Amplification**

John Virgin (University of Waterloo) and Karen Smith (University of Toronto Scarborough)

Arctic amplification, or the enhanced warming at northern polar latitudes compared to the global average, is typically associated with multiple climate feedback mechanisms- Planck, lapse rate, and

the sea-ice albedo feedback. Alongside historically documented Arctic amplification, polar stratospheric ozone depletion has been a cause for concern over the latter half of the 20th century as well. Here, we use output from the Whole Atmosphere Community Climate Model (WACCM4), coupled to a deep ocean model, to investigate the relationship between ozone depletion and Arctic amplification by way of its associated feedbacks. Utilizing three ensembles- one meant to simulate stratospheric ozone recovery over the 21st century, one that holds ozone levels constant, and one meant to simulate unprecedented ozone loss- elucidated trends yielded large surface and air temperature increases under a climate with unprecedented ozone loss. Furthermore, perturbations on top of atmosphere net radiative flux due to changes in lapse rate and water vapour concentrations contributed a larger positive effect in an Arctic climate with low ozone levels. The extent of such effects were strong enough to promote significant warming, despite the net Arctic radiative forcing being negative. Results show that stratospheric ozone depletion and Arctic Amplification have potential linkages that warrant further research, specifically with regards to climate feedbacks. Moreover, regional feedback results highlight the uncertainties associated with a linear approach to quantifying local climate feedbacks.

**10. Determining the rate of surface processes using crater morphology in the Gusev Plains, Mars**

Juliana Conlon (University of Waterloo)

Craters on the Gusev Plains on Mars can reveal important information about the surface processes. The purpose of this research was to determine the rate of surface processes in Gusev Plains using crater morphology and compare them to the landing site for the InSight mission's rates. An image and digital elevation model of part of Gusev Crater were obtained from the High-Resolution Imaging Science Experiment (HiRISE) onboard the Mars Reconnaissance Orbiter. Craters of over 50 meters in diameter were mapped in ESRI's ArcMap. They were then analyzed to determine their maximum rim height and crater depth using 3D Analyst tools and Model Builder. A classification scheme was created using crater morphology to group them by their relative age. Crater statistics were then performed on each category to determine their age. The crater depth, rim height, and age were used to determine the rates of deposition and erosion from one category to the next. The rates of deposition and erosion from the least to most degraded craters are 0.0035 m/My and 0.0012 m/My respectively. The Gusev Plains and the InSight landing site have similar erosion rates, so the bedrock conditions in both locations can be inferred to be similar. Should the rover successfully land on the Martian surface, the lack of water and the distance between the bedrock and the surface will allow for a successful mission.

**11. Characterizing arsenic deposition and mobility in terrestrial and aquatic ecosystems of the 'Lake 10' catchment, NWT**

Mackenzie Schultz, Jeremy Leathers (both Wilfrid Laurier University), Izabela Jasiak (University of Waterloo), Jason J. Venkiteswaran, Michael C. English, Brent B. Wolfe (all Wilfried Laurier University), Roland I. Hall, Sherry L. Schiff (both University of Waterloo), Jennifer Hickman and Ryan Connon (both Wilfrid Laurier University)

Abandoned mine sites in Canada's Northwest Territories prompt uncertainty regarding the extent of legacy metal pollution. Additionally, warming of subarctic regions is leading to changes in hydrology and dissolved organic matter (DOM), which can affect the fate, mobility, and toxicity of legacy

mining pollutants. A thorough understanding of metal mobility in terrestrial and aquatic ecosystems is imperative to assess ecological health. Here we focus on possible far-field arsenic pollution from Giant Mine. Laboratory analyses on a sediment core from 'Lake 10', located 57 km northwest of Yellowknife, has identified evidence of arsenic enrichment in the latter part of the 20th century consistent with the emission history of Giant Mine. These results provide the foundation to assess potential mechanisms that may mobilize arsenic from the landscape to the aquatic ecosystem. To characterize linkages of metal mobility between terrestrial and aquatic ecosystems, we will: (1) identify stores of metals in multiple terrain units and the aquatic ecosystems, (2) investigate the hydrological and biogeochemical pathways for metal mobility, and (3) probe for how climate change may alter these stores and processes.

**12. UAVs and ground-based robotics - Agriculture in the 21st Century**

N. Pilger, E. Wrona, A. Berg (all University of Guelph), and M. Duncan (Niagara College)

This research examines the use of emergent technology in precision agriculture applications, notably the use of UAVs (drones), in-field micro-meteorological / weather monitoring stations, and remotely operated surface rovers (where applicable). Working together in near-real time, these three technologies have the potential to provide invaluable information as to the current conditions in any field at any particular time. This project will explain how such technology, opens the doors to new opportunities in precision monitoring of viticulture crops (transferrable to many agricultural crops), both in monitoring growth and yield via photosynthetic rate, and in the detailed examination of topographic profiles which influence air transfer, temperature, and humidity below the canopy and aid in the identification of optimal, within field placement of crop types.

The integrated system we are looking at utilizes in-field, Wi-Fi enabled weather stations that track wind-speed, temperature and humidity at several elevations, and transmit this information in real-time wirelessly to an in-house computer, to identify areas where micro- and localized climate conditions may be affecting growth conditions, which may then be examined via aerial remote sensing.

**13. Semantic Segmentation of Roadside Survey Imagery for Post-harvest Tillage Assessment**

N. Pilger, L. Mann, A. Berg, and G. Taylor (University of Guelph)

In excess of 12,000 oblique geo-referenced images of agricultural fields were captured over three counties in southern Ontario on two dates in May and one in November of 2016. Data collection for this project was performed using a single, continuously moving, multi-camera mobile imaging survey vehicle designed for the sole purpose of reducing both environmental and financial costs related to the standardized sampling practices. These oblique images were evaluated against a sample of 155 static nadir images captured in-situ from OMAFRA research field plots in effort to expand upon both the sampling size, and classification accuracy in the quantification of post-harvest tillage practices employed in the region.

To expedite the manual task of sorting and classifying each image, a machine learning semantic segmentation protocol was developed which has not only proven to be reliable in the classification of each field with a very high level of agreement to those gathered in-situ, but was shown to be transferrable to different locations under different atmospheric conditions (clear, scattered cloud,

and overcast). Current field sampling methods, while acceptable for aiding in validation of orbital remote sensing data (e.g. Landsat) classification are contingent on clear-sky conditions, whereas the mobile roadside method is not. Such mobile ground-based survey vehicles, as described in this research may also be deployed when required, as opposed to field survey scheduling being reliant on windows of satellite overpass.

14. **British Lateglacial Environmental and Climatic Change: Reconstructing Gembling, East Yorkshire, using Fossil Insects**

    Scott Cocker (Brock University, University of Edinburgh), Aythya Young, and Eva Pangiotakopulu (both University of Edinburgh)

    This poster presents preliminary results of a climatic and environmental reconstruction from a kettle hole deposit spanning the late glacial interval from Gembling, East Yorkshire, through dominant application of fossil Coleoptera. Within Quaternary environmental and climatic reconstructions, fossil insects have seen increasing application due to their evolutionary and morphological stasis allowing direct comparison to modern species. Coleoptera, which remain the dominant proxy of this study, have become a particular focus attributed to their high mobility, species richness and the ubiquity surrounding their distribution. Here we have produced several MCR reconstructions from the upper and lowermost units of the section yielding variations in local temperatures and highlighting notable differences in the identified assemblages. Stenothermic taxa from the lowest stratigraphic units are consistent with the British Lateglacial Interstadial with a July temperature averaging at 180C. Results from the upper section yield an average July temperature of 14.50C which confirms compatibility with the British Younger Dryas.

    Both units of the sequence also present key environmental data that reconstruct, in both cases, distinct ecotones based on the niche requirements of many coleopteran taxa. Despite variation in Coleoptera between the Lateglacial Interstadial and the Younger Dryas assemblages, there is a ubiquitous signal for wetland habitats.

    We consider the wider implications of this study in the scope of further understanding the intense and characteristic nature of late glacial climate and hope to shed light further on the mechanisms for post glacial re-colonisation of the British Isles through temporal tracking of deposits such as Gembling.

## 3:45-4:00pm: Refreshment Break (SS 2nd floor)

## 4:00-5:30pm: Session 4

**A4: Urban Modelling** (SS 2015)
Chair: Conor Anderson

1. **The Effects of Sub-Facet Scale Geometries on Vertical Facet Temperatures**

   Rainer Hilland and James A. Voogt (Western University)

Urban surface temperatures are an important determinant of urban climates. They affect wind patterns, air pollution concentration and dispersal, building energy use, and human comfort. The urban surface structure is highly three-dimensional, and walls comprise a significant portion of the urban surface area. Understanding the temperature variation between and within wall facets is critical to models of the urban energy balance, building scale energy simulations, and accurate remote sensing of urban temperatures.

Two structurally dissimilar residential neighbourhoods in London, Ontario were examined. The first site contained a mixture of older houses with large porches that created significant self-shading. The second site was comprised of newer houses without porches, large overhangs, or significant self-shading features.

Measurements were made by traversing instruments mounted on a vehicle through the street canyons. A thermal imager capable of resolving sub-facet scale detail measured surface brightness temperatures of street-facing walls. A true-colour video camera recorded simultaneously, providing a second data channel to better identify shadows and surface materials. Traverses in each study site were performed eight times over a 24-hour period to capture diurnal variations in surface temperature and shading patterns. Images were manually classified in a GIS for a series of nominal variables.

The resulting dataset is a catalogue of urban wall surface temperatures with high spatio-temporal resolution that assesses the degree to which sub-facet scale geometries affect sub-facet scale temperature distributions and shows that these can both cool and warm facets. The data have implications for thermal remote sensing and micro-scale surface temperature modeling.

2. **Characterization of the urban heat island at Toronto: Revisiting the choice of rural sites using a measure of day-to-day variation**

   Conor I. Anderson, William A. Gough, and Tanzina Mohsin (all University of Toronto Scarborough)

   The quantification of the Urban Heat Island (UHI) relies on the establishment of urban–rural station pairs for comparison. We revisited the selection of three rural stations (Albion Field Centre, Millgrove, and King Smoke Tree) and two urban stations (Toronto and Toronto Pearson International Airport) that have previously been used to perform UHI analysis in Toronto, Ontario, Canada. We employed a derived measure of day-to-day temperature variability, ΔDTD—the difference between the variation in daytime maximum temperatures and the variation in nighttime minimum temperatures—to determine whether our stations exhibited the ΔDTD values that are characteristic of rural (negative or less positive ΔDTD) and urban (positive or less negative ΔDTD) sites. Our results indicate that both of our urban stations do, indeed, exhibit day-to-day variation that is characteristic of urban stations. Of our three rural sites, Albion Field Centre was found to be the most rural. King Smoke Tree, an agricultural station, showed the highest ΔDTD values of the three rural sites, indicating that ΔDTD is, therefore, a useful tool for the detection of anthropogenic disturbance and the evaluation of urban and rural members of urban–rural station pairs.

3. **Multi-objective Transit Network Design using Ant Colony Optimization (ACO), Sanandaj, Iran**

Armin Ahmadi (Western University)

The purpose of transportation is to overcome distance friction in space which is affected by physical and human constraints such as: geometric distance, time, topology of network, and administrative policies and decisions. The specific purpose of transportation is to satisfy mobility demand of people, goods, and information. Recent development of network-based methods in transport geography operationalizes different concepts and guides decisions made by planners with regard to the transportation system. The network-based multi-objective routing methods are able to construct efficient routes for different types of vehicles traveling from an origin to destination while consider objectives, costs, and policies related to user and operator of transportation systems. The methods aim at identifying a set of feasible solutions (or decision alternatives), evaluating each alternative and selecting the 'best' alternatives. There are four main research objectives of this research: (i) to formulate a GIS-based multi-objective model of the Transit Network Design (TND) problem, (ii) to develop a multi-objective meta-heuristic procedure for solving the transit network design (TND) problem, (iii) to apply the approach for designing transit network in the City of Sanandaj, Iran, and (iv) to examine and evaluate the solutions (alternative transit networks) generated by multi-objective Ant Colony Optimization. City of Sanandaj is the capital of the Kurdistan province in Iran. Sanandaj population was 432,330 in 2011 with traffic congestion problem that can be attributed to the process of migration from smaller population centers, insufficient transportation infrastructure development, the compact structure of road/street network , and the structure of trips by transportation mode (a very low share of bus system of trips and very high share of private car trips) . Transportation policies such as construction of fast and competitive public transit system can facilitate movement and reduce congestion in cities with radial pattern such as Sanandaj. Ant Colony Optimization (ACO) is a type of swarm intelligence with simple agents and lower level of complexity compared to Agent Based Models (ABMs). ACO consists of a collection of ants searching for food in nature. Ants try to find the shortest route to the food source by following the path created by pheromones on the ground from previous ants. ACO has been developed to solve single objective problems but recently multi-objective ant colony optimization (MOACO) methods have been proposed to solve problems with several conflicting objectives.

**4. Microclimate Variability of Select Toronto Neighbourhoods Under Hot Summertime Conditions**

Timothy Wiechers and James Voogt (Western University)

Micrometeorological variability within cities has important implications for urban air and water quality, building energy consumption, and human health and thermal comfort. However, the monitoring of microscale climate is not routinely conducted. In most instances, meteorological observations are made under reproducible standard conditions (at an airport); but these open field observations tend to be unrepresentative of the intra-urban meteorological conditions.

This project used an alternative approach of conducting mobile traverse measurements using vehicle-mounted sensors to characterize the microclimates of Toronto, ON under hot, summertime weather conditions. Sampling occurred along two routes and incorporated sampling 8 intra-urban neighbourhoods with contrasting surface properties. In addition, a rural reference and two areas identified by Toronto Public Health (TPH) as 'high-risk' in relation to human health were sampled. These observations were used to address the following:

1) What is the intra-urban meteorological variability observed by vehicle traverses under daytime and nighttime conditions?
2) Compared to the other neighbourhoods, do the TPH neighbourhoods exhibit microclimates associated with higher human thermal discomfort?
3) How does an urban-scale numerical model perform in predicting neighbourhood-scale microclimates?

The results presented demonstrate significant microscale intra-urban variability from 9 daytime and 3 nighttime traverses. Numerical model outputs show relatively good agreement with vehicle traverse observations, where ΔTair (mod-obs) < -1.1 ºC and ΔTdew (mod-obs) < -1.7 ºC in 8 of 11 evaluated vehicle traverses. The application of these results can provide insight to where in Toronto public health is at highest risk and where heat mitigation strategies are most needed.

**B4: Special Session – Agroecology 2** (SS 2117)
Chair: Sarah Archibald

1. **Bridging ecological trait-based science with farmer knowledge and practice for adaptive management to climate change**

   Kira A. Borden (University of Toronto Scarborough) and Adam K. Dickinson (University of Toronto)

   There have been widespread calls for greater support and adoption of sustainable cropping systems and management practices that can maintain high levels of biodiversity and limit the use of external inputs. At the same time, agricultural environments are threatened by climate change and, relatedly, the spread of pests and plant pathogens. While traditional and species-diverse agroecosystems can be more resilient to these threats compared to intensive agriculture, there can be biophysical limits to cultivation in regions where climatic changes are anticipated to be severe. Facilitating dialogue among farmers and researchers may be critical in improving agricultural adaptation strategies. It is within this context that we explore the conceptual and methodological frameworks that can bridge farmer and traditional knowledge of complex agroecosystems with the scientific community's data-rich predictive capacity of environmental effects on crop physiology. We review field studies and conceptual papers that investigate these linkages. We pay special attention to the use of plant functional traits, such as leaf size, which are already commonly used by farmers to diagnose the health of their crops and farms. While global databases of these traits do exist, their accessibility, usefulness and applicability to on-farm decision-making remains poorly understood. We highlight promising synergies in trait-based research and farm management, but also identify limitations to these forms of exchange, such as constraints of scientific units of analysis. Ultimately, our paper aims to contextualize farmer knowledge in diagnosing and mitigating impacts of changing environmental conditions on agroecosystems.

2. **Payments for Environmental Services for Established Coffee Agroforestry Systems (PES-SAF-COFFEE): Analyzing Costa Rica's Agroecological Policy and its Impacts on Smallholder Coffee Farmers**

   Astrid M. Galvez Ciani (University of Toronto)

The production of coffee has played a major role in the development – and underdevelopment – of Costa Rica. Despite conventional notions of development, smallholder coffee farmers are often impoverished and disempowered socioeconomically, politically and environmentally. Meanwhile large-scale and corporate coffee producers accrue the benefits and dominate and the market. In Costa Rica, democratic and environmentally-focused governance enabled a political space where a Payments for Environmental Services for Established Coffee Agroforestry Systems (PES-SAF-COFFEE) program was developed to address the needs of smallholder coffee farmers and achieve national environmental goals. Using policy-documents, semi-structured interviews with participant and non-participant coffee farmers, policy-makers, and agricultural advisors, in conjunction with a focus group discussion with policy-makers, my research explores how the PES-SAF-COFFEE has impacted the socio-ecological wellbeing of smallholder coffee farmers in Costa Rica. I focus on the program's impacts on agricultural practices on smallholder coffee farms, its socioeconomic, political, and environmental outcomes and their sustainability, the distribution of the program's impacts, along with viable pathways to achieve the program's goals. While policymakers have a demonstrated interest in the wellbeing of farmers and most producers received the program positively, the overall impacts are constrained by international power relations and hegemonic development paradigms, as well as national administrational limitations. The purpose of this research is to understand the ability of Costa Rica's PES-SAF-COFFEE, as an agroecological and inter-disciplinary policy, to address the environmental and political-economic factors that have impoverished smallholder farmers within the global coffee regime, and to offer potential solutions.

**3. Farming on the Urban Fringe: Challenges and Opportunities**

Eleonora Gagliardi and Christopher Wellen (Ryerson University)

Agriculture is important area of focus especially in the urban fringe. This is because many places rely on the agricultural sector to fuel their economy. However, with urbanization comes the introduction of expansion into areas that were once known as rural or suburban. With this expansion into urban fringe areas comes implementations of new policies. Which will have an impact on practices and land management in place. Furthermore, this theme of change will be examined as agriculture in the urban fringe is changing at an unprecedented rate while the incentive for individuals to focus on soil health and stewardship is declining. This report employs the social-ecological framework to examine the cross-sectional relationship between the different aspects of the area. This is exemplified through a variety of factors that influences the practices of the individuals farming on the urban fringe. The factors being looked at are policy/tenure systems, land management and soil health. In all, the aim of this study is to examine the complex interrelated systems that are in place in the urban fringe that govern how people work the land. This research is significant because little work has been done regarding social-ecological systems around the great lakes basin of where this study is situated. The studies purpose is to create plausible, evidence-based research, which utilizes both the social and the scientific aspects to get a better understanding of the unique conditions of farming on the urban fringe. Ultimately, helping to inform future policies and incentives.

**4. Seeds of Reconciliation: Seed Sovereignty as a Form of Reparation for Victims of War in Colombia**

Juan-Manuel Velez-Villegas (University of Toronto)

My research looks at how Colombian farmers and their allies have politicized their relationship to seeds. These seed stewards consider recent state policies restricting the production and circulation of seeds as a form of dispossession. They have politicized their relationship to seeds, disputing the legitimacy of those policies by creating seed banks in their communities and forming a national network of seed savers. Their preservation of traditional agricultural seeds is a mean to protect their livelihoods, their cultural identities and their territories. In my work, I analyze the implications of state policies on agricultural seeds and farmers, exposing the tensions between the position of farmers and the government, and locating possible spaces for articulation and compromise. I propose that having a political framework that works to protect the seed sovereignty of farmers is a form of reparation for farming communities that can create possible spaces of reconciliation. The worldview that emerges through the defense of traditional seed varieties transforms the relationship of humans to the environment, fostering restorative process of territorialization. This thesis explores the significance of the work done by seed stewards in the creation of spaces for collective healing, in relation with a long history of dispossession and civil war.

5. **Alliances for Agroecology: From Climate Change to Food System Change**

   Bryan Dale (University of Toronto)

   Agroecological food production models have the potential to contribute to both the fight against climate change and a shift away from the dominant (industrial, capitalist) food system in Canada. Based on interviews with farmers, and participant observation on farms and at agricultural conferences, I discuss the evidence that ecological farmers are helping to reduce greenhouse gas emissions and sequester carbon through their production practices. I also describe the practical challenges that Canadian farmers face in scaling up (or scaling 'out') these agricultural systems that are demonstrably knowledge- and labour-intensive, and currently limited to niche markets. I argue that the strength of agroecology, conceptually, comes from its emphasis on the convergence of agroecological science, practice, and a social movement oriented toward food sovereignty. In this regard, I point to the potential for both physical and social scientists to contribute to alliance-building with farmers and others, as a means to over come some of the key challenges associated with expanding agroecological production in Canada. Specifically, I contend that there is a need for collective efforts to advance agroecology in Canada in terms of (1) knowledge sharing related to production practices, (2) the politics of developing more community-based economies, and (3) a just transition in agricultural labour.

**C4: Geographies of Healthcare** (SS 2111)
Chair: TBA

1. **Traditional, Complementary and Alternative Medicine (TCAM) Medical Return and Unmet Needs Among Persons of Sub-Saharan Africa Origin Living in the GTA: A Quantitative Analysis**

   Prince M. Amegbor and Mark W. Rosenberg (Queen's University)

   It is well-known that about 60-80% of people living in sub-Saharan Africa (SSA) use traditional medicine (TM) or resources for their primary and chronic healthcare needs. Compared to oriental medicine – that is traditional healing practices from Asia, traditional African medicine has not gained popularity in (both) use and practice in western countries. Yet, little is known about the unmet

traditional medical care needs of persons of SSA origins living in the west or their 'medical returns' to their countries of origin for the purpose of addressing this need. Using data from a sample of 273 respondents, we examine the effect of chronic health, perceived adequacy of allopathic care and sociodemographic factors on unmet TM needs and medical return. The results from the multivariate logistic regression analysis show that persons of SSA origin with a chronic health condition(s) were more likely to express unmet TM need (OR=4.487, $p<0.001$) and engage in medical return (OR=2.121, $p<0.05$). Persons who had lower views on the adequacy of the formal healthcare system were also more likely to report unmet TM need and engage in medical return. In terms of sociodemographic factors, educational was significantly associated with unmet TM need; while age, marital status, education and household income were significantly associated with medical return. The findings from the data suggest unmet TM needs and the phenomenon of medical return among persons of SSA origin living in the GTA are largely driven by chronic health and perceived inability of allopathic care to address healthcare needs.

2. **Health practitioners perceptions and capacity for action: An assessment of public health risks associated with climate change in Ghana**

Lucia Kafui Hussey (Western University)

Climate change is postulated to have several immediate and long-term impacts on the fundamental determinants of human health. Consequently, it has been suggested that health systems and infrastructure will be overwhelmed by the large-scale and myriad public health risks from climate change. Developing countries such as Ghana are projected to disproportionately carry the greatest health burden from climate change. Accordingly, health system adaptation and building of resilience to manage the adverse health outcomes is vital. Yet, there is limited knowledge about the preparedness and capacities of health institutions and professionals in developing countries to respond to climate change health risks. Using a qualitative research design, capacities and preparedness of public health practitioners in Ghana to manage climate change-health risks and emergencies were examined. In-depth interviews were carried out with health professionals in Savelugu-Nanton and Ada East Districts in Ghana. The study found that, although health professionals perceived climate change as a public health risk, they also indicated not having adequate information on climate change and its associated health risks. It was also revealed that, capacity and preparedness to respond to climate change related health emergencies were weak in the study districts. Based on these findings, it is recommended that there is an urgent need for the development and implementation of a comprehensive policy on climate change and health to build capacities of health institutions and professionals. This policy should consider health sector training and workshops on climate change and health.

3. **Understanding the connection between financial support and unmet need among older Ghanaians: evidence from a national survey**

Sanewal Singh and Vincent Kuuire (University of Toronto Mississauga)

Weak or absent social protection policies and safety nets in low- and middle-income countries (LMICs) such as Ghana leave seniors with limited support to enhance quality of life — including challenges in accessing to health care services at the time of need. In addition to general infrastructural development, several studies on ageing in LMICs have suggested the provision of financial support to older people as a potential avenue to improve access to health care services. In

this study, we test the veracity of this policy prescription by examining whether financial transfers received from family members and government are associated with unmet health care needs. Using a sub-sample of persons aged 60+ We fitted negative loglog regression models on data from the World Health Organization's Study on Global Ageing and Health in Ghana. We found that while family support was associated with lower likely of unmet need, respondents who received support from the government were more likely to have unmet need. We argue that government's ongoing Livelihood Empowerment Against Poverty (LEAP) program which focuses on handing out cash to citizens in its current form may not be a solution to improving the poverty situation of the most vulnerable sections of the population including seniors. Rather, more holistic strategies focusing on actual livelihood improvement and broader economic development need to be incorporated in the LEAP program.

**D4: Migration 2** (SS 2110)
Chair: Hiba Sha'ath

1. **Monitoring People 'on the Move': migration profiles, humanitarianism, and representations of the migrant**

   Hiba Sha'ath (York University)

   In the governance of the so-called Euro-Mediterranean migration crisis, there is an increasing reliance on live-updated statistics and aggregated data to inform humanitarian assistance for 'mixed migration flows'. Data collection tools such as IOM's Displacement Tracking Matrix and the Danish Refugee Council's 4Mi bill themselves as flexible, adaptable tools that help target humanitarian assistance to people and places most in need. These tools, implemented across many countries in Africa and Europe, generate information about mobile subjects in the form of statistics, interactive maps, and abstracted migrant profiles. These same tools are also referred to by EU policy-makers, and aid donors, to inform their policies on the care (in the form of aid funding) and control (containment and deterrence policies) of migrants.

   Relying on a content analysis of websites and publications of the Displacement Tracking Matrix and 4Mi and personal observation of the process of producing such reports, my paper investigates the entanglements of humanitarianism, security, and representation that are implicated in this form of knowledge production. I argue that externalization of this data collection and monitoring from governments to supra-national humanitarian organizations contributes to the deterritorialization of precautionary risk governance. Further, this reliance on a techno-solutionism that is ostensibly depoliticized by virtue of being humanitarian engages in a politics of life that counts, aggregates, and calculates certain people deemed to be worthy of need, while omitting others that are not seen as vulnerable, or risky enough for inclusion, heavily influencing collective understandings of the migrant as victim and threat.

2. **Framing Trinidad and Tobago's (Non-) Response to the Venezuelan Migration Crisis**

   Shiva Mohan (Wilfrid Laurier University)

   The "Venezuelan crisis" has prompted an unprecedented rate of emigration from the traditionally "receiving" territory. UNHCR (2017) figures estimate that there are over 40,000 Venezuelans residing, both legally and illegally, in the neighbouring twin-island nation of Trinidad and Tobago.

The response by the Trinidad and Tobago government to this 'influx' of persons has been indifferent, leaving asylum seekers and refugees especially vulnerable. The island's immigration policy is fragmented and ad hoc at best, and there has been slow progress to make any amendments. Using in-depth interviews, policy mapping and media analyses, this paper examines Trinidad and Tobago's re-action to this Venezuelan in-migration question. It argues that notwithstanding the limited capacity of Small Island Developing States (SIDS), the lethargic response by the Trinidad and Tobago government to the "newness" of the migration circumstance is a carefully considered and strategic action driven by a series of complex interactions of mainland-island im/mobilities, domestic politics and the privileging of regional geo -political and -economic relations.

3. **The Lived Experiences of Chinese Adoptees in Canada**

Shelley Rottenberg (McMaster University)

This paper explores the lived experiences of Chinese adoptees in Canada. More specifically, the research focuses on two interconnected core issues. The first theme is the influence of adoption on the participants' sense of place and belongingness over time. Spaces of interest include the home, school, neighbourhood, and the broader scale of Canada as a country. The second theme is the adoptees' self-perceived identity and how they manage their Chinese ethnicity with their Canadian culture. The purpose of investigating this issue is to see how adoptees' personal experiences of inclusivity and exclusivity from both cultural contexts shape their sense of self, and the way in which they express their identity to others. Qualitative data pertaining to these two themes was collected through conducting nine in-depth interviews with individuals who were adopted from China by Canadians. The distinctiveness of each respondent's emotions and life encounters revealed the diversity and complexity of the feelings, thoughts, and experiences of young Chinese Canadian adoptees. At the same time, the commonalities among the nine participants' stories emphasize Chinese Canadian adoptees as their own unique minority group, unified by their ties to both cultures and their mixed identities.

**E4: Placemaking** (SS 2125)
Chair: Loren March

1. **Images of DIY: Representations of Place and Placelessness in Toronto's Creative City**

Loren March (University of Toronto)

This paper explores the use of participant photography as part of a methodology for exploring questions of spatial production and uncovering contradictions that exist at the level of everyday life. Starting from Henri Lefebvre's understanding of space as socially produced, and everyday life as an ideal point of entry into exploring it, the paper argues that the use of vernacular film photography to represent spaces in the city can undermine the dominant imagery that underpins assumptions, stereotypes, ideals and desires, but can also reveal place as a tangled realm of both real and imagined that remains tied up with dominant institutional projects. The article discusses the use of participant photography in the exploration of do-it-yourself (DIY) creative workspaces in downtown Toronto, Ontario. DIY workspaces are created by the practitioners themselves, often in their own homes, and are necessitated in Toronto by high rents and a lack of suitable, available space. The photographs produced by participants serve not only to complicate narratives about and understandings of creative space in the so-called Creative City, but to complicate understandings of DIY as a political

practice, and to reveal image and representation as central aspects of cultural production, placemaking, identity and everyday life in the neoliberal capitalist city.

2. **Locating Paris-Belleville: World City Systems and Spatial Agency in the Translocal Neighborhood**

   Darian Razdar (University of Toronto)

   Since John Friedmann published "The World Cities Hypothesis" in 1986, a groundswell of literature on the topic of world cities has arisen. This literature includes authors in a variety of disciplines, and their theories permeate urban policy and planning. However, mainstream discourses in this subfield routinely ignore the real-world implications of their work—namely the reproduction of hegemony of the Global over the Local, and the City over the Neighborhood. This thesis seeks to unsettle such dichotomies through studying world city systems from the perspective of a Parisian neighborhood, Belleville. This study puts existing geographical theories from John Friedmann, Jennifer Robinson, Henri Lefebvre, and Doreen Massey in conversation with Situationist practice and innovative fieldwork including interviews, ethnography, and digital recording. Through a dual inductive and deductive process, I find that hegemonic dichotomies of Local/Global and City/Neighborhood become precarious in and world city systems. The study's key finding is that social actors and residents in Belleville locate the space of their everyday lives through the dialectical process of imagining-performing-(re)constructing. In this way, Bellevillois.es cultivate the spatial agency to both reclaim space and shape world cities.

3. **Heading Somewhere but Never Getting there: The Farmworker and his Pursuit of the 'Elusive' House**

   Ed Thomas (York University)

   One of the gendered expectations that mainstream Jamaican society attaches older men is for them to own their homes. But the premium that is attached to the house as a material investment is not so much for the personal equity it generates, though it becomes the prime vehicle to do so. Rather, it signifies that the man has somewhere, in Jamaican parlance, 'to put his family.' It is also about respectability for the man and shows his hard work; so, it feeds into the patriarchal notion of the male as the provider. Thus, when the district sees a man's house, it sees the man and his worth. Therefore, a well-appointed home forms a quantifiable extension of masculine identity – a patriarchal status symbol that not only affirms manhood but one that solicits ongoing local endorsement of masculinity. The expectation is even more acute for farmworkers who, in many instances, have worked on the program for decades, so by the time they quit the program, they are expected, at the minimum, to have something – a house – to show for it. So, this discussion is framed with a sensitivity to that prime patriarchal goal that farmworkers envisioned entering the program. But as I will argue, only a few men manage to achieve this goal since home construction, for most men, extends well into their retirement while for others it is a pursuit that has been abandoned altogether, a consequence I map as a result of a 'process of forgetting.'

**F4: Special Session – Vélomobilities: Current Issues, Theoretical and Methodological Approaches**
(SS 2127)
Chair: Léa Ravensbergen

1. **Geospatial Analysis of how Opportunities Influence User Destination Choice in the Hamilton Bike Share System**

Jordan Aharoni (University of Toronto)

Cycling trends and behaviours are important factors informing urban policies to improve sustainable and active transportation infrastructure. However, destination choice behaviours have not yet been thoroughly examined in the available cycling literature. This project was a preliminary study on how destination choice in the SoBi Hamilton bike share is influenced by nearby opportunities, a term used to convey spatial instances of establishments such as businesses, shopping centres, and schools. Trip data from SoBi and a dataset of opportunities from DMTI were used in addition to other geographic data such as the docking hubs of the SoBi network and a network of Hamilton roads and bikeways. A Python script was developed utilizing ArcGIS geoprocessing to create six different service areas around the hubs and tabulate the number of opportunities within each hub's service area. Linear regression models correlated the number of trips ended at each hub for each year with the number of opportunities within each of the six service areas. The total number of trips have been increasing each year, and 11% of all trips end out of hub. Summer months see the most usage, and winter months see the least usage. The regression models showed no significant correlation between the number of opportunities and the number of trips ended at a hub. The regression was limited by the geoprocessing methods used, the opportunities dataset, and the network dataset. Future models would be improved by including other spatial variables such as land use and population dynamics, and by using software specifically designed for transportation modelling.

2. **Urban cycling policy in Moscow as the case of policy transfer/policy mobility**

Asya Bidordinova (University of Toronto)

Urban cycling policies have been implemented in cities located in a variety of geographic contexts. Presence of cyclists and cycling infrastructure symbolizes a turn to sustainable and equitable urban mobility, which increases quality of life and global competitiveness of a city. How do cities that have little to no cycling planning experience develop cycling policies?

This study applies policy transfer and policy mobility analytical frameworks to explore how policy ideas circulate. Empirical analysis is focussed on the development of a cycling policy in Moscow, Russia. The analysis is focussed on the process and outcomes of policy transfer/mobility. Research questions: 1. What can we learn about the Moscow cycling policy applying policy transfer/mobility frameworks? 2. What does the Moscow case contribute to the policy mobility theory?

The case study demonstrates that cities no longer have to 'reinvent the bicycle'; they can get inspired and borrow policy ideas from other cities. Local and international experts, cycling activists and local governments have facilitated networking and exchange of policy ideas. Best practices from other countries can be used to legitimize policy decisions. Policy ideas do not originate in one 'model city'. Policies are assembled using ideas and examples from a variety of places. To 'take-off' and 'move' policy ideas take a variety of forms, including presentations, images, reports, conversations, site visit observations, experiences of cycling in other cities. Upon arrival to get implemented policy ideas undergo adaptation to the local context. Local context factors - spatial, institutional, economic, socio-cultural - influence how policy ideas get assembled in familiar and new ways.

### 3. Building bike culture beyond the urban core

Trudy Ledsham (University of Toronto)

In Canada, transport emissions remain our second largest GHG emissions sector and the only one to continue to increase in the decade from 2005 through 2015. Changing transport behaviour to low-carbon options from carbon-emitting vehicles is challenging but has met with success in some areas. Urban cores throughout North America have experienced strong growth in utility cycling. Some smaller towns, particularly those focused on outdoor recreation tourism have also seen increases. But the in between world of automotive suburbs, where the majority of the population lives, has not experienced the same growth. In Toronto, the inner ring suburbs remain heavily dependent on automobiles, even while demographic changes have reduced the levels of vehicle ownership and driver's licensing. This paper focuses on an effort to build cycling culture beyond the urban core in Scarborough, an inner suburb of Toronto. Both theoretical considerations and practical strategies are addressed in this paper focused on a community-based research and cycling intervention project.

### 4. Towards Feminist Geographies of Transportation: A Critical Review of the Gender and Cycling Literature

Léa Ravensbergen, Ron Buliung, and Nicole Laliberté (University of Toronto Mississauga)

Transportation studies have been critiqued by geographers for being isolated from social theory. Using a systematic search strategy, this paper reviews and critically assesses how the literature about gender and cycling has engaged with feminist thought. Most studies use a cross-sectional research design and quantitative analysis to examine male-female differences in cycling behaviours, stated concerns, correlates, and barriers. The two hypotheses at the centre of most of this work are (1) that women cycle less than men due to greater safety concerns and (2) that women cycle less, or at least use bicycles differently than men, because of their more complex travel patterns that arise from greater household responsibilities. While the literature identifies differences in male-female cycling patterns, it rarely sheds light on the gendered processes underlying these differences. Greater engagement with theories used in feminist geography like performativity, intersectionality, and embodiment could be helpful in advancing a more nuanced understanding of the relationship between cycling and gender.

### 5. The Transit Experiences of Suburban Young Adults

Khairunnabila Prayitno (University of Waterloo)

In recent times, there has been a wide push for transit development from all levels of government. However, public transit connectivity is still lacking in suburban contexts, and there has been a gap in qualitative research within the transportation literature. The lack of viable transit is especially detrimental to those who are most dependent on the service, and among them are young adults. This study describes the transit experiences of young adults (aged 18 – 35) living in high-rise apartments near a subway station in two inner-suburban neighbourhoods of Toronto. More specifically, two interrelated questions are asked: Do residents experience transit barriers despite living near a rapid transit station? How can public transit be improved to better meet the needs of suburban residents? Findings suggest the presence of transit barriers, which prevent them from

accessing opportunities across the city. In addition to technical enhancements, policy recommendations are suggested in this paper. The ultimate goal is to inform planners and decision makers on strategies to improve public transit in the suburban context.

**G4:**

**Special Session - Thesis Proposals II** (SS 2018)
Chair: Jeremy Withers

1. **Conservation as Reconciliation: assessing the benefits of Indigenous-led conservation in Canada**

   Jessica Lukawiecki (University of Guelph)

   The conservation landscape in Canada is changing. In response to international biodiversity commitments, Canada adopted in 2015 a new policy framework for biodiversity conservation. One of the pathways taken to meet its targets is to work with Indigenous peoples towards shared conservation goals. This includes the development of Indigenous Protected and Conserved Areas (IPCAs), which describe a variety of land and water protection initiatives where Indigenous governments have a primary role in protecting ecosystems using their laws, governance and knowledge systems. Calls have been made by Indigenous peoples for collaborations with universities and research institutions to support the development of Indigenous-led conservation in Canada. As part of the Conservation as Reconciliation Partnership (CRP) at the University of Guelph, my work proposes to assess the benefits captured by Indigenous conservation practices compared to colonial systems of conservation governance. Benefits may be incurred across a range of dimensions (cultural, economic, ecological), across different scales and time periods. A range of qualitative and quantitative methodologies will be utilized combined with in-depth case studies of current and proposed IPCAs to provide an assessment that is holistic and of real-world significance. This work will be continually informed by recommendations and guidance from the Indigenous Circle of Experts, representing a diversity of Indigenous Elders and leaders who are collaborators to the CRP. The proposed research will be of importance to Indigenous leadership, ENGOs, government and the international community as we collectively shift towards more inclusive models of environmental governance that support Indigenous-led conservation and reconciliation.

2. **Exploring the tourism development trajectory in the Central Region of Ghana, through the lens of Evolutionary Economic Geography**

   Faiza Omar (University of Waterloo)

   We are increasingly seeing the proliferation of Evolutionary Economic Geography (EEG) in tourism research, in more developed countries of North America, Europe, and Australia. (e.g., Brouder, 2014; Brouder, 2013a, b; Brouder, Clave, Gill and Loannides, 2017; Brouder and Fullerton, 2015; Gill and Williams, 2011, 2017; Mitchell and Shannon, 2017; Mitchell and Shannon, 2018a, b). The EEG approach recognizes that historical events can produce current economic patterns (Boschma and Frenken, 2011). EEG uses path dependence theory to understand how primary resource regions make use of existing resources to transition overtime along new paths, such as tourism (Brouder et al., 2017). Few EEG studies have been done in less developed nations. My research uses the EEG perspective to explore the tourism development trajectory in resource-

dependent postcolonial Central Region of Ghana. Using the critical realist ontology of demi-regularity identification, abduction, and retroduction, and qualitative and quantitative research methods, I will collect data from existing literature, key informant interviews and semi-structured face-to-face interviews, from local government, tourism operators, and other business entrepreneurs. Data collected will uncover how the region's economy and the tourism industry have changed overtime, and what new economic sectors have emerged. Data collected will also reveal who is involved in the development trajectory, how they became involved, and how they are impacting particular pathways in the region. My research will be first to use the EEG perspective in Africa. This will provide a new perspective and contribute to the literature on EEG and tourism studies, and provide reference for further research.

3. **Dreams of the Future City: Planning, publics, and the problems of imagination**

Andrew Morgan (University of Toronto)

Many urban planners and engagement practitioners have found success in using narrative to frame complex planning issues in a light that connects to peoples everyday lives. Thinking with the lens of narrative more broadly, participatory planning procedures lead people towards imagining how their city or neighbourhood could be different, now and in the future. My research centers around these urban imaginaries, their contents, how they are crafted, by whom, and how they serve to spark or eclipse the political participation of affected publics in planning disputes. Indeed, imagined present and future urban environments occupy a central role in discourses on planning and 'urbanism', however, those imaginaries all too often align with state and market visions which project universal notions of benevolent growth and progress. In this way, urban imaginaries are implicated in the delegitimising and marginalising of alternative narratives, and alternative voices, that contest dominant, established framings, even in well-meaning participatory planning efforts. Here I follow interdisciplinary scholarship in policy deliberation, modern social imaginaries, and political philosophy in exploring the intersection of participatory procedure and urban imagination. I explore this subject both in terms of the potential for hegemony and oppressive relations between planning, planners, and subaltern publics, and in terms of the potential emancipation of subaltern publics through participatory production and solicitation of alternative narratives, visions, and imaginaries of present and future cities. My paper concludes with possible research questions to investigate in my doctoral dissertation on this topic.

4. **Can social media replace geographical space: Understanding parents of intellectually disabled adults use of online resources.**

Lorraine Hutton (Queen's University)

The lived experience of a parent caring for an intellectually disabled adult who has out-grown the comprehensive, K-12 service and education system is not well understood and is afforded little attention by researchers. Wait lists for respite and group-home placement are years long and aging parents have few options other than to persevere and doggedly avert crisis. It is well documented that the health of long-term carers is poorer than the regular population with higher incidents of poor mental health and early death. Social rejection imposes isolation on the caregiver and family (affiliate stigma) and self-imposed isolation resulting from the carer's wish to avoid negative interactions with strangers in public, verbal insults and the complexity of managing their recipient's needs and behaviors while away from home, leads to reduced social networks and loneliness. In

addition, the reluctance of parents to share details of the care duties due to embarrassment and protectiveness toward their adult "child", causes an internalization of the burden and at times, a questioning of self-worth and ability as a parent. As new administrations take up austerity measures, support services to vulnerable populations are likely to be the first to be reduced, and emphasis is instead placed on personal responsibility---couched in terms of resilience and adaptation. A neoliberal agenda necessitates alternative support strategies to help carers help themselves and each other. The proposed research asks whether social media and internet-based resources might provide meaningful social support by removing the barriers of distance and time.

5. **From the Right to Stay Put to the Right to the City: Resisting gentrification through community-led economic development**

   Jeremy Withers (University of Toronto)

   In cities around the world, the cost of living is rising, while government social spending and most residents' income stagnates or declines. A central tributary to these rising costs is the surge in the price of land, which is squeezing and displacing residents and local enterprises in many neighbourhoods. My dissertation traces policies and actors responsible for these intensifying pressures of unaffordability, and studies how neighbourhoods can offer a scale on which to resist them, through fostering non-profit, democratic approaches to land stewardship and community-led economic development.

   The central focus of my study is Parkdale, a gentrifying inner-city neighborhood in Toronto with a rich history of anti-poverty organizing, which is being drawn on today by hundreds of local advocates for a more affordable, inclusive approach to development. A centrepiece of their strategy is to expand the Parkdale Neighborhood Land Trust (PNLT) — providing affordable space to community initiatives which mitigate indecent shelter conditions, precarious employment, financial exploitation, and food insecurity. My research draws on a wellspring of recent geographic and planning scholarship, and interviews with Community Economic Development practitioners across Canada and the US, to assesses policy frameworks and social finance mechanisms that could be fought for and leveraged to help these initiatives scale up. Working closely with a team of researchers at PNLT, I will facilitate interviews and focus groups with local foundations, credit unions, and government representatives, to evaluate the feasibility and barriers to implementing our findings across Toronto, and develop city-wide, neighborhood controlled, incubators and investment platforms.

6. **'Brothers' desiring 'Hope': geohistory of semi-private welfare detention facilities in urban spaces of South Korea, 1950 – 1960s**

   Hyun-Chul Kim (University of Toronto)

   "My project investigates the urban development of semi-private welfare detention facilities in South Korea, which were constructed in the 1950s and continue to operate in contemporary urban spaces --- the Brothers Home in Busan and the Daegu City Hope Village in Daegu, in particular. I will conduct an in-depth geohistorical analysis of these facilities by exploring three main aspects: 1) their material construction and management processes, 2) their local to transnational networks and mobilities, highlighting the entanglements between U.S. occupation, authoritarian national government, Japanese welfare business groups, and transnational religious aid organizations, 3) the

privatization of medical welfare services and the birth of the Welfare Chaebol*. Through this historical analysis, I seek to examine how the 'hope' of reconstruction of 'Welfare Korea' desired by 'brothers', comprised mainly of local Welfare Chaebols and their trans/nationally tied institutions, has been deeply embedded within the modern and contemporary urban imaginary of South Korea.

*Chaebol is an affluent conglomerate that is usually operated and controlled by one family in South Korea. Samsung or Hyundai are among the most prominent Chaebols in South Korea. Welfare Chaebol is a composite word of welfare and Chaebol, specifically referring to the people who have accumulated their own economic and political profits by being funded and protected by the national government, international welfare NGOs, and religious institutions. This word has popularly been used by activists in the anti-welfare residential institution movement.

7. **Evolving landscapes of asylum in Canada: exploring the impact of asylum policy in refugee claimants' lives through the management of settlement services in Toronto**

Monica Romero (Wilfrid Laurier University)

The uncertainty and volatile conditions in the US have prompted the arrival of thousands of immigrants to Canada during the last year. The accelerated increasing of asylum claims have overwhelmed Canada's refugee system, causing delays in hearing times and tensions in settlement services. Government agents expect this spike to continue during 2018 due to the ongoing geopolitical instability in different regions of the world.This presentation explores the evolving landscapes of asylum in Canada, focusing on the relation between Canadian asylum policy, irregular flow of refugees and refugee claimants' everyday spaces. It will highlight recent changes in asylum policy in Canada and the current practices to manage the spike of asylum claimants crossing irregularly to this country. It will mainly explore how exclusionary asylum policies creates more vulnerabilities among refugee claimants as these favour practices consistent with reinforcing Canadian sovereignty instead of protecting people in need. In a more local level, by taking the city of Toronto as the case of study, this presentation examines the impact of unprecedented refugee claimants flows into the city in its capacity to offer adequate settlement services to all vulnerable people. I will argue that both larger structural asylum policies and the lack of adequate resources in settlement services affects in myriad ways refugee claimants' everyday experiences and personal developments.

8. **Farming the city in Montréal: Can community gardens close metabolic rifts?**

Christina Frendo (Queen's University)

Urban agriculture is a practice growing in popularity across North American cities, and is often hailed as a way to solve food security issues, among them the prevalence of food deserts in low-income areas. Montréal is a leading Canadian example in urban agriculture, holding some of the world's first rooftop gardens and hosting many community gardening projects. The purpose of this study is to determine 1) the accessibility of community gardens to neighbourhoods of different socioeconomic status and 2) to determine whether these community gardens are able to solve food security issues brought about by the capitalist shift to industrial agriculture. The theoretical framework of metabolic rift will be used to assess whether social and individual rifts are lessened by urban agriculture practices, and whether the benefits of urban agriculture are equitable across socioeconomic status. This will be done in two parts. First, spatial analysis will be used to determine

the position of community gardens in Montréal in relation to census data for income. This will provide information about access to community gardens in Montréal across income levels. Second, there will be a case study of a Montréal community garden project to gain qualitative context about the effectiveness of urban agriculture projects for communities and individual citizens of Montréal.

**9. Understanding the governance of best management practices as a tool for farm resilience**

Lisa Ashton (University of Guelph)

Integrating greenhouse gas (GHG) mitigation into on-farm economic decision-making is a potential opportunity to reduce the environmental and economic costs of climate change in conventional agriculture systems. My research will explore this topic by focusing on GHG mitigation in the form of on-farm best management practices (BMP). The initial objective is to understand the potential of BMPs as a tool to converge efforts in developing farm resilience, improving profit margins and promoting ecological sustainability. There is a need for further research on BMPs and their potential in mitigating GHG emissions and acting as carbon stores (Asgedom & Kebreab 2011). There is also a limited understanding of the potential economic benefits of applying many BMPs (Asgedom & Kebreab 2011; Meyer-Aurich et al. 2010). A key reason for this is that the economic and environmental benefits of BMPs are variable and dependent on various factors including the methods of integrating BMPs into existing farm practices (Abalos et al. 2016). To tackle these knowledge gaps, I plan to use a Delphi method that includes stakeholders at all levels within the sector and a layered economic and climate model to analyze the feasibility and anticipated outcomes of BMPs on GHG emissions. The purpose of this approach is to identify the potential for GHG mitigation through BMPs and the necessary governance to realize this potential, which requires understanding how farming practices might simultaneously achieve economic and climate targets. The latter focus of this project will be evaluating these forms of governance to support farm resilience.

**10. Factors Associated with Long-term Psychological Resilience in Post-Earthquake Nepal**

Shawna Hamilton (University of Waterloo)

An important recovery challenge after a natural disaster is identifying and addressing mental health problems. After the 2015 earthquake in Nepal, higher rates of morbidity and suicide were found. Several factors have been identified that contribute to the prevalence of these issues. Of these, influential factors for developing countries are the accessibility of mental health services, direct or indirect exposure to the earthquake, and the level of poverty.

Not only is Nepal economically and geographically disadvantaged, particularly due to the "fragility of mountain ecology", they also have very few systems in place for dealing with psychological health. The existing research on mental health services and their effectiveness in Nepal is extremely limited, and the various proposed strategies for strengthening them have yet to be been implemented.

The purpose of this study is to identify factors contributing to psychological resiliency in the long-term in post-earthquake Nepal through semi-structured interviews, and explore next steps for putting them into practice. To measure this I will analyze a) perceptions of recovery in regions affected differently by the earthquake, with b) different access to mental health resources (city vs. rural), and c) different income level. It is crucial for future resiliency to build adaptive capacity and

"build back better"; a concept based on the idea that disasters can allow us to strengthen current systems. With further research into the factors influencing psychological resiliency we can build a framework for altering the current mental health services and a plan for future natural disasters.

*and*

**Posters 2** (SS 2nd floor hallways)
*(If possible, authors should be available for conversation about their posters during this session)*

1. **Space/Time Compression in the Body: The Embodiment of Transience in Canada as represented in the Moving Home Project**

   Amelia Merhar (University of Waterloo)

   Youth who have exited the child welfare system are among the most vulnerable in Canada. Ample research in social sciences disciplines outside of Geography have illustrated the significant likelihood of poorer life outcomes for former youth in care across a variety of indicators. Combining geographies of mobilities, children's geographies, and emotional geographies, the Moving Home Project seeks to understand the embodied experiences of former youth in care as they relate the transience experienced in care in the past and lived on in the present. Using arts-based, participatory and Indigenous methods this comparative study collaborated with 15 co-researchers from Toronto and Whitehorse ages 18-30 with lived-experience in care. Representations of bodies were complex, partial, and most often created by female-identified co-researchers. An interesting finding was positive representation of and identification with nature and natural elements, while homes and depictions of them hardly present in comparison. Hope for the future and other youth in care emerged as strong theme, and this hope connects to resilience as practiced by co-researchers as a conscious form of resistance against the child welfare system. Methodological findings include the compelling nature of the data created by opening up artistic medium to be self-selected. Lastly, policy suggestions for housing and transition supports to be more understanding of the hypermobility of these young people are discussed.

2. **Mapping Energy Futures: A Standardized, Community-Based Framework for Local Renewable Energy Planning**

   Philip Teri (University of Guelph)

   A transition to renewable energy (RE) is underway, driven by a combination of market, technology, and regulatory changes. This transition is, by nature, a shift from 'below ground energy' (fossil fuels) to 'above ground energy' and will therefore re-shape the landscapes all around us; e.g., solar panels covering agricultural fields; wind turbines dotting the countryside; and biomass grown and harvested for energy markets. As we shift toward area-intensive RE resources like the sun and wind, local planners and other stewards of local land and resources will need to think carefully about how to maximize opportunities to generate RE, while minimizing negative impacts to local ecosystems and existing land-based economies. This poster will summarize ongoing research into the development and implementation of a standardized approach to mapping RE resources at the local level, accounting for changes in technology and (land-use) policy. Our approach has two parts. First, detailed multi-criteria analysis in a GIS combined with policy analysis and technology modeling to identify areas that are most likely to be proposed as sites for RE development. Second, participatory

mapping to solicit community and stakeholder sentiment about RE development strategies in these areas. Combined, our approach is able to provide information that local governments and local planners can use to understand, anticipate, communicate, and manage the land-use and landscape impacts of RE development within their jurisdiction.

3. **Sustainable and Equitable Development of Non-Timber Forest Products: Challenges and Opportunities for Ontario in a Changing Climate**

   Brock Vaughan, Brenda Murphy, and Bryce Gunson (Wilfrid Laurier University)

   In Ontario, little systematic research has been undertaken to evaluate the sociocultural, economic, and ecological values of non-timber forest products (NTFPs). Researchers are just beginning to recognize the role wild foods and other plant-based resources can play in supporting local, small-scale NTFP production. NTFPs harvested from public and private forests often provide seasonal income that supports local livelihoods. At present, a research gap exists; linkages between community resilience, ecological sustainability, and climate change adaptation and mitigation with respect to NTFP production has not been fully explored. During the months of July and August 2018, sixteen (16) semi-structured interviews were conducted with NTFP producers and knowledge holders in various localities across Ontario. A total of twenty (20) participants were included in this study. The purpose of this exploratory project was to document how NTFPs contribute to the adaptive capacity and resilience of local communities, businesses, households, and/or individuals and to evaluate the challenges and opportunities currently facing NTFP harvesters, particularly the impact of extreme weather and climate change. Despite challenges, we argue that there are more opportunities and markets today than ever before to support an economically viable, socially just, and environmentally sustainable NTFP industry.

4. **UAV based remote sensing of viticulture growth dynamics**

   Neal Pilger (University of Guelph)

   The proliferation of UAV's over the past 10 years or so has shown incredible potential in precision mapping based on the incredibly high spatial resolution, and low relative costs afforded by these aircraft. Of particular interest to this research are the benefits that can be attained in the utilization of UAV remote sensing for the identification of crop vigour for viticulture management based on varietal dynamics, and topographically induced microclimate variation. This ongoing project involves crop surveillance using a small fleet of dedicated multi-rotor aircraft, fitted with visual; multispectral; and thermal sensors, recording and mapping growth variation over ten distinct vineyards in the greater Niagara region.

5. **UAV/UAS Remote Sensing in Precision Viticulture Pre-Assessment**

   Neal Pilger (University of Guelph)

   Pre-assessment of crop vitality early in the growing season is paramount for application of remedial solutions prior to full leaf-flush. This research examines the utility of aerial RGB survey of viticulture blocks in the Greater Niagara region, for the sole purpose of identifying deficient growth areas early in the season. Patterns of deficient/dead plants, such as linear or areal clusters aids in

management decisions as to the potential cause of the damage (e.g. topographical, fungal, drainage issues, etc.).

The data collected via our remote-sensing platforms have been field proven to reveal vegetation growth variation for precision agriculture / viticulture, variations that are not readily accessible for ground-based human visualization, and to accurately identify and isolate areas of low and high productivity as they relate to soil moisture, micro-climate gradients, soil chemistry, pests and disease.

This poster outlines some of the more common viticulture deficiency patterning captured over the past 4 growing seasons over 20 different wineries in the Greater Niagara region from low-level UAV aerial footage. Application of even the most basic UAV/UAS technologies have been proven to be a cost-effective field survey tool for such early investigations as to the potential growth and yield of this highly valued crop. "

6. **"Crisis," Public Space, and City Building: The Redevelopment of Moss Park**

Nikki Pagaling and Keisha St. Louis-McBurnie (University of Toronto)

In their entrepreneurial pursuit of securing private actors for funding and partnerships, local states work to secure an urban politics that normalizes the privatization of urban planning. The revitalization and redevelopment of one of Toronto's most economically diverse neighbourhoods, through the consultation process that is More Moss Park, involves a public-private partnership between the City of Toronto, The 519 – an LGBT-focused community centre, and a private philanthropist. This partnership is illustrative of the neoliberalization of social justice such that a community in "crisis" is understood by these actors as an opportunity for the suspension of standard planning practices, in favour of "innovative" design and consultation processes that attempt deliver social justice and fix neighbourhood ills. The application of the crisis place-frames used to characterize the neighbourhood of Moss Park fail to investigate the systemic processes and conditions that neoliberalism, itself, has caused. In this poster, we will be analyzing the implications of this crisis-framing as it is used to justify neighbourhood improvement schemes that have the potential to further disadvantage the historically poor and racialized users of Moss Park. Through media analysis, qualitative interviews, and participatory observation with community stakeholders, we will be analyzing how the neoliberalization of social justice shapes local decision-making, community planning, and whose recommendations are being utilized and prioritized over the course of the neighbourhood's redevelopment. This project is important to study as it could set a dangerous precedent for future infrastructure initiatives that exacerbate already existing conditions of uneven investment in communities across the city.

7. **Street Tree Suitability in Toronto's Urban Forest for Future Climate Change Scenarios and an Assessment of an Assisted Migration of Ontario's Species at Risk Trees**

Peter Q. Ng, William A. Gough, Jay R. Malcolm, Tenley Conway (all University of Toronto), and Adam Fenech (University of Prince Edward Island)

Toronto is located at the boundary between Ontario's Carolinian forest zone and the Great Lakes - St. Lawrence forest and projected climate change may pose important consequences for the heterogeneous mix of trees that currently inhabit its urban forest. To provide insight into the impact

of climate change on Toronto's urban forest, trees occurring on roadside allowances were mapped to show potential changes in tree suitability.

This study also explores the potential rehabilitation of Ontario's Species at Risk in Toronto through assisted migration. Because all of Ontario's tree Species at Risk are Carolinian species that thrive in the projected warmer and wetter climates of Southwestern Ontario, the rehabilitation of these Carolinian species may be increasingly possible as a result of Toronto's evolving climate. An assessment of threats to conservation was used as criteria in addition to climate suitability to evaluate an assisted migration of translocated trees in the context of Toronto's strategic goals of afforestation. In the case of Toronto's urban trees, it appears that projected climates will become increasingly accommodating to these Species at Risk. However, a closer analysis reveals disease, pest risk and loss of genetic diversity currently threaten Ontario's Species at Risk and a potential introduction of translocated tree stock as part of an assisted migration may further exacerbate its threats to conservation.

**8. Impact of Smartphone Application Usage on Trip Planning**

Shaila Jamal (McMaster University)

This paper explores the determinants of individuals' trip planning driven by smartphone applications usage. Trip planning activities by using smartphone applications considered in the study include: performing online tasks, deciding departure time, mode choice decision, deciding trip destination and communicating/coordinating trips with others. This study uses data from 'Smartphone Use and Travel Choice Survey 2015' which was conducted in Halifax, Nova Scotia. This paper specifically investigates the nature of trip planning through smartphone applications and how this differentiates among socio-demographic characteristics, travel attributes, built environment and lifestyle strata. Following an ordered response modelling approach, this study identifies that socio-demographic factors and attitudes play a significant role in smartphone use for trip planning. For instance: 15 - 24 years old show a higher likelihood of using smartphone applications for mode choice. Students are more likely to use smartphone applications for performing online tasks and deciding the trip destination. On the other hand, older generations (34+ years) are less likely to use smartphone applications for communicating/ coordinating trips with others. Another influencing factor is travel characteristics. A higher number of trips involve a higher use of smartphone applications for these trip planning activities. Moreover, commute mode choice is a strong predictor of the type of trip planning activities individuals partake in using smartphone applications. Tech-Savvy attitudes are highly associated with the use of smartphone applications for trip planning activities. The relative influence of neighbourhood characteristics is comparatively low in relation to the other attributes considered in the models.

**9. The impact of white-tailed deer (Odocoileus virginianus) on the diversity, growth, and species abundance of urban plant communities**

Thomas Younen, Jessica Balgobin, Tiger Wu, Christoph Richter, and Monika Havelka (University of Toronto Mississauga)

The unique interactions between the white tailed deer (Odocoileus virginianus) and the diverse plant ecosystems co-existing amongst the urban setting is not very well known. In this study the impact of white-tailed deer presence in respect to the diversity, abundance, and plant growth of both the native

and invasive plant species set within a secluded urban area will be done. During the time of study, results have suggested the presence of white-tailed deer correlating to a greater diversity among the plant community, higher abundance the growth of invasive species, and reduction of general plant height. This research has highlighted the importance of altercation of the urban plant community ecosystem in the presence of white-tailed deer activity, while lays the fundamental steps for developing and implementation suitable environmental management actions.

**10. Flow and sediment dynamics through a stormwater management pond**

W. Weatherson, H. Atwal, M. Talebishojaeion, T. Litmanovitch, and T. Duval (University of Toronto Mississauga)

Stormwater management ponds (SWMPs) are an increasingly important and prevalent feature in today's urban environment, and are responsible for delaying flood effects to downstream ecosystems; however, their influence on water quality associated with urbanization is less well understood. By observing trends in SWMPs, we can begin to determine the effectiveness of various pond designs on downstream water quality and identify areas of improvement to better manage our future environmental impact as a species. Our chosen study area was the University of Toronto Mississauga campus SWMP, comprised of a forebay and midbay, totalling 126m long, 45m wide and 1.5m deep. At the time of sampling, the pond has been in existence for approximately 10 years and has remained largely untouched since its construction. We measured flow direction and velocity, rates of sedimentation, and elemental composition of the deposited sediments throughout the SWMP. Our results show that there is a preferential flow path from the inflow to the outflow and a mean residence time of approximately 86 hours. Sediment deposition is nearly 60% greater in the forebay than the midbay, making wind-induced resuspension in the midbay a potential contributing factor to the amount of total suspended solids found in the pond effluent. Heavy metal in the sediments were positively correlated with rates of deposition. By analyzing the processes related to sedimentation in SWMPs, we can further our understanding of anthropogenic impacts on the environment and inform policymakers to guide urban city centers toward initiatives that have positive health and environmental impacts.

**11. Temporal and Spatial Variations of Tropospheric Ozone over the Arctic**

Yue Cheng Zhao and Jane Liu (University of Toronto)

Tropospheric ozone is a short-lived climate forcer that can be either injected from the stratosphere or produced in the troposphere by photochemical processes involving the ozone precursors such as nitrogen oxides (NOx). In addition, tropospheric ozone is also the third strongest anthropogenic greenhouse gas after carbon dioxide (CO2) and methane (CH4). Tropospheric ozone's temporal variations are important in determining the oxidative capacity of the atmosphere, higher oxidative capacity means more hydroxyl radicals (OH) that the atmosphere can contain to perform oxidation reactions.

This study is focusing on the temporal and spatial variations of tropospheric ozone within the Arctic Circle. Ozonesonde is the dataset used for temporal analysis and there are six selected Arctic ozonesonde stations. The measurement period covers from 1985 to 2015, and the common measurement period for all six stations is 1992-2006. Tropospheric ozone concentration, for all the stations at most of the selected altitudes, has increased in recent decades, which means the source of

ozone in Arctic is greater than its sink during the measurement period. However, the increase is not consistent; the trends are observed with ozone accumulation and depletion events. Trajectory-mapped Ozonesonde dataset for Stratosphere and Troposphere (TOST) is used for spatial analysis. TOST is the trajectory- mapped data binned to a 3-D data grid system, with dimensions 5º latitude, 5º longitude, and 1-kilometer altitude. In this study, TOST interprets the variations of spatial ozone pattern over the period 1985-2015.

12. ***Everything I wanted to tell you* (2018): Arts-based refusals in the Greater Toronto Area**

Mitra Fakhrashrafi (University of Toronto)

In recounting her experiences at the opening night of Jean Michel Basquiat's exhibit in 1992, bell hooks (1992) takes on the distance Basquiat consciously produces through his art between himself and "white folks in the established art world". She goes on to describe Basquiat's painting as a means of challenging those who think that by merely looking they can 'see' (bell hooks, 1992). David Garneau engages in this drive to 'see', particularly in its academic branch, linking it to the colonial function of making translatable, exploitable and in extension rendering artifacts and histories as potentially extractable resources or commodities (Garneau, 2012). In examining Nuit Blanche Scarborough's *Everything I wanted to tell you* (2018), a public art instillation by Hiba Abdallah and in collaboration with intergenerational Scarborough-based artists, I locate Abdallah's work in the context of what Delacy Tedesco and Jen Bagelman (2017) refer to as "missing communities" remaking relations of their 'rightful presence' in the city, against dominant racialized, colonial, and urban narratives of their absence. This 'rightful presence' and the arts-based act of placemaking are complicated by reconfiguring the settler-colonial city "which itself has no rightful presence on unceded Indigenous land" (Tedesco & Bagelman, 2017). I thus work through the tensions and possibilities of *Everything I wanted to tell you* (2018) to identify the way that placemaking practices for marginalized people can be archived through art while refusing the white gaze which historically (and contemporarily) is linked to surveillance and "reinforcing the boundaries of citizenship" (Villegas, 2013) for non-white people.