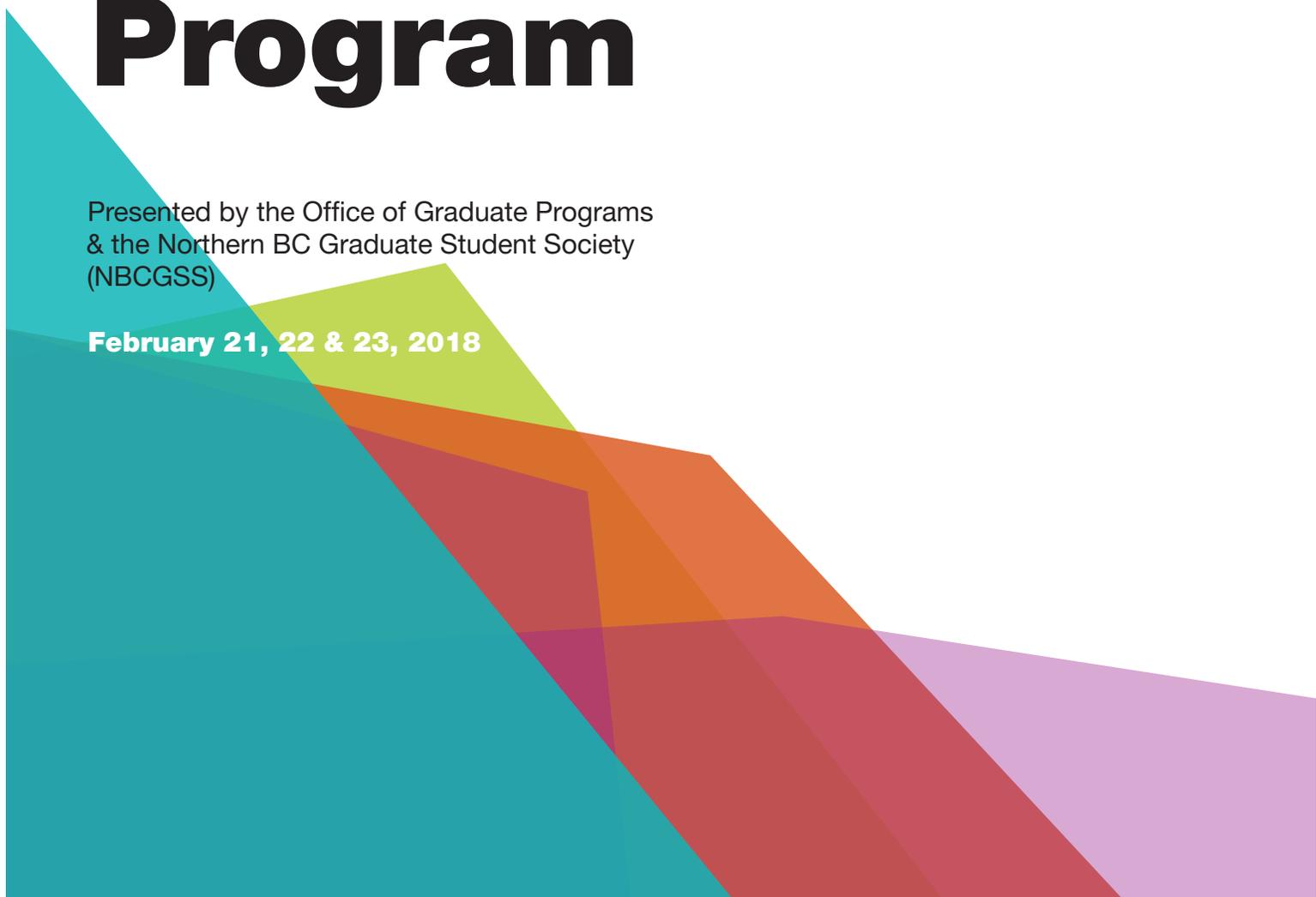


2018

Graduate Student Conference Program

Presented by the Office of Graduate Programs
& the Northern BC Graduate Student Society
(NBCGSS)

February 21, 22 & 23, 2018



Wednesday February 21, 2018

Music & Poetry Conference Kick-Off featuring Kevin Hutchings

7:00pm – 11:00pm
Art Space (above Books & Company)
Hosted by NBCGSS

Thursday February 22, 2018

Registration

8:00am - 8:45am
Bentley Center
* Light refreshments provided

Welcome

8:45am
Bentley Center
Dr. Ian Hartley – Chair, Physics
Darlene McIntosh - Elder
Dr. Geoff Payne - VP Research & Graduate Programs

Session A – Resource Development, Governance & Community Impact

9:00am | Bentley Center

Nicholas Parlato - MA Interdisciplinary Studies

Title: *Mining the Closed Regime: Western Knowledge Production on Russia's Informal Political Economy*

Abstract: The formal hierarchies and functional divisions of Western government structures are paralleled in Vladimir Putin's Russia as a wide network of informal relations operating across boundaries of private-public, local-national, and legal-illegal. A few established Russian scholars (Ledenova, Kryshstanovskaya, Shevtsova, e.g.) have met with degrees of success in exposing the logics and culture of this *Sistema*. But it remains largely unaddressed by Western political and economic scholars, who typically seek to critique it from a normative democratic standpoint, classifying it within the

liberal/illiberal binary, rather than understanding *how* Russian political economy works. In light of current international tensions between the US and Russia, the language used by experts and officials in both countries can be correlated to direct and deliberate political agendas, from the nationalistic to the neoliberal. Scholars working from the institutional matrix of the Western Academy are also implicated in this contentious field of politics and knowledge-production. Whether conducting research on sensitive Russian national industries, such as oil and gas, grassroots socio-political movements, or geopolitics writ large, we must be conscientious about our potential contributions to domestic and international tensions and harms. How can we hone our language and methodologies to sensitively address the controversial nature of “closed regimes”? Challenging the usefulness of the liberal/illiberal binary to understand these political and economic systems from the outside, this presentation will approach and interrogate the epistemological and ethical problems of Western research practices in post-Soviet Russia, with particular reference to the extractive industry complex of Siberia.

Nadia Nowak - MNRES

Title: *Traditional Governance & Environmental Stewardship: Gathering Knowledge with Saik'uz Whut'enne*

Abstract: The traditional governance system of Saik'uz Whut'enne is based in a deep relationship with their territory. Saik'uz Whut'enne continue to uphold the values and practices that are rooted in this relationship. However, colonization and land dispossession and degradation have disrupted Saik'uz traditional governance. In recent years, the intensity of resource development has increased, and the unwillingness of the Crown regulatory system to uphold Indigenous rights and title has reached a critical point. During this same period of time, the *Tsilhqot'in* decision granted a declaration of Aboriginal title to the Tsilhqot'in Nation, which re-affirmed the right of Indigenous Nations to manage the land based on their own values and perspectives. Emerging from this context, this research aims to explore the key principles and processes of Saik'uz traditional governance in order to inform a community conversation about the ways that traditional governance may be revitalized to improve environmental stewardship within Saik'uz territory. Informed by Indigenist, Indigenous and decolonizing methodologies, this research has been developed and designed in collaboration with the Saik'uz First Nation and uses qualitative methods including archive and document review and semi-structured interviews.

Katie Cornish - MSc Health Sciences

Title: *Understanding the mental health and well-being impacts of natural resource extraction and development in resource-dependent communities*

Abstract: Natural resource extraction refers to the extraction and development of naturally occurring materials from below

the earth's crust. While industry provides economic prosperity to communities, with it comes a variety of negative impacts which are notoriously difficult to manage. Mental health impacts are no exception. Growing interest in Northwest BC from industry indicates the need to better understand how mental health is impacted by natural resource extraction and development. This research will be conducted in two phases at two contrasting units of analysis. The first is a targeted systematic review on the topic of mental health and well-being utilizing the HIRED dataset of 2800 articles describing the public health impacts of natural resource extraction and development globally. Inclusion/exclusion criteria will be applied and narrative synthesis will be performed. It is anticipated that less than 1% of items within the HIRED dataset will be represented in the final sample. Findings from phase one will be used to inform phase two which intends to explore the experiences of mental health service providers in Northwest BC through qualitative analysis. Interviews with service providers will be conducted to examine how these individuals provide mental health support to their communities within the unique context of Northern BC. This presentation will provide an overview of study rationale, design and some preliminary findings from the review.

Session B – Species Diversity, Susceptibility & Conservation

9:00am | Gathering Place

Mandi Baxter – MSc NRES Biology

Title: *Development of eDNA monitoring tools and protocols for assessment of Western Painted Turtles (Chrysemys picta bellii) in British Columbia*

Abstract: The Western painted turtle (WPT) (*Chrysemys picta bellii*) along the Pacific coast of British Columbia is endangered due to wetland habitat loss, delayed maturity, and vehicle-related mortalities. As this species can be difficult to detect using traditional methods, the objective of this study is to develop a standardized sampling procedure that reliably detects WPTs via environmental DNA (eDNA) monitoring. eDNA monitoring detects species from genetic material left behind in the environment. This method is difficult to standardize due to differences in target species and ecosystems. In order to determine an effective monitoring protocol, water processing methods (filtration and precipitation) will be compared and environmental variables and temporal data will be assessed to determine whether seasonal variance has any effect on detection of this species. To better understand the rate that these turtles release DNA into their environment, water samples were collected from red-eared sliders (*Trachemys scripta*) and goldfish (*Carassius auratus*) in an experimental setting. This illustrated a complex interaction between eDNA accumulation and degradation rates. The eDNA signal persisted longer in the turtle system than the goldfish, which may be correlated to the amount of biological activity within the system. The results from this project will yield baseline data

on the minimal concentration required to detect WPT, aiding in the detection of the species, leading to better conservation and management planning of WPT.

Ilsa A. Griebel – MSc NRES Biology

Title: *Morphological and physiological benefits of an anti-parasite treatment are influenced by within-brood variation in tree swallows (Tachycineta bicolor)*

Abstract: Individuals can differ in their susceptibility to parasites. Young, nest-bound birds are exposed to a diversity of nest-dwelling ectoparasites that typically feed on their blood. Within broods, hatching asynchrony creates size hierarchies that result in morphological and physiological variation among nest mates, and susceptibility to parasites also may vary predictably with this size hierarchy. My objective was to use a broad spectrum, anti-parasite drug, ivermectin (IVM), to treat individual nestling tree swallows (*Tachycineta bicolor*) and assess how nestling susceptibility to parasites varied both within and among broods. Broods were either assigned as IVM broods, where half of the nestlings received IVM injections and half received control injections of sesame oil, or control broods, where all nestlings received oil injections. I found that the IVM treatment reduced parasite loads for broods as a whole, thereby benefiting all nestlings in IVM broods, both morphologically and physiologically. Variation in size within broods, however, influenced some results; mass near to fledging increased with the relative brood asynchrony, but only under higher parasite loads (i.e., control broods, not IVM broods), and the chance of an individual fledging increased with its relative within-brood size, but only under lower parasite loads (i.e., IVM broods, not control broods). By experimentally manipulating nestling susceptibility to parasites, I have demonstrated variation in nestling response to an anti-parasite treatment both within and among broods, and future studies should investigate the underlying mechanism for why certain nestlings along the brood size hierarchy are more susceptible to parasites.

Cherie Mosher – PhD NRES

Title: *Sharp Reduction in Genetic Diversity of the Coastal Tailed Frog (Ascaphus truei): A Phylogeographic Study Using Multiple Methods*

Abstract: The coastal tailed frog (*Ascaphus truei*) is used as an indicator species for the health of its habitats in the Coastal and Cascade Mountains of the Pacific Northwest of North America. This ancient species, unique among and a sister species to all extant frogs, is associated with cool, fast-flowing, typically non-fish bearing, mountain streams. We compared the within region genetic diversity of populations near the northern extent of the coastal tailed frog's range (British Columbia, Canada) to four other regions (two in British Columbia, Canada and two in Washington, USA), moving towards the core of the range in Washington, USA. We used two genetic techniques – a 9-microsatellite loci study and next-generation sequencing

– to explore broad-scale genetic diversification. Sampled regions (N=5) separated into 4 genetic clusters with the two most northern regions clustering together, all marker systems being consistent. The allelic richness and heterozygosity reduced substantially as the latitude increased. Though northernmost populations are often characterized by lower genetic variability, we discovered an extreme case of reduction in a large portion of the coastal tailed frog range. This study showed a strong correlation between microsatellite and "big data" analyses. Additionally, our discovery of reduced diversity throughout a large portion of the coastal tailed frog range may have important conservation and management implications regarding population connectivity and response to climate change.

Networking Break

10:15am
Bentley Center
* Light refreshments provided

Grant Writing Workshop

10:30am
Bentley Center

Presenters: Nicole Balliet (Office of Research), Jacqueline Dockray (Office of Research), Barbara Curtis (Graduate Programs)

Faculty Panel: Stephen Dery (ENVS), Hugues Massicotte (FTSY), Benjamin Bryce (HIST), Martha MacLeod (NURS/COMH)

Abstract: Writing grant or scholarship applications is both an art and a science. It is important to understand what ‘data’ to include (the science part) and how to write in such a way as to convince the reviewers to give you the money (the art part). Grantsmanship, as this combination of skill sets is termed, takes a lot of practice and time. But much of that time can be saved by taking some important initial steps, and by keeping some tips top of mind while writing. Nicole Balliet and Jacqueline Dockray, Research Project Officers in the Office of Research, will present some key items to keep in mind when writing grant applications, and take you through the process that successful grant writers follow. A panel of experienced faculty grant writers will join them after the presentation for a question and answer period and to offer their seasoned tips on the grant-writing process.

Lunch n’ Learn Keynote Speaker

Noon
Bentley Center

Presenter: Dr. Heather Smith – Director, Center for Teaching, Learning & Technology (UNBC)

Title: *Pushing Our Boundaries: Inside/Outside the Academy*

Abstract: Let’s take some time together to reflect on the idea of ‘pushing boundaries’. What does ‘pushing boundaries’ mean to you? Is there really some sort of inside and outside to the academy? Can we talk about pushing boundaries in the academy in a way that separates us from our personal lives? Is there one generalizable vision of what it means to push boundaries? And do we really want to push all boundaries? These are the questions that provide the foundation for what I hope will be an interactive keynote conversation. I’ll share with audience some of my experiences with pushing boundaries as a scholar-teacher-human but really what I want us to do is to take the time to reflect on the boundaries which limit us, boundaries which protect us and the boundaries that we determine we need to address individually and collectively.

Session C – Air Quality, Climate Change & Weather Modelling

1:30pm | Bentley Center

Sahar Ebadzadsahraei – MSc NRES

Title: *Quantifying the Effect of Volatile Organic Compounds and Fine Particulate Matter Contaminants on the Prince George Air Quality*

Abstract: The main objective of this research is to develop proper standard operating procedures (SOPs) for collecting representative air samples, to measure Volatile Organic Compounds (VOC) molecules and particulate matter (PM2.5) in Prince George neighborhoods. Air pollution and climate change are interconnected [1]. According to the World Health Organization (WHO), air pollution is currently the leading environmental cause of premature death [2]. The communities of Prince George have been facing different types of air pollution issues for many years. Air pollution is one of the main concerns of the city of Prince George, which is known as the northern capital of British Columbia (BC). Reports of air monitoring since 1994 show the annual average PM2.5 concentration in the Prince George airshed was one of the highest in the province [3]. Exposure to PM2.5 and VOC are harmful to public health and ecosystems. VOCs daily exist in human’s life and are carbon-containing gases and vapors such as gasoline fumes and solvents. These chemicals can enter into the human’s body through the breathing of air and results in headaches, nausea and damage the liver, kidney, and central nervous system [4]. Furthermore, PM2.5 and VOC can create a serious problem in human health such as cancer [4]. Thus, it is important to understand the nature of VOCs and PM2.5 present in the environment that we live (i.e., Prince George) and how to reduce and control these air pollutants. One of the tasks of this research is to measure physical and chemical properties of particulate air pollutants in different neighborhoods of the city of Prince George. Elemental analysis methodology will be developed to study the essential elemental composition of PM2.5 samples. Chemical analyses will be conducted using different techniques including

Inductively Coupled Plasma Mass spectrometry (ICP-MS) for elemental analysis, and Scanning Electron Microscopy-Energy Dispersive Spectrometry (SEM-EDS) for both morphology and elemental analysis of specific particulates. Gas chromatography equipped with mass spectrometry (GC-MS) and flame ionization detector (GC-FID) will be used to quantify the VOCs in the collected air samples by sorbent tubes.

References:

- [1]Air Pollution and Climate Change IASS research on air quality and climate change.
- [2]The World Health Organization is a specialized agency of the United Nations that is concerned with international public health
- [3] Source apportionment of pm2.5 in Prince George, British Columbia final report STI-906052.06-3268-FR, Sonoma Technology, Inc. 2008.
- [4] "Volatile Organic Compounds' Impact on Indoor Air Quality". EPA. 2017-04-19.

Rachel Hay – MSc NRES Environmental Science

Title: *Preliminary Results from the Sub-grid Parameterization of Snow in the CLASS Model*

Abstract: Snow accumulation events in Western Canada result from a diverse range of processes including, but not limited to, large-scale air circulations (e.g., El Niño Southern Oscillation) and mid-latitude cyclones, to surface interactions such as orographic snowfall and lake-effect snow. Redistribution of snow following initial deposition has particular importance for the resultant depth and density of the snowpack, grain size and structure. This therefore influences the albedo of the snowpack, which has large scale feedback implications for energy budgets and modelled climate. Despite a thorough understanding of snow processes, simulation can only occur with high-resolution models that require parameterization for numerous processes contributing to this variation in snow distribution. Subgrid-scale snow (SSS) parameterizations within the Canadian Land Surface Scheme (CLASS) model have enabled better modelling of the heterogeneities of snowpack conditions. Recent SSS parameterizations include land surface features such as slope, aspect, and elevation, to be incorporated into the updated version of the Canadian Regional Climate Model (CRCM). Preliminary results from recent SSS developments will be presented and discussed. Future work may consider the evolution of the snowpack through the melt season and the effects on surface albedo and turbulent exchange. Continued refinement will resolve the changing snowpack and glacier hydrology of western North America in next generation Regional Climate Models.

Aseem R. Sharma – PhD NRES

Title: *Climatology of atmospheric rivers landfalling in British Columbia, Canada*

Abstract: Atmospheric Rivers (ARs) are filamentary structures generally with length >2000 km and width < 1000 km in the lower atmosphere responsible for most of the horizontal transport of water vapour outside of the tropics. ARs are important phenomena for freshwater recharge in British Columbia (BC) and play a crucial role in water resources of this region. In this study, we examine the variability and trends of landfalling ARs in BC during the latter half of the twentieth century and early twenty-first century. We use six-hourly time stepped ARs identified as those integrated water vapour transport (IVT) grid cells that satisfy the selection criteria such as minimum IVT threshold, direction, and geometry. On average, 17% of total number of days each year are affected by ARs in BC. ARs are most prevalent in BC during fall months followed by winter months. The annual landfalling ARs frequency show increasing trend of 25.9 daysdecade-1 and 5.1daysdecade-1 over 1979-2015 and 1948-2015, respectively. Synoptic conditions and ocean-atmospheric large-scale patterns play significant roles in modulating the frequency of landfalling ARs to BC. A better understanding of annual and seasonal ARs climatology in BC will lead to improved water resources management, seasonal predictability, weather forecasting, natural hazard prevention and community awareness on AR related extreme weather events.

Session D – Gender, Colonialism & Empowerment

1:30pm | Gathering Place

Alexandra Wagstaffe – MA English

Title: *Traversing the Landscape: the Empowerment of Women and Nature in The Mysteries of Udolpho*

Abstract: This paper will examine ecofeminism and the Gothic in the novel *The Mysteries of Udolpho* by Ann Radcliffe. In this novel, the heroine, Emily St. Aubert, interacts with several male characters, including the hero, Valancourt, the villain, Montoni, and her father, St. Aubert. Emily also traverses natural landscapes during her adventures, particularly, sublime Gothic spaces. In this novel, as well as many other novels of the eighteenth-century, the Gothic represents patriarchal power structures in that society. Radcliffe's novels use what several scholars call the "explained Gothic," which is also a tool Radcliffe uses to dismantle the power of the patriarchy. I will consider how Emily and her immersion in nature combat the patriarchal power structures in the novel. This resistance is apparent through Emily's interactions with the male characters of the novel and how she finds strength from natural environments. The thesis of this paper is that green space, particularly Gothic sublime green spaces, allow Emil to traverse the landscape and escape Montoni, thus empowering her.

Wendel Swab – MA English

Title: *Canada Unveiled: Colonial and Patriarchal Enforcement of Traditional Gender Expectations during the Niqab Debate*

Abstract: The debate during the 2015 federal election over whether Muslim women in Canada should be permitted to wear the niqab during citizenship ceremonies shook the idea of Canada as a multicultural and postcolonial nation to the core. One side of this debate takes up the cause of women’s rights and the desire to protect Muslim women from patriarchal Islamic power structures, and by critically analyzing media narratives, I will argue that support for the niqab ban at citizenship ceremonies is predicated upon support for patriarchal and colonial power structures that exist within Canada; these power structures have the consequence of subjugating Muslim women and enforcing traditional views of femininity, feminine actions and displays, and female gender roles, thus damaging the feminist project within Canada for all women, not just Muslim women. Muslims within Canada are subject to a neo-Orientalism that has arisen in Western nations, which can be traced back to the colonialism of the so-called Islamic world by the major European powers, as well as the Orientalist perception of the Islamic world. Based on the premise that gender is a socially constructed performative phenomenon, Muslim women who don the niqab, hijab, burqa, and loose flowing traditional garb must then thwart societal attempts to police these women and enforce traditional gender performativity in appearance, gestures, movement, and bodily decoration. Ultimately, the enforcement of these traditional Western gender expectations upon an immigrant culture widely perceived to be “barbaric” or “anti-woman” by the dominant culture is damaging to the feminist cause for both minority immigrant cultures as well as the majority culture.

Janine Luggi – MA First Nations Studies

Title: *Experiences of Running: One Dakelh Woman's Message of Transformation & Resilience*

Abstract: Running was a traditional role to share messages among the Dakelh communities of northern British Columbia. This role has been lost due to colonialism. The injustices of colonialism have resulted in challenges for Indigenous peoples’ health and well-being. Despite colonialism, the benefits of running for the mind, body, and spirit remain. The following question guided my research: “What role has running and spirit played, and continued to play, in my holistic health and transformation as a Dakelh woman?” I participated in an autoethnographic study about myself and the role of running in my life. I use decolonizing and Indigenous methodologies as a foundation for my research, drawing on my own experiences to express my testimony about transformation. My data includes my personal reflective journals and an interview. I analyzed this data by situating my experiences within the context of my culture. The themes identified include: 1) Space for self-reflection and responding to the world around me, (2) Relationships and encouragement, (3) My connection to something greater, (4) Honour my life enough to love myself, and (5) Creating space to fully express

myself. This research fills a gap in Indigenous specific literature because spiritual health is not widely discussed in the physical activity and running literature connected to Indigenous people. This thesis concludes that running has proven beneficial to me through the mental, emotional, physical, and spiritual areas of my health and well-being.

Networking Break

3:00pm
Bentley Center
* Light refreshments provided

Mitacs Presentation

3:15pm
Bentley Center
Presenter: Jennifer Tedman-Jones - Director, Business Development BC Interior

3-Minute Thesis Competition (3MT)

3:30pm
Bentley Center

Judges: Agnes Pawlowska (FNST) Luke Harris (HLSC), Oye Abioye (BUSM) and Art Fredeen (NRES)

Competitors:

Lon Kerr – MNRES
Title: *Modified Canadian Natural Zeolite: An Antibacterial Agent for the Purification of Drinking Water*

Chandehl Morgan – MSc NRES
Title: *Chemical and antimicrobial properties of moringa oleifera root, and its impact on water quality*

Trevor Ritchie – MA Political Sciences
Title: *Citizen Initiated Referenda in British Columbia: A Primer on the BC Recall and Initiative Act and its Initiative Provisions as Tools for Participatory Democracy*

Alexandra Wagstaffe – MA English
Title: *Gothic Green Romanticism*

Friday February 23, 2018

Registration

8:00am - 8:45am
Bentley Center
* Light refreshments provided

Welcome

8:45am
Bentley Center
Dr. Ian Hartley – Chair, Physics
Dr. Daniel Weeks – UNBC President & Vice Chancellor
Dr. Dan Ryan – Provost & VP Academic

Student Panel - Graduate Student Experiences with Community-Based Research

9:00am
Bentley Center

Panelists: Nadia Nowak (MNRES), Shayna Dolan (MSc Community Heath) & Kate Hewitt (MNRES)
Abstract: The current environmental, political and economic climate in northern BC can benefit from research at the intersections of environment, community and health. Three graduate students will share an overview of their qualitative research involving three different communities in northern BC undergoing rapid socio ecological change. Principles of community-based research using decolonizing and equity focused approaches will be highlighted in relation to the challenges and successes experienced so far in their respective research journeys.

Student Poster Presentations

9:00am
Bentley Center Hallway

Mohammad Tabrez Alam – MSc NRES Environmental Science

Title: *ENSO Simulation and Prediction using a Hybrid Coupled Model (HCM)*

Abstract: El Niño–Southern Oscillation (ENSO) is the large-scale annual to decadal fluctuations in climate and weather caused by warm sea surface temperature (SST) anomalies over eastern and central Pacific Ocean. When an occurrence of El Niño develops, there is a large area of warm surface water that expands toward the east. This creates a shift

in the atmospheric pressure. Thus, these changes in the atmosphere produce odd weather patterns. Battisti and Sarachik (1996) identified features of the observed El-Niño event such as- (1) warm SST anomalies, which appear over the eastern and central Pacific Ocean, (2) at an event onset, wind relate to positive SST anomalies, (3) the peak anomaly occurs in winter (i.e. phase locking to the annual cycle), (4) the oscillation of El Niño is irregular, with a period of 3 to 7 years. The latest well observed extreme El Niño was in 1997/98 that demand billions of dollars for economic damage and human casualties. Moreover, the current 2015/16 extreme El Niño also had significant effects, some yet unfolding. Recent work has further demonstrated that occurrence of extreme El Niño could be double under unmitigated Climate change (Cai et.al, 2014). In the light of their devastating impacts and possible future increased occurrence, understanding of the dynamics, predictability, and teleconnections of these extreme El Niño events is still limited and requires a major effort from the community. The present research is designed to improve El Niño simulation and prediction using hybrid coupled models (HCMs). The goals of this research are to investigate two essential problems in hybrid coupled modelling— (1) atmospheric model construction and (2) oceanic model initialization. Towards the first goal, a non-linear technique and neural networks are being use to construct a nonlinear statistical atmosphere model instead of the traditional linear atmosphere in the HCM. For the second goal, data assimilation technique to derive the HCM.

References:

- Battisti, D. S., and E. S. Sarachik, Understanding and predicting ENSO, U.S. Natl. Rep. Int. Union Geod. Geophys. 1991-1994, Rev. Geophys., 33, 1367-1376, 1996.
- Cai, W. et al. Increasing frequency of extreme El Nino events due to greenhouse warming. Nature Climate Change 4, 111-116, doi:10.1038/NCLIMATE2100 ,2014.

Mandi Baxter – MSc NRES Biology

Title: *Development of eDNA monitoring tools and protocols for assessment of Western Painted Turtles (Chrysemys picta bellii) in British Columbia*

Abstract: The Western painted turtle (WPT) (*Chrysemys picta bellii*) along the Pacific coast of British Columbia is endangered due to wetland habitat loss, delayed maturity, and vehicle-related mortalities. As this species can be difficult to detect using traditional methods, the objective of this study is to develop a standardized sampling procedure that reliably detects WPTs via environmental DNA (eDNA) monitoring. eDNA monitoring detects species from genetic material left behind in the environment. This method is difficult to standardize due to differences in target species and ecosystems. In order to determine an effective monitoring protocol, water processing methods (filtration and precipitation) will be compared and environmental variables and temporal data will be assessed to determine whether seasonal variance has any effect on detection of this species. To better understand the rate that these turtles release DNA into their environment, water

samples were collected from red-eared sliders (*Trachemys scripta*) and goldfish (*Carassius auratus*) in an experimental setting. This illustrated a complex interaction between eDNA accumulation and degradation rates. The eDNA signal persisted longer in the turtle system than the goldfish, which may be correlated to the amount of biological activity within the system. The results from this project will yield baseline data on the minimal concentration required to detect WPT, aiding in the detection of the species, leading to better conservation and management planning of WPT.

Georgia Betkus – MSc Interdisciplinary Studies

Title: *Piloting an Intergenerational Digital Storytelling Program with Indigenous Elders and Youth*

Abstract: Our team piloted an intergenerational digital storytelling workshop aimed at building healthy relationships and preserving culture between Indigenous Elders and youth in the Nak’azdli First Nation community in Northern BC. In this study, a community based research approach was utilized which involved a partnership between the Nak’azdli Health Centre, the Elder’s Society, the elementary school, and researchers from three Universities. This program took place over one month in Spring 2017, and included 10 workshop sessions. All aspects were co-created with community partners to ensure it met the needs of all partners and also aligned with the BC school curriculum. Grade 6 and 7 elementary school students along with a number of Elders participated. During 4 sessions, Elders shared personal and traditional stories with students. The students recorded these sessions and engaged with the Elders by asking them questions related to their stories. At the end of the project, the completed digital stories were shown to the community. Students, Elders, and teachers were interviewed mid-way through the project and at the final community showing. Researcher and community observations were also collected with a goal of considering the best approach for future iterations. Results from the interviews revealed that all groups found the project worthwhile in building intergenerational relationships and preserving cultural knowledge, with all members being engaged in the process. The interviews revealed that, while the intergenerational digital storytelling workshops were well received, this workshop must be revised in order to be sustainable and integrated within the school curriculum.

Charlotte Connolly – MA NRES Geography

Title: *Tahoe on Trial: Closing the Governance Gap? A Critical Legal Geography Perspective on a Canadian Mining Conflict in Guatemala.*

Abstract: In June 2014, the Canadian Centre for International Justice and the Guatemalan Centre for Legal, Environmental & Social Action filed a civil lawsuit against a Vancouver-based mining company, Tahoe Resources, for the alleged shooting of

seven protesters by Tahoe's private security personnel at the Escobal silver mine. As one of five ongoing lawsuits brought to Canadian courts concerning the alleged abuses of Canadian mining companies abroad, the Tahoe case could have significant impacts for the regulation of Canada's international extractive sector. As a form of voluntary compliance, Corporate Social Responsibility (CSR) is increasingly recognized as an inadequate substitute for state regulation. The current governance gap has compelled victims, in partnership with non-governmental organizations (NGOs), to submit legal claims in the home state of the multi-national corporation in hopes of achieving access to remedy. This study critically evaluates the causes and implications of extraterritorial jurisdiction in the context of Canadian mining abuses abroad and analyzes the role of NGOs in improving access to justice for individuals and communities impacted by Canadian mining operations. Drawing on theories of legal geography, this thesis considers the tensions between state sovereignty, international human rights law and various CSR principles, with attention to the meaning given to these regulatory regimes in different geographical contexts. In adopting a multi-scalar approach to theorizing natural resource governance, this study contributes to the field of legal geography by exploring the interactions between global, regional and local actors and legal institutions involved in mining conflicts in Guatemala.

Ilsa A Griebel – MSc NRES Biology

Title: *The nestling who lived: predictors of survival during harsh weather events in an aerial insectivore*

Abstract: Periods of inclement weather can have devastating effects on aerial insectivorous birds, particularly during brood rearing when sufficient food must be obtained to sustain both young and parents. Here, we examine predictors of survival of whole broods and individual nestlings in tree swallows (*Tachycineta bicolor*) during an extreme, two-day harsh weather event in central British Columbia, which co-occurred with an experiment reducing nest ectoparasite loads using an anti-parasite drug (ivermectin). We found that middle-aged broods and nestlings were less likely to survive than those that were younger or older in age. Survival of broods and individual nestlings was higher when raised by males with bluer plumage, whereas it was lower when female parents had brighter and more UV-reflective plumage. Within broods, smaller nestlings had a lower chance of surviving the harsh weather event than their larger siblings. Nestlings in broods where half of the offspring received ivermectin injections had significantly higher chances of surviving than nestlings from non-experimental broods, suggesting that parasite loads can influence survival during inclement weather. Our results that identify several factors influencing resiliency of nestlings to harsh weather are particularly relevant in the context of declining bird populations and climate change. As the frequency of extreme weather events are predicted to increase with the progression of global climate change, understanding survival during harsh weather events may be critical for aerial insectivores, one of the fastest declining group of birds in Canada.

Saki Kondo – MSc NRES Environmental Science

Title: *Assessment of Chemical Profiles of Modified Natural Zeolite for application of water treatment by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-OES)*

Abstract: Natural zeolites and their modified forms can be used as cost-effective adsorbents for water treatment. In order to ensure that modified natural zeolite would not release significant amounts of toxic elements to the water body during water treatment process, it is necessary to assess its leaching profiles regarding the available trace elements including heavy metal cations. In this project, leachate of a Canadian Natural zeolite (clinoptilolite) as well as its magnesium-modified (Mg-zeolite) and ammonium-magnesium modified (NH4-Mg-zeolite) forms are assessed by using ICP-OES. For further understanding of the chemical profiles, all samples will be analyzed using acid digestion followed by ICP-OES measurement. Modified zeolites are prepared by using magnesium chloride (MgCl₂) and ammonium acetate (NH₄-CH₃CO₂) with agitation at 200 rpm for 24 hr at 25 degree C. The leaching test is based on US EPA method 1311. A solution of acetic acid (pH 2.8) is used as an extraction fluid. Zeolite samples are agitated with the extraction fluid at 50 rpm for 20 hr at room temperature, and then the obtained leachate is analyzed with ICP-OES. Acid digestion of modified zeolites will be performed by following US EPA method 3050B. The obtained solution will be also analyzed with ICP-OES to compare the effect of modification process.

Bryan C. C. Lim – MSC Biochemistry

Title: *Purification and Characterization of an Immuno-Stimulatory Compound from the Water Extracts of *Royoporus badius* (Pers.) De.*

Abstract: The use of mushroom metabolites to treat diseases have been rising tremendously in recent years due to its wide medicinal applications and safety. Despite a long history of mushrooms being used as traditional medicine in Asia, this medicinal field is relatively new to the West, with very limited number of studies performed on the medicinal properties of wild mushrooms in Canada. In this study, the entire fruiting body of a BC wild mushroom, *Royoporus badius* was sequentially fractionated into four extracts, with the water extract (E3) exhibiting strong immuno-stimulatory activity. The water extract E3 was subjected to anion-exchange chromatography using DEAE Sephadex followed by size-exclusion chromatography with Sephacryl 500 for downstream purification. The semi-purified fraction is suggested to be a heat-sensitive polysaccharide-protein mixture that is able to stimulate murine macrophage cells (RAW 264.7) cells at doses as low as 0.05 mg/mL. The bio-active compound is estimated to be approximately 350 kDa and is water soluble. Enzyme assays using Proteinase K and amyloglucosidase suggest that the large molecule requires its protein portion for bioactivity. This is the first study to report on an immuno-stimulatory compound isolated from *R. badius* native to British Columbia.

Hadleigh Thompson – MSc NRES Environmental Science

Title: *Winds at Quesnel Lake: A meteorological investigation in response to a catastrophic mine spill*

Abstract: The 2014 Mount Polley mine tailings impoundment breach deposited 25 Mm³ of mine tailings, waste water, and scoured sediments into the West Basin of Quesnel Lake. My research focuses on the wind climatology and wind field observed at this glacial-formed, deep, fjord-type lake. This work is nested within a larger, multi-disciplinary research program, analyzing the long-term effects of the spill. Producing a wind climatology for Quesnel Lake will broaden our understanding of the synoptic, regional, and micro-scale winds. Resolving the lake-level wind field that is affected by the surrounding complex topography will assist limnologists in modelling the forcing of many wind-induced hydrodynamic processes within the lake. The Northern Hydrometeorology Group’s Cariboo Alpine Mesonet (CAMnet) array of weather stations provide the bulk of near-surface meteorological data, while synoptic-scale datasets are obtained from the National Oceanic and Atmospheric Administration’s North American Regional Reanalysis (NARR). Methods include a manual classification of the various synoptic patterns seen over Cariboo Mountain region, moving to an automated classification method to maintain pace with current literature. Non-parametric statistical methods will be implemented due to the non-normal distributions seen in the winds speed and wind direction timeseries dataset. It is envisioned that my research at Quesnel Lake will be able to identify wind ‘seasons’ within the year, discern which synoptic patterns are responsible for intense wind episodes, and begin to examine the spatial variability of the lake-level wind field.

Jennifer Nicole Tippett – MSc Health Sciences

Title: *Does Alcohol Consumption Exacerbate Prospective Memory Dysfunction in Dementia?*

Abstract: With the aging population, the prevalence and economic burden of dementia is anticipated to rise. It is, therefore, important to identify modifiable risk factors that may increase the likelihood of developing dementia. Alcohol consumption has been well-established to influence the dementia risk, and prospective memory (PM) function has been identified as the earliest cognitive indicator of memory decline in those with early stage dementia. This research specifically explores whether alcohol consumption aggravates PM dysfunction in those with dementia. Three research questions will be addressed: (1) Does alcohol consumption exacerbate PM dysfunction in those with dementia? (2) What is the nature and shape of the relationship between alcohol consumption and the likelihood of dementia diagnosis? (3) Does PM performance influence dementia risk? A combination of structural equation modeling, logistic regression, and graphing techniques will be utilized to investigate three hypotheses using baseline data from the Canadian Longitudinal Study on Aging. The anticipated findings are

as follows: structural equation modeling will demonstrate that the association between PM and dementia is stronger when alcohol consumption is included in the model; logistic regression will yield an overall positive relationship between alcohol consumption and the likelihood of dementia diagnosis, however, through graphing, it is expected that the shape of this relationship will be J- or U-shaped; and logistic regression will show a negative relationship between PM function and the likelihood of dementia diagnosis.

Sukhpreet Buttar – BSc Biochemistry & Molecular Biology

Title: *Evaluation of British Columbian Wild Mushrooms for Immuno-Modulatory Activity*

Abstract: Many cultures worldwide have recognized that extracts from certain mushrooms have profound health promoting benefits. The term ‘medicinal mushroom’ is now increasingly gaining worldwide recognition, as there are at least 700 species of mushrooms that have been reported to have therapeutic potential. Because of their biological activity for the treatment of cancers, mushrooms have been an area of interest for scientists and pharmaceutical industries and have recently gained attention for their anti-cancer purposes, namely through immuno-modulation. In the present study, the immuno-stimulatory and anti-inflammatory activities of four different extracts (80% ethanol, 50% methanol, water, and 5% sodium hydroxide) of mushrooms (*Pleurotus ostreatus*, *Porodaedalea pini*, and *Bjerkandera adusta*) collected from North-Central British Columbia were investigated. To assess for immuno-stimulatory activity, Enzyme-Linked Immuno-Sorbent assays (ELISA) were performed to measure the production of the cytokine (TNF- α) in Raw264.7 mouse macrophage cells. To assess for anti-inflammatory activity, the ability to inhibit lipopolysaccharide (LPS)-induced TNF- α was measured. This study was successful in extracting and assessing immuno-stimulatory and anti-inflammatory extracts from BC wild mushrooms.

Networking Break

10:15am
Bentley Center
* Light refreshments provided

Thesis Boot Camp

10:30am
Gathering Place

Presenters: Ian Hartley (PHYS), Michelle Stephen (Graduate Programs), Susie Wilson (Library), Annelise Dowd (Library), Amy Blanding (Academic Success Center), Brooke Boswell (MSc Community Health - Graduate Student)

Abstract: This session will cover the ins and outs of planning, writing, submitting and defending your thesis. Presenters will discuss the thesis timeline, focusing on key points and processes for graduate students. Following this discussion, the presenters will respond to student questions and facilitate breakout sessions where students can cover topics of interest more in depth.

Keynote Speaker presented by Global Friday & the Geography Program

Noon
Bentley Center

Presenter: Dr. Lawrence Berg – Professor of Geography (UBC)

Title: *Producing Anxiety in the Neoliberal University*

Abstract: This lecture presents an analysis of the neoliberal production of anxiety in the academy. It focuses on neoliberalization as it is instantiated through audit and ranking systems designed to produce academia as a space of economic efficiency and intensifying competition. I suggest that powerful forms of competition and ranking of academic performance have been developed in Universities. These systems are differentiated and differentiating, and they serve to both index and facilitate the neoliberalization of the academy. Moreover, these audit and ranking systems produce an ongoing sense of anxiety among academic workers. I argue that neoliberalism in the academy is part of a wider system of anxiety production arising as part of the so-called “soft governance” of everything, including life itself, in contemporary late liberalism.

Session E - Trauma, Healing & Support

1:30pm | Bentley Center

Serena George – PhD Health Sciences

Title: Narratives of Healing from Complex Trauma

Abstract: Complex trauma is a critical area to explore in terms of the emotional, psychological, and social well-being of survivors. This research explored the personal experiences of 12 adult survivors of childhood trauma by interpreting the meanings they attach to their stories of healing. Individual interviews were analyzed following a narrative approach to capture each participant’s perspective and meaning. The themes that emerged from the narratives were organized into ten main categories. Five overarching metathemes occurring across all of the participants’ narratives included: Trauma Effects, *Establishing Safety, Reclaiming Self, Healing through Relationships, The Healing Journey.* The results of this study add important findings that increase understanding of how to address complex trauma in counselling and health care

settings in order to restore individual’s sense of safety and well-being.

Omolara Odulaja – PhD Health Sciences

Title: *Social media and Indigenous youth’s wellbeing*

Abstract: Face to face communication and traditional ways of communicating via home phones and postage letters are being replaced by more technologically advanced online modes of communication via social media. With new forms of communication, people are forced to adapt rapidly both socially, culturally, cognitively and mentally. Young people are not excluded from online engagement and represent the most avid users of social media. Literature is replete with information on the psychological benefits and adverse effects of social media. However, there is a huge knowledge gap on how it impacts Indigenous youth in Canada. Using a mixed method, community- informed participatory approach, I explore Indigenous youth experiences with social media. The quantitative part of the research seeks to address the following questions: Does social media improve the psychological wellbeing of Indigenous youth? How frequently should Indigenous youth engage with one another on social media to derive significant health benefits? Are these benefits mediated through increased social support or increased cultural identity or both? Qualitatively, community-informed participatory methods anchored on Indigenous research principles will be employed to give context to statistical findings. Using screen snapshots of content on social media over a period of six months, youth will capture Indigenous representation on social media, and through focus groups and in-depth interviews, narratively address how these representations on social media impact their health and wellbeing. As a prelude to my research, this paper will present the findings from literature on social media and adolescent wellbeing, and discuss why an inquiry into Indigenous youth experiences is paramount at this time.

Lorraine Schembri – Med Counselling

Title: *How stigma impacts the translation of evidence-based policy: Harm reduction service providers report on how public attitudes impact their work*

Abstract: Do public misperceptions hinder evidence-based drug policy? Harm reduction service providers report on how public perceptions impact their work
Abstract: The fentanyl crisis in Canada has brought urgency to reevaluating our country’s response to drug use. Despite the wealth of literature in support of a harm reduction approach, it remains challenging to implement evidence into policy. Public opinion, misinformation and politics are seen as major barriers in progressing towards an evidence-based harm reduction model that the United Nations and World Health Organization have outlined. As Canada is expanding its harm reduction services, it is important to examine how controversial community perceptions may be impacting the process. This proposed research examines how harm reduction service

providers experience community response to their work in Prince George. Qualitative interviews with staff from needle exchange programs, methadone maintenance programs and detox programs, will focus on how staff describe community perceptions of harm reduction, how these perceptions impact their work, and what they would like the community to understand about harm reduction. Transcribed interviews will undergo a basic qualitative thematic analysis. The purpose of this research will be to examine how community attitudes may be helping or hindering local harm reduction goals, and to give experienced service providers a voice in addressing controversial community perceptions of their work.

Alina Schroeder – MA Interdisciplinary Studies

Title: *Insights into Life with HIV: Knowledge translation for friends, family, and support networks for those living with HIV.*

Abstract: There have been many developments in HIV treatment and prognosis in the last ten years. Though the number of new cases is on the decline in Canada the number of people living with HIV has risen and, new diagnosis are reflected disproportionately within Indigenous populations. These higher numbers could mean that many in Indigenous communities could be impacted by someone living with HIV. In what ways does being a friend, family member or part of a support network of a person living with HIV impact knowledge, perception and experience related to HIV? This research will be conducted through an Indigenous Methodology to facilitate the four R’s (Respect, Relevance, Reciprocity, and Responsibility). Research will be implemented through narrative interviews with those who have been deeply impacted by supporting a person living with HIV. It is not a requirement that participants be Indigenous or providing support to an Indigenous person. Posters will be placed in areas such as Positive Living North and Central Interior Native Health Society to facilitate voluntary participation. It is expected that this research will give insight into difficulties, joys, learning experiences or changes that providing support to people living with HIV has had on a person’s life. It will help families understand the kinds of experiences they may expect when caring for someone living with HIV and will contribute to health care professional’s knowledge of circumstances that people providing care are experiencing.

Session F - Assessing Environmental Threats

1:30pm | Gathering Place

Lon Kerr – MNRES

Title: *Modified Canadian Natural Zeolite: An antibacterial agent for purification of Drinking Water*

Abstract: Previous research has shown that modification of natural zeolites with different cations such as silver and zinc can be used to eliminate harmful bacteria from contaminated media. British Columbia has a wealth of natural zeolites that could be potential candidates for the same application. The main objective of this research project is to purify a Canadian natural zeolite (i.e. Clinoptilolite) in order to reduce its unwanted elements such as lead, and then modify it with different cations including zinc and silver to develop an antibacterial agent for water purification purposes. Purifying process happens through different methods including but not limited to washing with saline solutions at high temperature to remove harmful elements such as lead. The purified zeolite are modified through repeated exposure to high concentrations of zinc and silver solutions in order to optimize modification process. Natural zeolite sample, as well as its purified and modified forms are characterized using XRD, SEM-EDS, chemically with ICP and BET techniques. Cation exchange capacity (CEC) of the samples will be determined using ammonium acetate method. Leaching of trace elements from the samples will be studied using EPA approved leaching test. The modified form of British Columbian natural zeolite will be used to study their capacity as anti-bacterial agent for water treatment purposes toward e. coli and coliform.

Kristen Hirsh-Pearson – MSc NRES Forestry

Title: *A Review of Mapping Cumulative Threats: The Trends, the Gaps and the Future*

Abstract: Cumulative threat mapping quantifies human influence across space and time, highlighting the extent and intensity of anthropogenic pressures while providing a foundation for mitigating environmental threats to natural systems. However, little is known about where cumulative threats have been mapped as well as which specific threats have been studied. Here we review current research mapping cumulative threats, highlighting gaps in the terrestrial, marine, and freshwater realms. We also identify how far along the Pressure – State – Impact framework studies progress, whether maps are static versus dynamic, and classify all threats into unified categories associated with species decline. Our results inform practitioners of areas that have yet to be mapped, on how to categorize threats in order to make them unified and relevant to biodiversity decline, and how to translate threats to identify state and impacts.

S M Nazrul Islam – PhD NRES

Title: *Satellite based methane concentration over the region of natural gas development area in B.C., Canada*

Abstract: Although British Columbia's natural gas resource is an economic boon, improper handling during its production, distribution and use can result in increased emissions of methane to the atmosphere. In 2014 it was estimated that 21% of B.C.'s total methane emissions (10,633 kt CO₂e) were from mining and upstream oil and gas production, as well as fugitive oil and natural gas sources. In this research, satellite-based methane concentrations (XCH₄) will be used to detect positive methane anomalies in spatial maps of regions associated with oil and gas industries. We will compute XCH₄ anomalies for the selected target regions by subtracting the monthly mean values of SCIAMACHY and/or GOSAT XCH₄ for the respective entire region from the individual satellite observations. By doing so, signals from large-scale seasonal variations and global increases will be filtered out, yielding regional enhancements relative to varying background concentrations. Next, the computed satellite anomalies are averaged over the time periods of 2004-2006 (before the rapid expansion of natural gas extraction) and 2007-2009 (after the rapid expansion). The differences in anomalies between these time periods are used to see the changes in atmospheric methane in Northeast B.C. before and after the rapid development of natural gas. This study is the first step towards methane emission estimation using satellite data.

Closing Remarks

3:00pm
Bentley Center
Trina Johnson – NBCGSS President

