

2012 Graduate Student Symposium

Thursday, April 26 UBC DEPARTMENT OF GEOGRAPHY

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9:00–9:10

Welcome: David Ley

Session Chair: Andreas Christen

9:10–9:30

Chris Adderley (MSc)

9:30–9:50

Liam McGuire (MA)

9:50–10:10

Matthew Kinnear (MSc)

2:40–3:00

3:00–3:20

3:20–3.40

Break

Session Chair: Jim Glassman

Michael More (MSc)

Amanda de Freitas (MA)

Ilana Klinghoffer (MSc)

Coffee Break

Session Chair: Merje Kuus

10:40–11:00

Sandra Banholzer (MSc)

11:00–11:20

Andrea Marston (MA)

11:20–11:40

Jenna Keane (MSc)

11:40–12:00

Justin Lau (MSc)

Conclusion

LUNCH

Session Chair: Dan Hiebert

1:00–1:20

Molly Kraft (MA)

1:20–1:40

Holly Buehler (MSc)

1:40–2:00

Xiao Fu (MA)

2:00–2:20

Lesley Winterhalt (MSc)



The UBC Department of Geography is pleased to host students, faculty and guests on April 26 for the 2012 Graduate Student Symposium. Second-year master students will be presenting their latest research findings with opportunities for discussion and constructive feedback. Each presentation will take approximately 15 minutes with five minutes afterwards for questions.

Chris Adderley (MSc)*The effect of preferential view direction on measured surface temperature*

The complete surface temperature $T_{0,c}$ of a complex urban surface is a key parameter in the urban energy balance, but is however difficult to measure. The goal of this presentation is to quantify typical differences between $T_{0,c}$ and surface temperature as measured from for different view directions over the course of a single day.

A full day of thermal panoramas was collected using a thermal scanner mounted on a hydraulic tower in a relatively uniform suburban residential area in Vancouver, Canada. The panoramas are combined with a high-detail 3D model of the urban form constructed via photogrammetry. Computer vision techniques are used to match thermal pixels to their world locations and attrib-

ute material, slope, aspect, sky view factor and relative altitude to them. From the dataset, a representation of $T_{0,c}$ is reconstructed using statistical relationships and knowledge about the actual 3D form of the urban surface. Computer graphics techniques then allow simulation of surface temperature for several view directions.

Liam McGuire (MA)*The Ten Cities of Toronto: Patterns of Socio-economic Inequality and Polarization throughout the Toronto Census Metropolitan Area*

My research employs mostly quantitative methods to explore the Greater Toronto Area, an urban region with over 6 million people. I am approaching this study of Toronto to explore the effects of neo-liberal urban governance on the city, characterized by growing levels of socio-economic polarization and inequality. Some key parts of my

research involve forming a typology of Toronto neighbourhoods via a multivariate analysis, thinking about urban planning discourse as driven by the ideology of the competitive and entrepreneurial city, and exploring the rapid growth of new suburban land tracts on the rural-urban fringe, where many new immigrant homeowners are

paying large percentages of income on homeownership costs. Through this research, I hope to provide new insight on the challenges residents in the Greater Toronto Area face as they attempt to secure affordable and suitable housing in an increasingly unequal urban region.

Matthew Kinnear (MSc)*The effects of discharge and slope on hyporheic flow in step-pool morphologies using cold water as a tracer*

The hyporheic zone is a transitional area between surface and groundwater systems that has a range of habitat characteristics supporting a wide range of species. For this reason, a better understanding of the movement and extent of flows through the sub-surface may lead to innovative habitat restoration techniques to make streams more productive and to enhance

aquatic stream biology. While the majority of studies thus far have studied the hyporheic zone at the catchment-scale, this study has investigated hyporheic flow at the channel unit scale to better understand the role of streambed topography on subsurface flows. A series of experiments were conducted which examined hyporheic flow in a 5 metre long, 0.8 metre

wide flume using cold water as a tracer. The channel consisted of 3 step-pool units with 64mm sized steps, discharges between 0.3-4.5L/s and slopes of 8 and 4%. The results indicated the water moving along the steeper (8%) slopes and the moderate discharges produced much deeper subsurface flows with the most significant changes occurring at the lowest flows.

Sandra Banholzer (MSc)*The new Central Pacific El Niño and its impact of the weather and forest fire pattern in the Pacific North West.*

In recent decades, the frequency of forest fires has been increasing in the Pacific North West (PNW). Several studies have already established a connection between ENSO, and forest fire occurrence. However, a recently discovered variant of El Niño, called Central Pacific El Niño has been observed more frequently

in the last few decades. This may cause different extra tropical teleconnections than the canonical El Niño. The objective of this research is to analyse current methods of identifying the new type of El Niño and establishing the associated impacts it has on weather and forest fire seasons in the PNW. The analysis reveals

that current methods are suboptimal and that a binary distinction leads to misclassifications. It further reveals that the teleconnections related to the two types show a different pattern. Exploratory analysis of the forest fire seasons following the events also shows a different pattern.

Andrea Marston (MA) *Actually Existing Post-Neoliberalism? Community Water Governance in Peri-Urban Cochabamba, Bolivia*

My research focuses on community water systems in peri-urban Cochabamba, Bolivia, with the goal of exploring frictions between supposedly "post-neoliberal" politics and actually existing water governance. In the year 2000, *Cochabambinos* rose up to protest the privatization of the city's water supply; this uprising acted as a catalyst for a series of protests that are

frequently attributed with the end of neoliberal hegemony. The hundreds of community-owned water systems that operate in the peri-urban south of the city played a major role in this protest, and they continue to play an important role in the post-neoliberal imaginary. I use the idea of "community" to engage with two major bodies of literature: the neoliberalization of nature and the

politics of scale. In the first I consider whether the community systems represent an alternative to the neoliberalization of urban water supply, and in the second I trace the role that scale has played and continues to play in the community systems' struggle for recognition. In both cases, I am interested in the relationship between governance strategies and historic socio-political context.



Jenna Keane (MSc) *Air Quality and Visibility during Forest Fire Smoke Events in Southwestern British Columbia*

In recent years, the frequency of forest fires has been increasing in western North America. With an increase in forest fire activity, attention has been drawn to the negative effects forest fire smoke has on air quality and visibility. Smoke particles from forest fires can travel over long distances, degrading air quality. This study quantifies the relationship

between smoke, air quality and visibility. The study was conducted from 2008 through 2011 during the fire season (April-October) in southwestern British Columbia. There were 67 smoke days and the trajectory of the air parcels on each smoke day was determined. Atmospheric visibility was calculated using digital images instead of using a nephe-

lometer. Fine particulate matter and ozone were examined at 12 locations across the Lower Fraser Valley. The concentrations of pollutants were compared during smoke and non-smoke events. The results help to improve regional air quality and visibility forecasts.

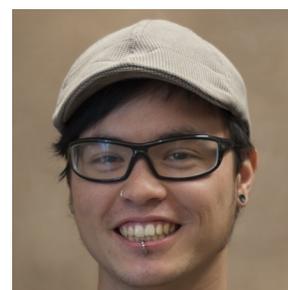


Justin Lau (MSc) *ENSO Teleconnections in the Caribbean: Incorporating and differentiating the influence of central pacific ENSO events upon sea surface temperatures*

The recently identified Central Pacific El Niño-Southern Oscillation (CP ENSO) mode has been shown to have different spatial and temporal teleconnections with the Caribbean than the classic Eastern Pacific El Niño-Southern Oscillation (EP ENSO) phases of El Niño and La Niña. Analysis was conducted upon NOAA's Optimum Interpolation Sea Surface Temperature version

2.0 daily 1-degree dataset during the satellite era (1982-2010). From these years, four events of each kind were selected for analysis. The Caribbean has classically been identified as a region where sea surface temperature (SST) is affected by ENSO, but with new knowledge about ENSO, the relationship needed to be revisited. Statistical analysis upon the

different populations of ENSO events identify that depending on event type, SST teleconnections in the Caribbean are associated with different spatial distributions. These results have potential implications for coral reefs, as well hurricane development due to the distribution of the teleconnections.



Molly Kraft (MA) *Multicultural (Un)belongings*

I investigate the ways that Muslim immigrant women have been affected by (and negotiate and resist) changes to Canadian multicultural policy over the past two decades. This group has become a popular symbol for the perceived incompatibility between Multiculturalism and specific cultural practices (Bilge 2010). I examine how these women come to see themselves in relation to the ways that their

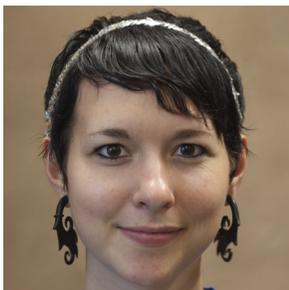
social, cultural and religious practices are framed as inherently incompatible with Canadian societal norms. I am particularly interested in their sense of belonging and how they speak about this issue.

How are their understandings of belonging affected, produced, or placed outside of, the official story of being in Canada? I draw from feminist, anti-racist scholarship calling for more nuanced

and critical approaches to concepts of integration, multiculturalism and nationalism (Thobani 2007, Razack 2008). Finally, echoing Jasbir Puar, I ask whether we can "keep our senses open to emergent and unknown forms of belonging, connectivity... [and] ... intimacy" (Puar 2007, p. xxviii) and how these might inform or enliven our studies of immigration and the politically-charged process of integration.



Holly Buehler (MSc) *Assessing morphologic change as a result of a hydro-peaking dam on the Kananaskis River*

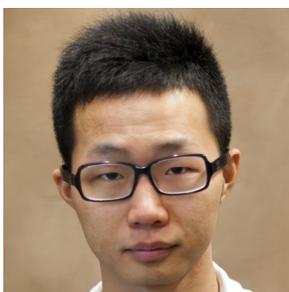


The damming of the Kananaskis River caused unique changes in flow regime through reduction of high flows and creation of daily peaking flow with no associated alteration in sediment supply. We assessed reach scale morphological channel change emphasizing the role of vegetation in affecting channel adjustment. Pre and post-dam channel conditions were assessed through

historical photos, field measurements, and airborne remote sensing techniques. The 8 most upstream sites were characterized by minimal narrowing while the downstream sites exhibited statistically significant narrowing over the period of interest. Additionally, throughout the entire region the vegetated banks shifted from grass and shrub dominance to coniferous forests.

In these downstream reaches with a more attenuated hydro-peaking flood pulse it appears that bank stability associated with riparian vegetation acts as an important control on channel adjustment. Therefore changes in channel morphology cannot be explained solely by altered flow regime, but also must consider vegetation dynamics.

Xiao Fu (MA) *Commercialization of University Research: the case of Nanjing, China*



The Chinese government is propelling commercialization of university research as a strategy to boost industrial innovation and upgrade economic structure. Nanjing, the national 3rd biggest hub of science and technology (S&T) resources, was selected in 2009 as the only pilot city for comprehensive S&T institutional reform. Based on in-depth key informant interviews, site visits and documents collected from multi

sources, this study aims to examine the mechanisms and evaluate the effectiveness of university research commercialization in Nanjing. First, a critical review of the development trajectory of innovation theories serves to establish the theoretical grid for this paper. Following is a survey of the multi-layer policy, institution and programme apparatus put up by multi-scalar governments, which sets the parameters of local endeavors. Then, four

sets of commercialization channels, 1) government initiatives, 2) university technology transfer offices, 3) university-affiliated S&T parks, 4) university-government cooperative platforms, are examined both in their respective functions and mutual interactions. The paper concludes by identifying problems in the commercialization system and generating policy implications.

Lesley Winterhalt (MSc) *Physical habitat below a hydropeaking dam examining progressive downstream change*



Hydropeaking dam operations often drastically alter natural flow regimes, to time flow releases with consumer energy demands. These large alterations to flow regimes affect aquatic organisms and their habitats. In this study, a 40-km stretch of the Kananaskis River (Ab) below a hydropeaking facility was examined to assess quantitative physical changes at

progressive distances downstream from the dam. The physical habitat properties examined were depth, velocity, total suspended solids, substrate size, and channel bed mobility. Additionally, benthic invertebrate samples were taken immediately upstream and downstream of four tributaries. These samples are compared to similar samples from an unregulated river. Seven sites were chosen to

examine physical habitat characteristics which were measured at high and low flow dam releases. Depths and velocities were modeled using RIVER2D (a 2D hydraulic modeling program). Preliminary results suggest that changes in physical habitat characteristics are great close to the dam, but follow less discernible patterns at great distances downstream.

Michael More (MSc) *Building A Global Sediment Database*



This project has two purposes: to create a global database of specific sediment yield, and to explore interpolation and visualization methods in quantifying spatial patterns of sediment yield and data uncertainty. This database draws on over two dozen data sources, taken from published material and datasets donated by other researchers.

As of now, the database contains over 7,000 data points from 19 countries across five continents. Detailed datasets include the United States, China, Canada, and Romania. Data quality guidelines have been developed to rate each dataset, as part of comprehensive metadata documentation. To demonstrate the potential of this

database, seven GIS interpolation methods will be implemented and compared. To visualize these results, interpolation and uncertainty surfaces will be mapped. By combining detailed metadata, interpolation values, and uncertainty surfaces the spatial distribution of sediment yield can confidently be evaluated.

Amanda de Freitas (MA) *Old Chico's New Tricks? Governance Changes and Water Charges in Brazil's São Francisco River Basin*

Over the past two decades, Brazil has been implementing water governance reforms that include several putatively "neoliberal" components; based on research in the São Francisco River Basin, my thesis centres on two: re-scaled, decentralized participatory governance and bulk water charges (the *cobrança*). Despite the presence of neoliberal narratives and examples of civil

society creatively utilizing the emerging system (including wielding the *cobrança* as a surprisingly polyvalent political tool), already-existing regressive agendas continue to be primarily responsible for shaping governance patterns. I therefore argue against analytically privileging neoliberalization, as it conflates neoliberal "omnipresence" and "omnipotence;" instead, under-

standing the conditions facilitating the perpetuation of these embedded patterns and opportunities for progressive mobilization -- in the age of neoliberalization -- requires greater sensitivity to informal and politicized (rather than path-dependent and institutionalized) aspects of Brazilian public policy decision making.



Ilana Klinghoffer (MSc) *Sediment Storage Patterns in a Small Gravel-Bed Stream*

Sediment transport in small gravel-bed streams is controlled by sediment supply and flow regime. Sediment supply and storage play a major role in controlling channel dynamics and morphology. In this study I examine the spatial and temporal patterns of sediment storage and transport in a small

gravel-bed stream. The study was conducted in East Creek, which contains three unique morphologies: rapid, riffle pool, and step pool. Pit traps, channel mapping, tracers, and aerial photographs have been used to assess sediment transport and annual sediment storage in the creek. Annual sediment budgets

were developed based on elevation difference maps created using the Wheaton method. These sediment budgets show alternating patterns of erosion and deposition with little relation to discharge and channel characteristics.

