Student workshop schedule
June 8-10, 2011
Saint Francis Xavier University
Science building

(1) Understanding climate and global change, (2) The ecological, societal, economic implications of climate change
(3) Solution/mitigation/adaptation (policy, technology) (4) Effective communication

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Program information here: http://create.stfx.ca

Day 1: June 8
Writing Centre Workshop
(CREATE students only)
Nancy Marenick
PSC2045, 9:00AM

Student research presentation
Carrie-Ellen Gabriel (Dal)
PSC3046, 1:30-1:55PM
Patrick Longobardi (StFX)
PSC3046, 2:00-2:25PM
Dale Prest (StFX)
PSC3046, 2:30-2:55PM
Hilary White (Acadia)
PSC3046, 3:00-3:25PM

Guest Lecture
Dr. Shannon Sterling (Dal)
PSC3046, 3:30-4:30PM

Day 2: June 9
Spectrometer hands on
(CREATE students only)
Dr. Dave Risk (StFX)
PSC2051, 9:00AM

Guest lectures
Dr. Karine Lebris (StFX)
PSC3046, 1:30-2:20PM
Dr. Amanda Diochon (Agri-Food Canada)
PSC3046, 2:30-3:20PM
Julian Boyle (HRM energy)
PSC3046, 3:30-4:20PM

Day 3: June 10
Guest lectures
Don Mac Crimmon (Dal)
PSC3046, 9:30AM
Steven Leach (CIPO)
PSC3046, 10:30AM

Canadian Intellectual Property Office workshop
Andrew Kendall (StFX)
PSC2045, 1:30-3:00PM
Actors, in order of appearance

Carrie-Ellen Gabriel (Dal)

*Examining the destabilization of soil organic matter in podzols in response to forest harvesting*

Abstract: Declines in soil carbon storage have been observed following forest harvesting, notably from the mineral soil. The loss of mineral soil carbon following harvesting has been attributed to increased microbial decomposition of soil organic matter (SOM) at depth; however, an alternate explanation for the loss is that the binding of SOM to minerals is destabilized as a result of the suite of changes that result from forest harvesting. Developing a better understanding of the dynamics of subsurface soil organic matter is crucial to understanding the terrestrial carbon cycle. The overall objectives of this research are to determine how forest harvesting can alter soil organic matter stability, and to estimate the C loss from mineral soil as a result of harvesting. This will be accomplished through the examination of mineralogy, soil incubation experiments and monitoring at the field scale. It is expected that this study will reveal mechanisms that explain the observed losses of soil organic matter from podzol soils following forest harvesting.

Patrick Longobardi (StFX)

*Evaluating the effects of regional deforestation and albedo uncertainties in the University of Victoria Earth System Climate Model.*

Abstract: Forests play a key role in influencing the Earth’s climate and at the same time are affected by changing climates. At this point it is estimated that 15-30% of Earth’s natural forests have already been converted to pasture or cropland, and if current trends continue, the Amazon Basin could be reduced to approximately 50% of its current size by 2050. With such large amounts of forest being converted to cropland and grassland, it is important to determine the climatic effects of these actions. To date, most studies have looked into complete removal of trees from large areas i.e. the Amazon basin, all forests above 50 N or complete global deforestation. Through the use of the University of Victoria Earth System Climate Model, this study will investigate the effects on the regional and global climate by removing incremental amounts of forests from high, middle and low latitudes. Satellite observations indicate that surfaces have a range of albedo values, determining the sensitivity of the model to uncertainties in albedo values will be another objective of this study. When different albedos within the range of observed values are used in deforestation simulations, results can vary from a warming, to a cooling response. Also there is a discrepancy between mean albedo values obtained via satellite and mean albedo values used in some models. To test these discrepancies, maximum, minimum and average albedo differences will be assigned to forest-grassland conversions, to determine the temperature response of the model.

Dale Prest (StFX)

*Investigating changes in soil carbon storage post clearcut harvesting in a red spruce dominated forest in central Nova Scotia.*

Hilary White (Acadia)

*Evolution of the Tantramar Marsh: A Paleolimnological Perspective*

Abstract: The Tantramar Marsh is located on the Chignecto Isthmus, NB/NS, the body of land that connects Nova Scotia to the Canadian mainland. This region contains an extensive system of salt marshes and freshwater lakes and wetlands that have been subject to both natural and anthropogenic change. Regional subsidence and sea level fluctuations have impacted the extent and character of freshwater resources. Land drainage and development, over the past 400 years, have resulted in a systematic reduction in freshwater resources within the area that are important to the inhabitant wildlife. Not only is the Tantramar Marsh part of a major Atlantic migratory flyway, but it also provides inland refuge and nesting grounds for waterfowl and many other organisms. My research will focus on using lake sediment records from the Jolicure Lake, New Brunswick to produce a 10, 000 year record of natural and anthropogenic change. Paleolimnological techniques and a variety of environmental change proxies will be applied to lake sediment samples in order to produce a regional record of climate change, to investigate how freshwater wetlands and lakes have physically...
evolved in response to both the natural and human induced change, and to provide an understanding on the impact of specific contaminants (lead, mercury) that are known to exist within the Tantramar Marsh.

Dr. Shannon Sterling (Dal)

*Human Alteration of the Global Water Cycle through Land Cover Change and Implications for Climate*

Abstract:
This lecture explores how human activity alters the global water cycle and explores implications for our climate. Indirectly, human activity alters runoff through climate change, increase in aerosols, and increase in pCO2atm; directly, humans alter runoff through water withdrawals and land cover change. Dr. Sterling will explain why, historically, the impact of land cover change on the water cycle has been difficult to estimate and poorly understood, and then will describe the recent advances that enable more robust studies of the impact of land cover change on the water cycle. Initial results of these studies are provocative, and suggest that land cover change alters the continental water cycle to a similar degree than do climate change and water withdrawals. This new knowledge reveals a new problem: how will these apparently equal drivers, global land cover change and climate change interact to alter the global water cycle? We will discuss potential approaches on how to advance our understanding on this new question.

Dr. Karine Lebris (StFX)

*Global monitoring of air pollution: Trace gas détection*

Dr. Amanda Diochon (Agri-food)

*Dishing the dirt on soil organic matter in a changing climate*

Julian Boyle (Energy Manager, Halifax Regional Municipality)

*Climate Change Dreams: Nightmares, Visions and Realities, Communicating Solutions not Problems*

Don MacCrimmon (Dal)

*Science, Law and a Quest to Stop Acid Rain*

Steven Leach (CIPO)

*IP: What’s in it for you*

Abstract: Introduces five main IP rights: patents, trade-marks, copyrights, industrial designs, and integrated circuit topographies.

Andrew Kendall (StFX)

*Samantha Chang Case Study*

Learning Objectives: Students'IP ownership rights; IP ownership for a university-industry research relationship; importance of non-disclosure and definition of a trade secret; Patent registration process.