UA GIS Day 2009 – Organizers

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NOTES

discovering the world through gis

UA GIS Day

Tuesday, November 17, 2009

A Showcase of GIS Applications at the University of Alberta

AGENDA

12:00	Free LUNCH in the Atrium	*Presentations in TELUS Rooms 236/238*
13:00	Some applications of GIS to improve access to Arctic data and understanding of biophysical processes during International Polar Year	**David Hik & Scott Williamson** *Biological Sciences*
13:30	Using GIS to interact with EMS data	**Daniel Haight** *Centre for Excellence in Operations* *School of Business*
14:00	Essential tools of the trade: GIS is critical for investigating the mechanisms of white-tailed deer, *Odocoileus virginianus*, range expansion	**Kim Dawe** *Biological Sciences*
14:30	Break	
14:45	GIS: Designing our future	**Natalie Fisher** *ESRI Canada – Edmonton*
15:15	Exploring Canada's past: Using census data to reconstitute population historical geographies	**Marc St-Hilaire** *Université Laval*
16:15	Door Prizes	

13:00 Some applications of GIS to improve access to Arctic data and understanding of biophysical processes during International Polar Year

During the 4th International Polar Year (IPY) considerable emphasis has been placed on improving access to data and information, and making better use of spatial information to better understand biophysical and socio-economic processes in Polar Regions. We will review some of the efforts to use GIS tools at various phases of IPY, including proposal development, data management, establishment of observing networks, and research project activities. The development of open source platforms has been critical in the wider adoption of GIS tools to support polar research.

Dr. Hik *is a Professor and Canada Research Chair in the Department of Biological Sciences at the University of Alberta. For the past 25 years he has been studying plant-animal and community dynamics in northern environments. From 2004-2009 he was the Executive Director of the Canadian International Polar Year Secretariat and is currently Vice-President of the International Arctic Science Committee and co- chairs the Arctic Council's Sustaining Arctic Observing Networks initiative.*
Mr. Williamson *is a PhD student in the Department of Biological Sciences. His background is in physics and glaciology but he is currently working on questions related to spatial scaling of Arctic ecosystems using various remote sensing datasets.*

13:30 Using GIS to interact with EMS data

In this presentation we demonstrate how GIS data has been used to support decision-making in Emergency Medical Services. The Centre for Excellence in Operations has conducted over a dozen studies for various emergency services organizations. GIS data has been integral in displaying results, modeling optimal solutions, and creating interactive decision-making tools. We first give an overview of some of the problems decision-makers are faced with. We then talk about the various GIS-based solutions we have developed.

Mr. Haight *is the managing director of the Centre for Excellence in Operations (an applied math research centre in the School of Business), a sessional lecturer, and the founding partner of Darkhorse Analytics. He started his career at Mercer Management Consulting in Toronto advising senior managers and jet-setting around the continent. Subsequently, he nearly made millions of dollars in a small Internet startup. Instead, he enjoyed the magnificent failure of the Internet bust. Along the way, he has started a used car dealership, purchased a second-hand trampoline for fifteen dollars, recorded a rock video, and fathered two children. His current work focuses on emergency medical services and data visualization. Daniel graduated with a Bachelor of Commerce in Business Studies after six years of study.*

14:00 Essential tools of the trade: GIS is critical for investigating the mechanisms of white-tailed deer, *Odocoileus virginianus*, range expansion

White-tailed deer have expanded their range into northern boreal habitats, which are atypical for this species, and they are already having negative effects on native communities. The goal of this research is to understand what is causing deer to expand their range and to develop management strategies to mitigate the spread and impacts of white-tailed deer invasion. Northern ungulates rely on stored body fat to survive winter, a period of net energy loss due to deep snow, cold temperatures, and limited forage intake. Thus there are two main causal mechanisms that may explain white-tailed deer expansion: changing climate (less severe winters) and changing habitat brought about by industrial land use (increased food supply).Disentangling the effects of these hypothesized mechanisms on spread can be difficult, however, because both can increase survival, reproduction, and abundance of local populations of white-tailed deer. Tests must ultimately rely on differences in the temporal and spatial changes in climate, land use and species spread. Geographic Information Systems (GIS) technology is critical for these tests. Using GIS, we can determine where and when changes occurred in climate and land use and link the pattern of white-tailed deer spread to specific components of these phenomena. I will show examples of these applications using (1) 40 years of climate data from across Canada; and (2) aerial survey data linking white-tailed deer to specific land use features. I will also show how GIS is critical for overcoming confounding factors typical to white-tailed deer research.

Ms. Dawe *is in the fourth year of her PhD here at the U of A. She has an MSc from Acadia University in Nova Scotia and a BSc from Memorial University of Newfoundland. Her research interests include population biology, biogeography, and interactions between wildlife and human populations. She is a Newfoundlander who has traded the oceans for the mountains and spends much of her spare time climbing, skiing, and appreciating the beauty of the Rockies.*

14:45 GIS: Designing our future

GIS has transitioned into the world of Enterprise solutions and as GIS professionals we are designing and creating systems for a multiplicity of purposes. Increasingly our technology is being consumed and relied upon by non GIS professionals and we are expected to design our system to meet their needs and expectations. One vehicle that is energizing this movement is the internet. We will use this session to look at the role GIS is playing in bringing data to end users through the web.

Ms. Fisher *has worked in GIS for the past nine years and has been with ESRI Canada for over one year as a GIS Consultant. Her area of expertise is implementing ESRI Solutions for ESRI Canada's Prairie Region customers. Natalie has excellent technical skills in ArcGIS through designing and implementing geodatabases, developing geoprocessing tools to automate tasks, as well as spatial analysis. She is a certified instructor of many ESRI courses including ArcGIS Desktop, Geodatabase and Geoprocessing using Python. Natalie has a Master of Science in GIS from the International Institute for Geo-Information Science and Earth Observation in Enschede, The Netherlands and a Bachelor of Science in Geography from the University of West Indies.*

15:15 Exploring Canada's past: Using census data to reconstitute population historical geographies

The understanding of today's highly differentiated Canadian society has to take into account its evolution through time and the variability of its relationships to space. Such an obvious aim is reachable if the social scientist may count on an array of resources and tools which, if rare and sometimes seemingly inaccessible, are nevertheless available. In a Canadian perspective, the CCRI project and other similar research projects provide the researcher with rich census data sets covering large parts of national history, while GIS software can complete the data processing toolbox to enable the scientist to apprehend large scale past social facts and to replace them within their historical and geographical contexts. This presentation thus aims to present some broad research questions in social historical geography and some ways to address them using GIS. The examples are based on two substantial census data sets: the Canadian Century Research Infrastructure (1911-1951 aggregated data and 1911 micro-data at the census subdivision level), and the Quebec City 1871-1901 census data (at the household level). Discussed topics include methodological issues and types of analyses.

Dr. St-Hilaire*, Director of the Geographic History Laboratory and, until recently, Co-Director of Université Laval's Centre interuniversitaire d'études québécoises (CIEQ). Together with S. Courville, C. Bellavance and N. Séguin, Dr. St-Hilaire has been directing a long-term project: l'Atlas historique du Québec. He has extensive expertise in building and managing vast databases of historical data on populations and habitat (censuses, population records, assessment rolls) and in Geographic Information System analysis. He is a specialist in population geography, and his current research is on the settlement of rural areas, inter-regional migration patterns and the social geography of towns in the 19th and 20th centuries. In addition to overseeing the input of census data, he will, together with his colleagues in Trois-Rivières and Toronto, supervise the cartography of social data under the CCRI project..*