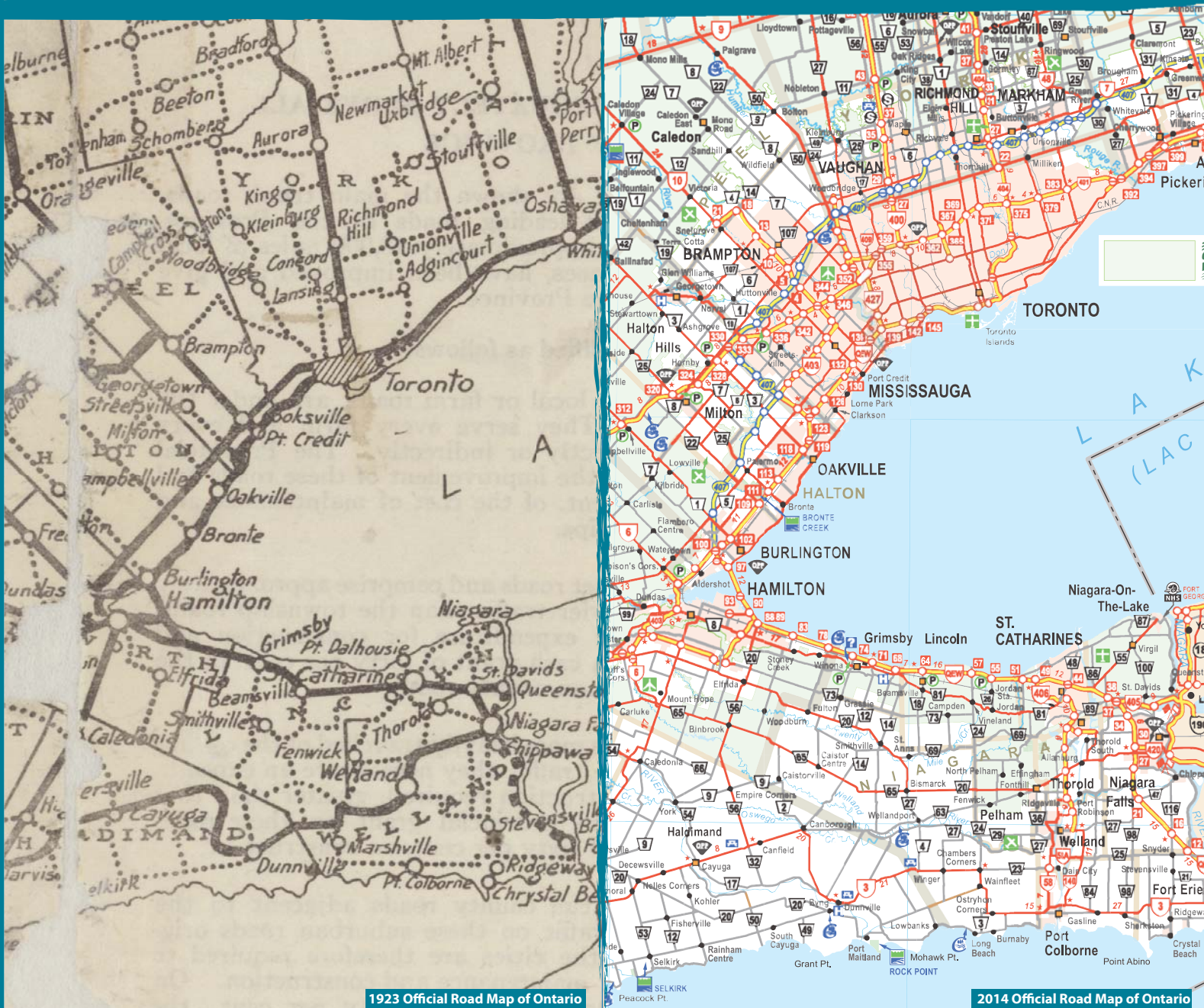




Canadian Cartographic Association 2014 Annual Conference

May 27 - 30, 2014

BORDERS WITHOUT BOUNDARIES



Welcome from the CCA President

On behalf of the executive of the Canadian Cartographic Association, I would like to welcome all new and existing CCA members, academic partners, Geomatics colleagues in industry and students to our annual conference. We thank Brock University in St. Catharines, Ontario and [The Congress of the Humanities and Social Sciences](#) for hosting this year's event. The conference theme for this year is "Borders without Boundaries".

On behalf of the CCA I would like to welcome the delegates of the [Canadian Association of Geographers](#) (CAG) and the [Environmental Studies Association of Canada](#) (ESAC) and thank them for collaborating with the CCA Program and Conference Organization Team in coordinating the sessions and events for this week. As in the past, our joint interest in Geography, Geomatics and geospatial data and analysis will no doubt be reflected in many stimulating sessions and workshops for delegates of all associations to participate in.

At this time I would like to extend special thanks to the many hours of work dedicated by Christine Earl and Lori Martin in acting as liaison with the Congress committee and our joint partners, the CAG and the ESAC to ensure our conference would be a success, including event planning and conference program development.

All CCA conference participants are invited to a complimentary icebreaker reception which will be held at the Old Winery Restaurant in Niagara-on-the-Lake (Tuesday, May 27th, 2014), located in the heart of the local wine growing region. Details regarding bus transportation will be available at registration. The banquet scheduled for the evening of May 29th at the [Ravine Vineyard](#) is located within the same region, providing all our delegates with first hand exposure to the prosperous wine industry in Canada.

I invite you all to make a special effort to attend the GIScience sessions that have been jointly organized by the CCA and the CAG and will take place on Wednesday, May 28th and Thursday, May 29th, 2014.

Once again Roger Wheate is putting us to the challenge of map reading and invites you to register for the Orienteering Event which will take place early on Wednesday evening following the sessions. A small fee will be charged to cover costs of the event. You may register for the event at Conference registration. Please feel free to welcome your CAG and ESAC colleagues to participate. Special thanks are extended to Loris Gasparotto of the Geography Department at Brock University for producing the map for the event. We have introduced two new events for this year's conference. The first is the PechaKucha Night which is scheduled to start shortly after the Orienteering Event on Wednesday night. It is being jointly hosted by the CCA, CAG and ESAC and promises to be a very exciting evening of fast paced and entertaining presentations in a very informal setting.

The second new addition to the CCA conference is the inclusion of workshop sessions open to all attending CCA members to participate in facilitated discussions around the modernization of the CCA. We strongly encourage you to attend both the session immediately after the AGM on Thursday, and to attend the multi-media presentation on Friday morning to be followed by continued facilitated discussions. The intent of these sessions is to begin the conversation of how the CCA can play a leading role in the domain of cartography and geomatics in Canada. What I do know is that we have been constantly changing and will continue to change, as does the technological and intellectual world around us. That is a certainty. What we now need to address is 'how' we need to change. It is a process that will take time – it has started and a solid group of individuals is leading the way. I invite you to join us in this important conversation.

Enjoy the conference and please feel free to share your experiences with myself or with incoming President Christopher Storie.

Anna Jasiak
President

Organizing Committee

Program Chair

Christine Earl

Local Area Coordinator

Lori Martin

Committee

Anna Jasiak

Christopher D. Storie

Paul Heersink

Roger Wheate

The organizing committee would like to thank the following for their assistance in planning your 2014 annual conference:

- Marilynne Jolliveau, Canadian Association of Geographers (CAG)
- Luáine Hathaway, Environmental Studies Association of Canada (ESAC)
- Loris Gasparotto, Cartographer, Department of Geography, Brock University
- Department of Geography, Brock University

Around Congress...

Big Thinking Lecture Series

The *Big Thinking* lecture series is held throughout Congress and is open to all attendees and members of the public. This series brings together leading scholars and public figures who can present forward-thinking research, ideas and solutions to the critical questions and issues of our time.

See www.congress2014.ca/program/big-thinking

Federation Wine and Cheese Receptions

The Federation will be hosting wine and cheese receptions in the Congress Expo (Walker Complex). Meet Federation staff and board members.

Career Corner

Graduate students, new scholars and junior faculty are an important demographic at Congress. *Career Corner* presents our next generation of researchers with an interactive venue to explore relevant and timely themes related to career development.

Presented by *University Affairs* magazine, Brock University and the Federation, *Career Corner* activities are open to all attendees.

See www.congress2014.ca/program/career-corner for a detailed listing.

Congress Expo

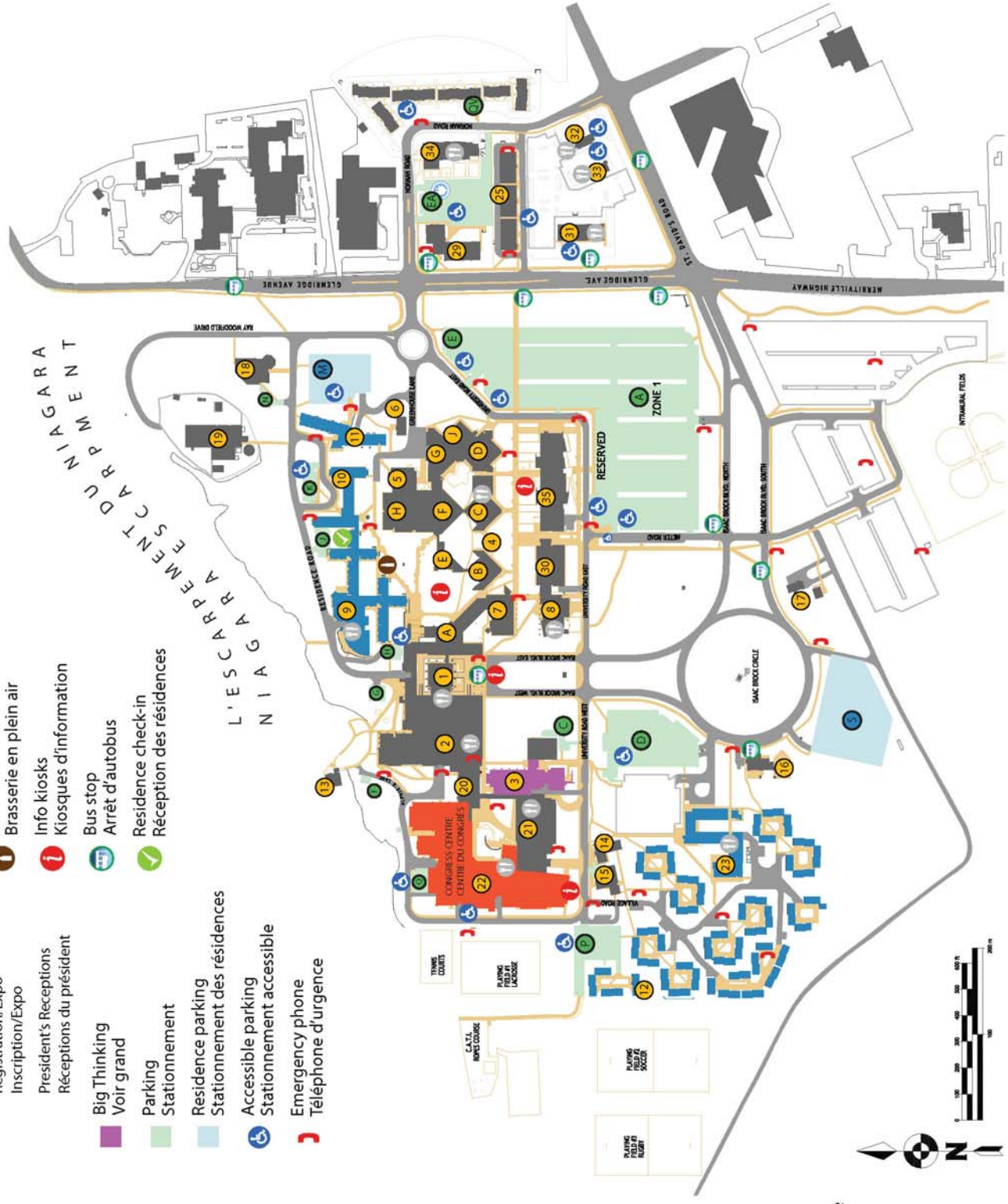
Located with Registration and the Information Office, the Congress Expo gives you the opportunity to discover a wide variety of high-quality, Canadian scholarly literature and connect with research and community partners

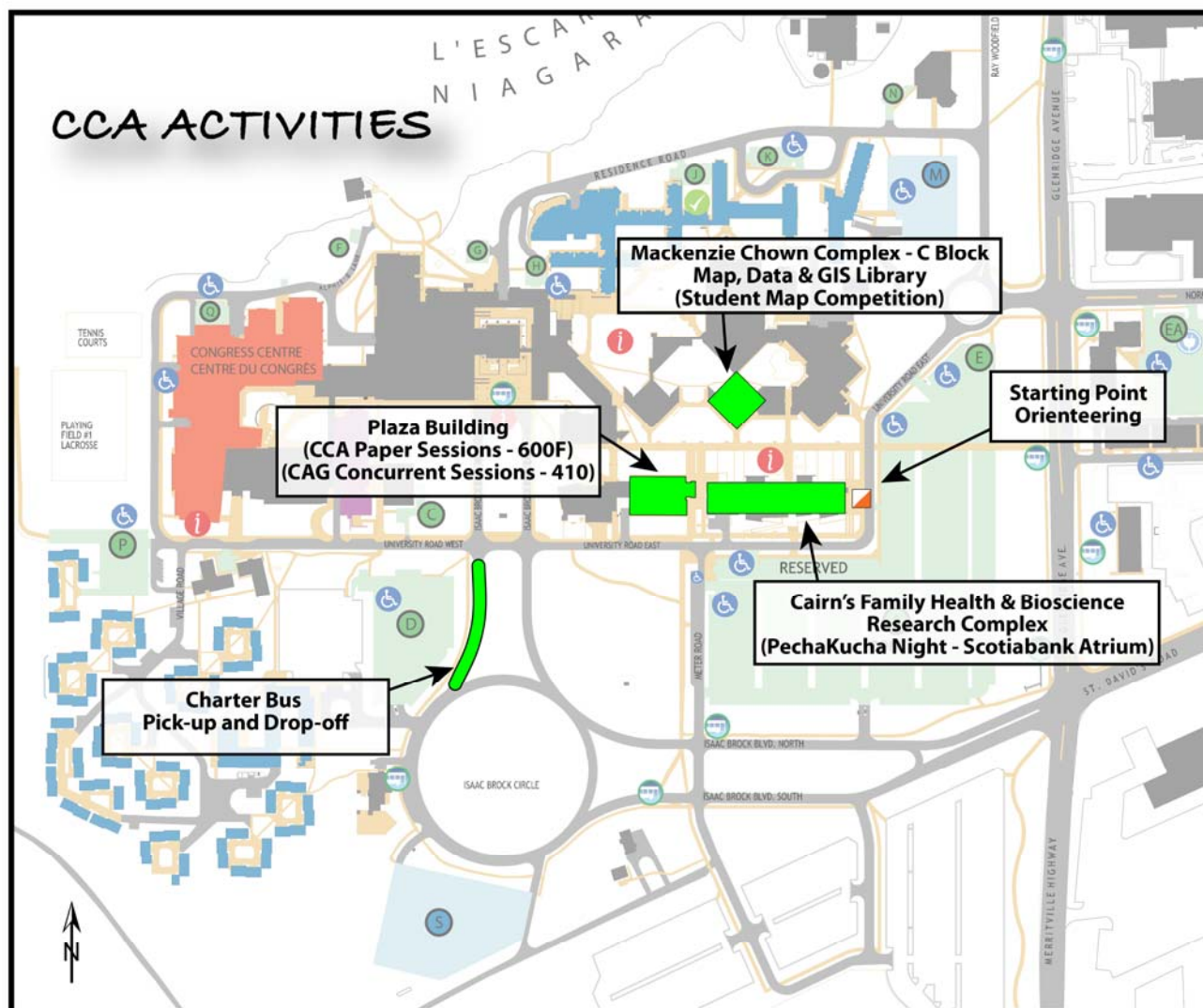
Building index/Index des bâtiments

Legend/Légende

- 1 Arthur Schmon Tower
- *James A. Gibson Library
- *Matheson Learning Commons
- 2 Thistle Complex
- *Sean O'Sullivan Theatre
- 3 Robert S.K. Welch Hall
- *David S. Howes Theatre
- 4 Mackenzie Chown Complex
- *Dr. Charles A. Sankey Chamber
- *Pond Inlet
- 5 Inniskillin Hall
- 6 Alumni Greenhouse
- 7 Taro Hall
- 8 Student - Alumni Centre
- 9 Deewew Residence
- 10 Gordon and Betty Vallee Residence
- 11 Alan Earp Residence
- 12 Village Residence
- 13 Alphonse's Trough
- 14 Harrison Hall
- 15 Kenmore Centre
- 16 Rosalind Blauer Centre
- 17 Theal House
- 18 Concordia Lutheran Seminary
- 19 Central Utilities Building
- 20 Scotiabank Hall
- 21 South Block
- *Art & Val Fleming Commons
- 22 Walker Complex (Congress Centre)
- *Ian D. Beddis Gymnasium
- 23 Lowenberger Residence
- 25 East Academic
- 29 573 Glenridge Avenue
- 30 Plaza Building
- 31 Heritage Place Plaza
- 32 Tim Hortons
- 33 McDonalds
- 34 International Centre
- 35 The Cairn's Family Health & Bioscience Research Complex

- Residences
Résidences
- Congress Centre
Centre du Congrès
- Registration/Expo
Inscription/Expo
- President's Receptions
Réceptions du président
- Big Thinking
Voir grand
- Parking
Stationnement
- Residence parking
Stationnement des résidences
- Accessible parking
Stationnement accessible
- Emergency phone
Téléphone d'urgence
- Electric vehicle station
Borne de recharge pour véhicules électriques
- Food services
Services de restauration
- Wine and Beer Garden
Brasserie en plein air
- Info kiosks
Kiosques d'information
- Bus stop
Arrêt d'autobus
- Residence check-in
Réception des résidences





The "O-Event"!

The Orienteering Event is a tradition at the CCA annual conference!

Orienteering involves locating flag 'controls' using a detailed topographic map. Join us as we explore the beautiful campus of Brock University. You can take a leisurely stroll, searching for the flags OR you can run around finding as many as you can in the shortest amount of time.

Your approach is up to you!

Sign up at the CCA association table (Plaza Building, 600F) before 17:00 on Wednesday, May 28th

Meet for a 17:30 start at the east-facing entrance to the Cairns Complex

Afterwards, join us for the PechaKucha Night which starts at 20:00 in the Scotiabank Atrium (Cairns Complex, Level 2)

Light snacks and cash bar will be available

There may be a small charge to offset the cost of printing the maps

DAY AT A GLANCE

TUESDAY, MAY 27, 2014

CCA Executive Meeting

13:30 – 15:30

Plaza 600A

Icebreaker Reception

The Old Winery Restaurant

2228 Niagara Stone Road, Niagara-on-the-Lake

Depart @ 6:00 from charter bus pick up and drop off location

(See map “CCA Activities”)



WEDNESDAY, MAY 28, 2014

Intro to ArcGIS! workshop

Workshop leader: Colleen Beard, Map Librarian, James Gibson Library, Brock University

Email: maplib@brocku.ca

Date: May 28, 2014 (14:00 to 16:00)

Location: Cairns Complex, Room 217

Join us for this hands-on workshop that introduces basic concepts of ArcGIS. No previous ArcGIS experience is necessary. Participants will learn how to: navigate the ArcGIS 10.1 interface; add multiple map data layers; add tabular data; use basic GIS analysis in a problem solving application, such as querying, geocoding, and buffering; also includes best practices for map design and layout. The concept learned can be applied to many research problems, visualizing research data, and preparing maps for publications.

Although there is no cost for this workshop, pre-registration is required as space is limited to 22 people. Please contact maplib@brocku.ca and use "CAG GIS workshop" in the subject line.

This is a CAG sponsored workshop and CCA participants are invited to attend.

DAY AT A GLANCE

WEDNESDAY, MAY 28, 2014

Student Map Competition

8:30 – 16:30

Mackenzie Chown Complex C Block – 306
(Map, Data & GIS Library)

Paper Sessions

8:30 – 10:00

Plaza 410

Nutrition Break *(Sponsored by ESRI Canada)*

10:00 - 10:30

Plaza 600F

Paper Sessions

10:30 – 12:00

Plaza 410

Paper Sessions (concurrent)

13:30 – 15:00

Plaza 600F, Plaza 410

Nutrition Break *(Sponsored by ESRI Canada)*

15:00 - 15:30

Plaza 600F

Paper Sessions (concurrent)

15:30 – 17:00

Plaza 600F, Plaza 410

CCA Orienteering Challenge 2014

17:30 – 19:30

Meet @ the east-facing entrance of the Cairns Complex

Sign up at the association table near Plaza 600F before 17:00

\$5.00

PechaKucha Night (PKN)

Scotiabank Atrium (Cairns Complex, Level 2)

20:00 – 21:30

Cash bar

CANADIAN CARTOGRAPHIC ASSOCIATION – 2014 CONFERENCE
Borders without Boundaries – Brock University – May 27 – 30, 2014

DAY AT A GLANCE

THURSDAY, MAY 29, 2014

Student Map Competition

8:30 – 16:30

Mackenzie Chown Complex C Block – 306

(Map, Data & GIS Library)

Paper Sessions

8:30 – 10:00

Plaza 600F

Nutrition Break *(Sponsored by TERA Environmental Consultants)*

10:00 - 10:30

Plaza 600F

Paper Sessions

10:30 – 12:00

Plaza 600F

CCA Annual General Meeting

13:30 – 15:00

Plaza 600F

Nutrition Break *(Sponsored by TERA Environmental Consultants)*

15:00 - 15:30

Plaza 600F

Planning for the Future:

Role of the CCA in the 21st Century

15:30 – 17:00

Plaza 600F

President's Reception

17:00 – 19:00

Congress Centre (Walker Complex)

Banquet @ Ravine Vineyard Estate Winery

(with the Canadian Association of Geographers and the
Environmental Studies Association of Canada)

18:30 – 22:30

Depart @ 18:15 from charter bus pick up and drop off location

(See map "CCA Activities")

RAVINE VINEYARD
ESTATE WINERY

DAY AT A GLANCE

FRIDAY, MAY 30, 2014

Carto 2.0 Workshop and Discussion

8:30 – 10:00

Plaza 600F

Nutrition Break *(Sponsored by the Canadian Cartographic Association)*

10:00 - 10:30

Plaza 600F

CCA Executive Meeting

10:30 – 12:00

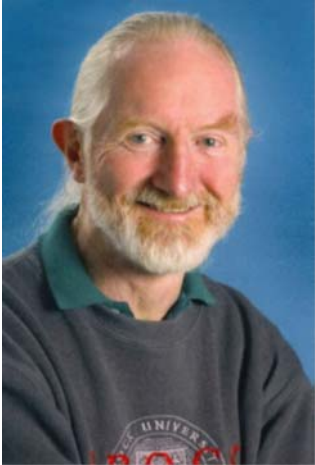
Plaza 601C

Alun Hughes - 1942-2013

Professor of Geography, Brock University 1969-2012

President of the Canadian Cartographic Association 1993-94

During Congress 2014, a special display featuring Alun's work is on view in the Maps, Data and GIS Library. Mackenzie Chown Complex, C-block, Rm 306



Many members of the CCA remember Alun Hughes for his service and loyalty to the association, and his rapid-fire and thoroughly entertaining talks at Annual Meetings.

Born in Wales, Alun worked in London as a cartographic editor before coming to Canada in 1969 to join the Department of Geography at Brock University, where he taught cartography, surveying, geographic information systems, and remote sensing for more than forty years.

Working with colleagues in his department, in particular the cartographic artist, Loris Gasparotto, and scientists in Canada and the U.S., Alun helped produce an impressive atlas of the Great Lakes in 1988. Entitled *The Great Lakes: An Environmental Atlas and Resource Book*, the atlas won the British Cartographic Society's Design Award in the year of publication.

Alun developed an interest in local Niagara history and became well-known throughout the region for his meticulous research on little-known aspects of the history and geography of Niagara. He served on many local committees, boards and historical societies and was a popular speaker, known particularly for his ability to solve historical puzzles and to separate fact from fiction. He was named Honorary Historian of the City of Thorold and received the Queen's Diamond Jubilee Medal in 2013.

An active and generous member of the CCA, Alun began his service to the Association by hosting the Annual Meeting at Brock University in 1991. A highly successful conference, this meeting featured a day in Buffalo at the SUNY campus with cartography and GIS colleagues David Mark and Barbara Battenfield. The banquet that year was honoured by an unexpected visit from a famous local, none other than William Hamilton Merritt (1793-1862), the man responsible for the building of the Welland Canal, played with tell-tale Welsh intonation and wit.

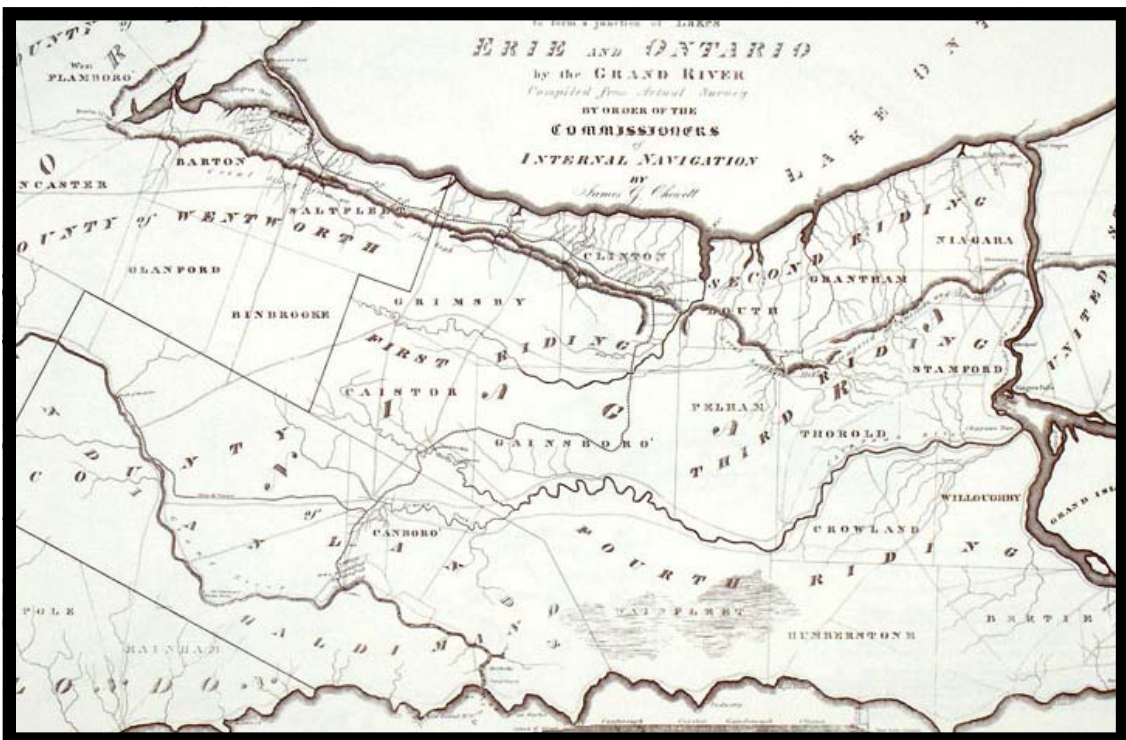
Alun was approached and agreed to serve on the Executive Board of the CCA in 1992, as Vice-President. He then became President for the 1993-94 term. He attended all or almost all Annual Meetings from the 1980s onwards and was a popular speaker, whether arguing for Macintosh tools for cartographers or disputing the origins of Niagara Peninsula toponyms. He was adept in the use of overheads for presentation and was famous for his deft shuffling of sheets of acetate while never losing the thread of his argument.

Alun died in May, 2013 and is very much missed. During your time at Brock University, you are invited to view a special display in the Maps, Data and GIS Library (Mackenzie Chown Complex, C-block, Room 306) that showcases many of Alun's historical works. Beside the display you will also find an information sheet that provides instructions for downloading the full text of several articles written by Alun from the Department of Geography's website.

CANADIAN CARTOGRAPHIC ASSOCIATION – 2014 CONFERENCE

Borders without Boundaries – Brock University – May 27 – 30, 2014

PROGRAM



PAPER SESSIONS

Applications and Development in GIScience I

Wednesday 8:30 – 10:00, Plaza 410)

Special Session Organizer: Tarmo K. Remmel, York University

Chair: Tarmo K. Remmel, York University

James Boxall, Dalhousie University

Enhancing the profile of GIScience in Canada: opportunities and challenges

Yuestas David, Tarmo K. Remmel, André Robert, York University

Quantifying runoff at the sub-watershed level with a physically based model: field measurements and the SWAT hydrological model

Yikalo H. Araya, Tarmo K. Remmel, York University

An evaluation of the predictive performance of Random Forest model for residual patch existence in the Red Lake Fire, Ontario

Laura J. Brown, Wilfrid Laurier University

Climate change and future maple sap flow: working with NETCDF data and GIS

Applications and Development in GIScience II

(Wednesday 10:30 – 12:00, Plaza 410)

Special Session Organizer: Tarmo K. Remmel, York University

Chair: Tarmo K. Remmel, York University

Budhendra (Alex) Singh, Tarmo K. Remmel, York University

Effect of grain size on morphological pattern elements and land cover within boreal wildfire residual patches

Andrei Balulescu, Derek T. Robinson, M. Bogdan Caradima, University of Waterloo

Estimating market potential using census data

M. Bogdan Caradima, Derek T. Robinson, Andrei M Balulescu, University of Waterloo

Criteria development for a suitability analysis of retail development across Ontario, Canada

Shanqi (Ashley) Zhang, Robert Feick, University of Waterloo; Colin Robertson, Wilfrid Laurier University

An approach to collect public visions toward urban places from the Geoweb

Special Panel on a Proposal for a Canadian Historical GIS Network

(Wednesday 13:30 – 15:00, Plaza 600F) CONCURRENT SESSION

Special Session Organizers: Byron Moldofsky, University of Toronto; John Bonnett, Brock University

Structured Panel Discussion

Moderator: James Boxall

Panelists:

Byron Moldofsky, University of Toronto;

Léon Robichaud, Université de Sherbrooke;

Donald Lafreniere, University of Western Ontario

PAPER SESSIONS

Applications in Geospatial Technologies

(Wednesday 13:30 – 15:00, Plaza 410) CONCURRENT SESSION

Special Session Organizers: Josh Valenti and Marilyne Jollineau, Brock University

Chair: Josh Valenti, Brock University

Jeff Pengelly, Kevin Turner, Brock University

Designing and Producing an Online Interactive Mapping Application for the Brock University Campus (St. Catharines, Ontario, Canada)

Nicholas Riddick, Josh Valenti, Brock University

Rainwater Harvest in the Niagara Region

Nick Savelli, Matt Norton, Josh Valenti, Shannen Worden, Brock University

A Comparative Analysis Using Change Detection to Monitor Urban Growth and its Influences on Public Transportation in St. Catharines and Thorold, Ontario (2000-2013)

Josh Valenti, Julia Baird, Marilyne Jollineau, Ryan Plummer, Brock University

Applying a Geospatial Social Network Analysis to Agricultural Advice Networks

Evolving Models of Collaboration by Building Canadian Geospatial Relationships

(Wednesday 15:30 – 17:00, Plaza 600F) CONCURRENT SESSION

Special Session Organizers: Anna Jasiak, Natural Resources Canada; James Boxall, Dalhousie University

Chair/Facilitator: Anna Jasiak, Natural Resources Canada

Anna Jasiak, Natural Resources Canada; James Boxall, Dalhousie University

The Canadian Geomatics Round Table: Building a Pan-Canadian geomatics strategy

Paul Heersink, ESRI Canada

GeoFoundation Exchange (GFX): Progress and Future Directions

Structured Panel discussion

Growth options for the future: Building a strong Canadian Geospatial Community.

Facilitator: Anna Jasiak, Natural Resources Canada

Developments in Volunteered Geographic Information, Web-based Mapping, and Remote Sensing

(Wednesday 15:30 – 17:00, Plaza 410) CONCURRENT SESSION

Chair: Alan G. Phipps, University of Windsor

Alan G. Phipps, University of Windsor

Three Applications of V.3 Google Maps

H. Lawrence, C. Robertson, Wilfrid Laurier University; R. Feick, University of Waterloo

Simulated Point Processes of VGI at Different Spatial Aggregation Units

Soheil Boroushaki, California State University Northridge

ParticipatoryGIS: A Collaborative GIS, Based on Open-Source Mapping Techniques

Su Ye, Dongmei Chen, Queen's University

Comparison of Automatic Threshold Selection Approaches for Change Detection from Remotely Sensed Images

Jonathan Gaudreau, Liliana Perez, University of Montreal

Understanding the factors determining the spatial distribution of boreal birds in Quebec: a multivariate approach

PAPER SESSIONS

Cartography I: Data and Applications

(Thursday 8:30 – 10:00, Plaza 600F)

Chair: Christopher D. Storie, University of Winnipeg

Joni Storie and Christopher D. Storie, University of Winnipeg

Mapping Coastal Wetlands of North Carolina using L-Band SAR Images

Roger Wheate, UNBC

Mapping the last spike: integrating geomatics in Canada's 1:50,000 topographic map series

Cameron Wilson, Natural Resources Canada

Arctic Spatial Data Infrastructure – What, Who and How

Jeff Wielki, TERA Environmental Consultants

A foodshed for Calgary

Cartography II: Visualization

(Thursday 10:30 – 12:00, Plaza 600F)

Chair: Gerald Stark, Alberta Agriculture and Rural Development

Julia Siemer, University of Regina

Mapping the Arts Ecology of Saskatchewan

Menquiang Yang, Concordia University

Geodata From Social Media -A case study in set-jetting

Colleen Beard, Brock University

War of 1812 in Maps

Will Van Den Hoonaard, Atlantic Centre for Qualitative Research and Analysis, Saint Thomas University

Marie Tharp: Inveterate Discoverer of Continental Drift

Planning for the Future: The Role of the CCA in the 21st Century

(Thursday 15:30 – 17:00, Plaza 600F)

Special Session Organizers : Christopher D. Storie, University of Winnipeg; Anna Jasiak, Natural Resources Canada

Facilitators: Anna Jasiak, Christopher D. Storie

Open discussion

Facilitators: Anna Jasiak, Christopher D. Storie

Carto 2.0 Interest Group and Canadian Cartographic Association 2020 Unconference

(Friday 8:30 – 10:00, Plaza 600F)

Special Session Organizers : Cameron Wilson, Natural Resources Canada; Anna Jasiak, Natural Resources Canada

Workshop and Structured discussion

Facilitators: Cameron Wilson, Christopher D. Storie

PechaKucha Night (PKN)

Wednesday 20:00 – 21:30 (Cairns Atrium)

A PechaKucha Night (PKN) is a presentation style where 20 slides are shown for 20 seconds each (six minutes and 40 seconds in total). This format keeps presentations concise and fast-paced. The goal is presentation efficiency and specificity.

This event is being co-hosted by the Canadian Association of Geographers, Canadian Cartographic Association and the Environmental Studies Association of Canada.

Join us in the Scotiabank Atrium (Cairns Complex, Level 2) for this exciting evening!

Light snacks and a cash bar will be available.

Presentations

Aiswarya Baskaran, Kate Sherren, School for Resource and Environmental Studies, Dalhousie University (CAG)

Using Map Elicitation Interviews to capture farmer perceptions of Ecosystem Services

Chris Brackley, *AstheCrowFliesCartography* (CCA)

Near and Far: Exploring the small things hidden in big maps

Runa Das, Ryerson University (ESAC)

A framework of methodology for examining energy literacy

Michael L. Dorn, Stony Brook University (CCA)

Alt-Transport Movements of the 1890s

Kristin Elton, School of Planning, University of Waterloo (ESAC)

Wildlife and Roads: Examining the Incorporation of Wildlife Management Strategies Into Our Road Infrastructure in Ontario

Roger Wheate, University of Northern British Columbia (CCA)

The 9th ICA Mountain Cartography workshop, Banff, April 2014

Jeff Wielki, TERA Environmental Consultants (CCA)

A Sea of Peaks

ABSTRACTS (paper sessions)

An evaluation of the predictive performance of Random Forest model for residual patch existence in the Red Lake Fire, Ontario

Yikalo H. Araya, Department of Geography, York University (yikalo@yorku.ca)

Tarmo K. Remmel, Department of Geography, York University

Wildfires are frequent boreal forest disturbances, and particularly in Ontario, emulating them with forest harvesting has emerged as a legislated forest management goal. Wildfires typically contain a considerable number of unburned residual patches and we present means for learning their characteristics to improve the subsequent emulation of wildfires. We present a method for developing probability maps for the existence of residual vegetation within burned landscapes. Using the Random Forest ensemble method, we develop a set of rules that explain residual patch occurrence based on selected predictor variables. We then implement the rules (akin to inverting the learning algorithm) to build maps of likely residual stand locations. Initially, satellite derived data from eleven fire events (from the same ecoregion) are partitioned into training and validation using a hold-out validation approach. The performance of the model is assessed in relation to two scenarios: 1) given the 11 fire events, the data records from an individual fire event is hold-out for testing while the records from the remaining 10 fire events are used for constructing and calibrating the model, and 2) using independent data (a fire not used in the training of the tool) as validation data, while records from the 11 fire events are used for developing the model. The predictive performance of the model ranges from good to excellent discrimination ability for most of the events within the same ecoregion. However, the predictive power of the model is low for the fire event in the second scenario.

Session: Applications and Development in GIScience I

Estimating market potential using census data

Andrei Balulescu, University of Waterloo (ambalule@uwaterloo.ca)

Derek T. Robinson, University of Waterloo

M. Bogdan Caradima, University of Waterloo

Understanding whether a consumer base is available for a retailer can make the difference between business success or failure. As described in literature, retailers often use 'rules of thumb' in making locational decisions for store expansion. Four methods are developed to estimate retail expenditures in Ontario using census data, each systematically incorporating additional information. These are compared to provincial sales data for accuracy assessment. The methods are applied across three geographic census levels and the distribution, patterns, and casual effects of expenditure estimates are described. Regression and spatial statistics are used in a GIS environment to create spatial profiles of the consumer base. When applied across the landscape, prime regions for retail expansion are identified. Our results outline key variables underlying the location choices of retailers and describe the spatial pattern of expenditures across Ontario.

Session: Applications and Development in GIScience II

War of 1812 in Maps

Colleen Beard, Brock University

Come listen to a story 'bout a man named Brock; Led his British troops then took a fatal shot; His men then charged and the yankees soon they fled; They heard his last command and this is what he said...

"Push on Surgite!" Colleen will use a Google Earth application developed by the staff of the Map, Data & GIS Library to narrate the major events that took place in Niagara during 1812 – 1814. From the place that Brock fell to the trek of Laura Secord, these cartographic gems create a visual enhancement that are just simply lovely to look at.

Session: Cartography II: Visualization

ABSTRACTS (paper sessions)

ParticipatoryGIS: A Collaborative GIS, based on Open-Source Mapping Technologies

Soheil Boroushaki, California State University Northridge

The current trend towards the democratization of spatial decision-making processes requires direct involvement of the general public who are affected by spatial decisions outcomes. It is in this context that local communities are increasingly seeking greater public participation in shaping spatial policy decisions. The concept of PGIS includes a variety of approaches, which aims at making GIS, relevant data and other spatial decision support tools available and accessible to all those with a stake in decision-making and planning. The rise of the Internet has stimulated the development of Web-based PGIS. This paper presents a framework for a collaborative Web-based mapping and GIS. It focuses on the underlying theories and techniques for designing and implementing the conceptual framework. The framework, called ParticipatoryGIS, has been implemented within an open-source JavaScript library for interactive mapping called Leaflet; it consists of a main component, based on the concept of Argumentation Maps, that facilitates and organizes the spatial deliberation. ParticipatoryGIS uses the server-side architecture approach to Web-based GIS. It employs HTML, CSS, and JavaScript on the client-side and a combination of PHP scripting language and a MySQL database on the ParticipatoryGIS server. The open-source Leaflet JavaScript provides the map and interactive mapping functionalities.

Session: Developments in Volunteered Geographic Information, Web-based Mapping, and Remote Sensing

Enhancing the profile of GIScience in Canada: opportunities and challenges

James Boxall, Dalhousie University, Co-Chair of the Canadian Round Table on Geomatics
(james.boxall@dal.ca)

The strength of the GIScience Community in the United States is well known and documented. The development of the field, and the creation of the very concept of GIScience has a certain cache in some jurisdictions but not in others. Recent developments in Canada may provide an opportunity to both improve the profile of the field and the impact of research and development both inside the academe and beyond our borders. The continuation of SKI and other positive efforts may well be a starting point for something broader. This talk will look at the challenges and opportunities for GIScience in Canada with direct reference to related initiatives in education (the Declaration on Geography endorsed by CAG) and the Canadian Round Table on Geomatics National Strategy. This may also be a perfect time to look at more collaborations across the sector as it has been a number of years since the GIScience Group was formed at the CAG meeting at McGill in 2001.

Session: Applications and Development in GIScience I

The Canadian Geomatics Round Table: Building a Pan-Canadian geomatics strategy

James Boxall, Dalhousie University

A key component of the Strategy is leadership and governance. Traditionally, practitioners within wide range of disciplines that make up “geomatics” tended to organize around their specialties – for example cartography, surveying, remote sensing. This served the community well until ever more sophisticated software, computing power, and sensor technologies revolutionized practices and methodologies in the “geo” fields and led to blurring of the lines between disciplines. Today, many ‘geo’ organizations find themselves challenged by:

- Defining themselves narrowly around single “issues/subjects/mandates”
- Limited connections and/ or communication with each other
- The demographic shift - memberships are declining and outreach to next generation is limited

Add to this that no one organization is viewed as the legitimate voice of the Geomatics Sector, and that the well-established, traditional network needs to broaden – new players such as developers of new applications, mobile mapping, 3-D visualization tools, etc. are not at the table.

This presentation will provide information on the Canadian Geomatics Community Round Table, insight into

ABSTRACTS (paper sessions)

its goals and how realizing those goals will benefit the geomatics community in Canada. It will focus on leadership and governance, and seek to challenge the CCA, the CAG and the ESAC to participate in the Canadian Geomatics Community Round Table.

Session: Evolving Models of Collaboration by Building Canadian Geospatial Relationships

Climate change and future maple sap flow: working with NETCDF data and GIS

Laura J. Brown, Wilfrid Laurier University (labrown@wlu.ca)

Climatic change will affect forest ecosystems throughout the world but the impact of these effects will not be uniform and will vary by region. As such Geography Information Systems (GIS) are an important tool to project these impacts at a regional level. In this study regional climate change data (generated by the CanRCM4-AR5) are used to model the effect of changing spring temperature patterns on maple sap flow in Ontario. Maple trees are extremely vulnerable to mid-winter thaws and summer droughts and a successful maple syrup season is dependent upon the right combination of weather conditions for sap to run. Sap collection is limited to a few weeks each spring season when the night temperatures are approximately -5°C and day time temperatures are around 5°C. The focus of this presentation will be on the procedures and tools used to extract the spatial and temporal data relevant to this study from the NetCDF formatted CanRCM4 files, bringing these data into a GIS, and working with them to develop the sap flow model. The maps of the spatial and temporal future impacts of climate change on spring sap flow will be also be presented.

Session: Applications and Development in GIScience I

Criteria development for a suitability analysis of retail development across Ontario, Canada

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Derek T. Robinson, University of Waterloo

Andrei M. Balulescu, University of Waterloo

As part of a study implementing a suitability analysis of retail development across the entire province of Ontario, Canada, criteria were selected and calculated using extensive script automation and large data sets. Suitability criteria at the site and situation level were generated as attributes for approximately 4.7 million parcels in Ontario, including topographic statistics, land cover proportions, and network distance from highway ramps. Across Ontario, parcel characteristics such as elevation, slope, and land cover will be used to determine parcel characteristics and development cost. Situation-level criteria such as the network distance from highway ramps provide a representations of accessibility and visibility of a parcel to high-traffic intersections. Challenges in calculating criteria using large data sets with limited computational resources include data accuracy and completeness as well as the conceptual representations of generalized spatial data. The presentation will highlight some of the challenges in generating criteria for a province of over a million square kilometers and present some of the solutions used to overcome these challenges.

Session: Applications and Development in GIScience II

Quantifying runoff at the sub-watershed level with a physically based model: field measurements and the SWAT hydrological model

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Tarmo K. Rimmel, Department of Geography, York University

André Robert, Department of Geography, York University

The SWAT hydrological model is a semi-distributed physically based model. As a physically based model, parameters are measurable in the field and can be implemented into the model. This study aims to evaluate the potential of integrating field data (hydraulic conductivity, bulk density, and leaf area index) into SWAT, and investigates its benefits for a Canadian watershed. Hydraulic conductivity was measured with the

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Tension Infiltrimeter and Guelph Permeameter, while leaf area index was measured using LAI-2000 and digital hemispherical photographs. SWAT can run based on the empirically based Curve Number (CN) or the physically based Green & Ampt (GA) runoff method, both of which are evaluated with and without field data. Without calibration/validation, adding field data improved performance of the GA method for both the calibration and validation years, but the CN method only improved for the validation year. The CN calibrated or validated model did not benefit from field data, but the GA model significantly improved for the calibrated years. It is suggested that hydrological modeling should proceed with physically based models so that it reflects the physical basis of the landscape. Furthermore, implementation of field data has been found to be beneficial for these models.

Session: Applications and Development in GIScience I

Understanding the factors determining the spatial distribution of boreal birds in Quebec: a multivariate approach

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Liliana Perez, Geography Department, University of Montreal (l.perez@umontreal.ca)

Climate has been proposed as a key factor in the distribution and abundance of bird populations and will be one of the main drivers of ecological changes in upcoming decades. Climate variables, followed by elevation, appear to be key variables shaping the distribution of avian species, as suggested by numerous studies. The boreal region of Quebec provides a rich environment for migratory bird species. However, climatic changes have altered the ecological status, impacting the distribution and behaviour of both resident and migratory birds. The study aims to get a better understanding of the relationships between multi-temporal data of bird abundances and presence/absence with climate and elevation, in order to clearly identify the driving variables in adaptation and spatial patterns distribution of boreal birds. The explanatory datasets used are climate variables, elevation, forest cover and anthropic disturbances. The response variables were bird abundance data, courtesy of eBird and species area ranges, courtesy of NatureServe and BirdLife, for thirty different bird species. The methods used for the analysis were multiple stepwise regression and redundancy canonical analysis. The results of this study can help to better understand the spatial and temporal relationships between boreal birds' spatial distribution and climate change.

Session: Developments in Volunteered Geographic Information, Web-based Mapping, and Remote Sensing

GeoFoundation Exchange (GFX): Progress and Future Directions

Paul Heersink, Esri Canada

The GeoFoundation Exchange (GFX) is a collaborative project that was created for the exchange and distribution of an authoritative Canadian base map in a cloud based secure platform where transactional data is contributed by municipal, provincial and federal participants. The benefits derived from the GFX system includes open data that is accurate, current and complete and is the definitive source in the creation of the Community Map of Canada. Map quality is maintained by enabling feedback from authoritative sources on data accuracy for continuous quality improvement. The presentation will highlight progress to date and focus on future directions and goals.

Session: Evolving Models of Collaboration by Building Canadian Geospatial Relationships

Growth options for the future: Building a strong Canadian Geospatial Community

Anna Jasiak, Natural Resources Canada

The Geomatics Community Round Table is an informal gathering of Canadian geomatics stakeholders. Representatives of organizations spanning the geomatics sector have participated at several meetings hosted by the GeoConnections Program of Natural Resources Canada. Participants have included federal and provincial/territorial governments, private sector companies, non-governmental organizations, professional organizations and associations, and geospatial data and service consumers. The Round Table

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provides a forum for discussion of issues and concerns that affect professional practice and activities in the Canadian geomatics sector – and to find ways in which to collaborate in resolving some of those issues. In 2012, the Round Table undertook the development of a pan-Canadian geomatics strategy. In January 2013, the Round Table agreed to take a Team Canada approach whereby governments adopt a facilitating role, where the private sector thrives under supporting policy, where there is sector-wide and citizen collaboration and wherein the sector is conscious of supporting Canada's future economic, social and environmental future. Based on seven strategic dimensions: Identity, Market, Business Model, Leadership and Governance, Education and Capacity Building, Data Sources, and Legal and Policy Interoperability, the Round Table Steering Committee developed the first draft of a Pan-Canadian Geomatics Strategy between January and December 2013. Input to and feedback on the Strategy from the Canadian geomatics community was gathered over the early part of 2014. Endorsement, action and implementation planning by the community will be sought in May 2014.

Session: Evolving Models of Collaboration by Building Canadian Geospatial Relationships

Simulated Point Processes of VGI at Different Spatial Aggregation Units

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Many studies of VGI have had narrow foci, both in spatial scale and in the type and characteristics of the VGI data investigated. In this paper, we introduce a new metric for better understanding VGI irrespective of platform (e.g. Twitter, Foursquare, or Yelp), and more specifically, to use this understanding to develop novel ways of mining and analysing publically volunteered data over varying spatial scales. VGI point patterns were assessed for variability in local coverage, density, and user-heterogeneity over multiple spatial grain sizes. A comparison of the component and aggregate measures for different simulated point processes was completed to demonstrate the properties of the metric under random and clustered conditions. A key practical outcome of this research is a set of open source tools which allows VGI evaluation / assessment from a user-oriented perspective, irrespective of scale or platform. Five Canadian cities, each of varying size, were used for comparison: Vancouver, Kitchener, Toronto, Moncton, and Halifax.

Session: Developments in Volunteered Geographic Information, Web-based Mapping, and Remote Sensing

Special Panel on Proposal for a Canadian Historical GIS Network

Byron Moldofsky, University of Toronto

The idea of a Canadian Historical GIS Network has been circulating for several years among CAG, CHA, CCA and ACMLA members. Last year at the CCA/ACMLA conference a presentation on this initiative met with substantial popular support. In February of this year a 2-day Canadian Historical GIS conference-workshop (Atelier-conférence canadien sur le SIG historique) was held in Montreal, attracting 40 participants from across the country, meeting at the Bibliothèque et Archives nationales du Québec, and sponsored by "Montreal - Plaque tournante des échanges", a partnership project financed by SSHRC and based at UQAM. Examples of spatial history projects were presented and goals, prospects and ways of developing a network to facilitate historical GIS on a national basis were discussed. This panel will review some of these ideas, and throw the floor open for discussion of building such a network going forward.

Session: Special Panel on a Proposal for a Canadian Historical GIS Network

ABSTRACTS (paper sessions)

Designing and Producing an Online Interactive Mapping Application for the Brock University Campus (St. Catharines, Ontario, Canada)

Jeff Pengelly, Department of Geography, Brock University (jp10re@brocku.ca)

Kevin W. Turner, Department of Geography, Brock University (kturner2@brocku.ca)

Brock University has experienced high student population growth and increased numbers of campus visitors during the past decade. It is necessary to accommodate the navigational needs of those on campus so that people can more efficiently find their destinations. With the support of Brock Marketing and Communication, development of an online interactive campus mapping application has been underway for several months. The initial launch of this application will provide users with the ability to search for and navigate to campus destinations using a mobile device. The application utilizes an ESRI ArcGIS Online template and will be published online using the ArcGIS Server. Brock University spatial data being used in the application has been acquired through digitizing recent aerial photographs and georeferencing of building floor plans. The final map will have a high level of detail and include features such as rooms, pathways, hallways, and pavement markings. By providing an improved navigation system, this tool will help to enhance the experience of long- and short-term visitors to Brock University.

Session: Applications in Geospatial Technologies

Three Applications of V.3 Google Maps

Alan G. Phipps, Department of Sociology, Anthropology and Criminology, University of Windsor
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Computer-programmers have been able since 2005 to code and display their own data on Google maps via the internet. Google basically rewrote its Version 3 JavaScript map application interface, and released it in 2009 for free non-commercial use without the need for a personal key, as documented at <https://developers.google.com/maps/documentation/javascript/reference>. I have now upgraded three different types of Google map applications to V.3 for teaching and research purposes: (1) Point maps with street views, for example, of exterior qualities of houses in two Windsor neighbourhoods, at <http://web2.uwindsor.ca/courses/sociology/hipps/courses/bqmss/uhq2013maps.html#Uhqmap>. (2) Polygon maps of dissemination area data from the 2011 Canadian census for metropolitan Windsor, at <http://web2.uwindsor.ca/courses/sociology/hipps/courses/is/windea11maps.html#Windsormap>. (3) Locational maps for automatically geocoding and displaying points of interest, including the user's (4) location, for example, at <http://web2.uwindsor.ca/courses/sociology/hipps/courses/np/indvillslides.html#IndVillmap>. In demonstrating these types of maps, (1) the speed of rendering V.3 maps has improved over V.2 in general, and in particular if mapping data from an online fusion table. However, (2) synchronous as opposed to asynchronous loading of map data is required for dynamic analysis of those data, such as in creating map legends.

Session: Developments in Volunteered Geographic Information, Web-based Mapping, and Remote Sensing

Rainwater Harvest in the Niagara Region

Nicholas Riddick, Department of Geography, Brock University (nr10bn@brocku.ca)

Josh Valenti, Department of Geography, Brock University (jv10xf@brocku.ca)

With the continuing growth of urban centres, a vast amount of land has been allocated to urban settings. The ability to harvest rainwater and use it for select purposes (i.e. gardens and toilets) presents an excellent opportunity for the conservation and recycling of our most important resource. Harvesting rainwater could hold the potential to reduce the demand on infrastructures, alleviate storm-water concerns, and protect fresh water sources. This project looks at the rainwater harvesting potential over three 'catchment areas' (North Thorold neighborhood, Brock University, and Niagara Region residences). Though several

ABSTRACTS (paper sessions)

assumptions regarding the efficiency of collection have been made, encouraging numbers have been calculated. Estimates of potential rainwater harvesting were calculated at different collection efficiencies using GIS to calculate roof 'foot-prints' alongside regional precipitation data. Beyond the scope of calculating harvesting potential, costs associated with implementation of collection systems was evaluated, along with the potential for households to save money on their water bill.

Session: Applications in Geospatial Technologies

A Comparative Analysis Using Change Detection to Monitor Urban Growth and its Influences on Public Transportation in St. Catharines and Thorold, Ontario (2000-2013)

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The form cities take have major impacts on the lifestyle choices of their residents. In a North American context, urban development continually sprawls outward from downtown centres. Sprawling growth generates difficulties for transportation engineers, urban planners and citizens within cities. Therefore, it is crucial to understand the interconnectedness between both urban development and the transportation network in a rapidly urbanizing world. More importantly, understanding the interconnectedness between urban infrastructure and public transit participation. Public transit allows cities to thrive via the mobility of capital and culture. The following was an analysis of the adequacy of the St. Catharines Transit Commission (SCTC) services offered in St. Catharines and Thorold, Ontario. Sustainable land-use planning requires the cautious use of resources and the management of the process of landscape change. The use of remotely sensed imagery allows for a means of gathering data on temporal trends and spatial distribution within images. Using change-detection techniques provided insight into assessing both, urban growth and how urban growth influences public transit. Although attempting to reverse urbanization would be extremely problematic; continued research similar to this study ensures future growth will be of a sustainable nature. The future of our cities starts with today.

Session: Applications in Geospatial Technologies

Mapping the Arts Ecology of Saskatchewan

Julia Siemer, University of Regina

The term 'arts ecology' is used increasingly to imply that artists create within an interactive, symbiotic system of relationships among themselves and with their larger environment. This SSHRC funded project investigates the arts ecology of Saskatchewan and how artists interact among themselves and with society, what connections are important to their art-making, and whether they form any networks. The impact those connections have on art making, creativity and innovation, economic and cultural wellbeing, and the health and sustainability of communities is mapped using GIS technology. Cartographic output of this study will include visualizations that (1) identify and map the distribution of artists and arts organizations, (2) compare the distribution of artists and their basic demographic characteristics within and among the provincial districts, and (3) identify and map interactively the key networks and interconnections between artists and other artists, artists and arts organizations, artists and other segments of their 'community' (geographical, disciplinary, virtual) and their contributions to local development and the economy. This paper will present some preliminary mapping results and discuss cartographic techniques used to map the variables of the arts ecology of Saskatchewan.

Session: Cartography II: Visualization

ABSTRACTS (paper sessions)

Effect of grain size on morphological pattern elements and land cover within boreal wildfire residual patches

Budhendra (Alex) Singh, Department of Geography, York University (alexeis@yorku.ca)
Tarmo K. Rimmel, Department of Geography, York University

Wildfires burn about 1% of boreal forests in Ontario each year. Post-fire conditions comprise a matrix of burned land cover classes that contained unburned patches, where these residual patches are important ecologically providing habitat, food resources, and other ecological services to the surviving flora and fauna. We study a 55,000 ha fire that burned in north-western Ontario during the 2011 fire season and characterize the residual patches based on land cover composition and their internal morphological characteristics. Our goal is to understand the scaling relationships of pattern measurement across 5 grain sizes (4 to 64 m) using Ikonos imagery, to identify optimal scales of mapping. We measure and test whether grain size coarsening alters the frequency of 10 land cover classes and 8 spatial morphological pattern elements (core, islet, perforation, edge, loop, bridge, branch and background). We also measure the frequency of land cover and pattern elements with 4 and 8 neighbourhood connectivity, 1 and 2 pixel widths, transitioning and in text parameters. Guidos' MSPA tool is used for the measurement by computing morphological metrics based on mathematical operators which describe the geometry and connectivity of landscape features. Preliminary findings show that the occurrence of each MSPA element decreases with an increase in grain size. When considering land cover, the frequency of land cover classes increases especially when observing grain sizes from 8 to 16 m.

Session: Applications and Development in GIScience I

Planning for the Future: The Role of the CCA in the 21st Century

Christopher D. Storie, University of Winnipeg

Anna Jasiak, Natural Resources Canada

The nature and role of Professional Associations and Organizations have changed dramatically with the introduction of the internet and more recently social media. Historically these organizations were forums within which like-minded individuals participated for the sharing of knowledge, exchange of ideas and collegiality. However, a new reality is rapidly emerging. The costs of memberships have increased, the cost of attending conferences has increased but has more value been returned to the participant for their increased costs? With the advent of the internet and social media, much of the information that was once only available through a conference or meeting is now freely available online. Additionally, much of the communication that occurred within the "walls of the association" now happen instantly through email, twitter, open forums and discussion boards, and other more specific venues. The result is a new reality that we need to face and address.

At the heart of this discussion are the possibilities of change for the future of the Canadian Cartographic Association. While the majority of us strongly believe in the continued role cartography and cartographers play within society, the reality is that no one is being formally trained as a cartographer anymore, they are 'geomagicians', 'GISers', and the like. In fact, many universities and colleges no longer offer cartography as a course. Additionally, the ability to make maps (maybe not good ones) has been vastly facilitated by both desktop and web based applications. Most individuals can now make a map, and since it is easy to make a map, i.e. anyone can do it, one may ask "what is the role of the cartographer within this new setting"?

The goal of this session is to plan for the rebirth and reinvigoration of the CCA as an association that is relevant, and representative of today's map makers both professional and amateur. There is a clear role for the CCA moving forward, the key is defining that role.

ABSTRACTS (paper sessions)

To that end we are seeking to generate discussion along the following points:

1. Name – is the name good or do we need to rebrand for the 21st century?
2. What role should the association play, generally and specifically?
3. How do we generate continued and sustained interest in the association and our meetings? This one may be diving in too soon – may need a survey feedback for this one – and other topics that we could not adequately get to – may also be dealt with by a survey. We need to poll the broader membership...
4. What value should be returned to the member through the association and at our meetings?
5. What roles should exist within the association outside of the management executive that will facilitate our new reality?

Session: Planning for the Future: The Role of the CCA in the 21st Century

Mapping Coastal Wetlands of North Carolina using L-Band SAR Images

Joni Storie and Christopher D. Storie, University of Winnipeg

The National Wetland Inventory (NWI) in the USA is required, by congress mandate, to map wetlands every ten years. Funding and current labour-intensive methods cause challenges to achieving this mandate. The goal of this project is to map NWI coastal wetlands in North Carolina using ALOS PALSAR data. Good classification accuracy for the wetlands with larger area distributions were achieved with both Wishart unsupervised classification using Cloude decomposition products and MLC supervised classification using Touzi decompositions. Wetlands with smaller area distributions will require use of higher spatial resolution radar data to achieve acceptable classification results.

Session: Cartography I: Data and Applications

Marie Tharp: Inveterate Discoverer of Continental Drift

Will Van Den Hoonaard, Atlantic Centre for Qualitative Research and Analysis, Saint Thomas University

This presentation offers an overview of the work of Marie Tharp who affirmed the theory of Continental Drift. Although her ideas about Continental Drift were viewed as an affront or heresy to prevailing geological views of the earth, her findings were later overwhelmingly acknowledged by the scientific community. My presentation also describes my attempt to mark that recognition with renaming part of an ocean floor.

Session: Cartography II: Visualization

Mapping the last spike: integrating geomatics in Canada's 1:50,000 topographic map series

Roger Wheate, University of Northern British Columbia.

When Natural Resources Canada finished the Pyramid Peak map sheet, Axel Heiberg Island, in 2012, they completed a task started in 1925 to cover Canada through the 13,377 map sheets at 1:50,000 scale. Due to Canada's large extent, many editions are now decades old, and especially remote northern tiles may have been created over 50 years ago. In this talk, I will demonstrate how combining remote sensing and GIS techniques can be used to both update and generate new layers for topographic mapping, to show glacier retreat, changing hydrological features and subordinate vegetation layers. Within the standard GIS toolbox, the Raster calculator, spatial analysis and Intersection overlay can be used to both create additional layers and to enhance symbolisation options. I challenge and encourage the application of these techniques in college and university courses in Cartography, GIS and remote sensing for assigned project work as a means of both updating and enhancing our national topographic mapping and for more effective geovisualisation and understanding of our northern landscapes.

Session: Cartography I: Data and Applications

ABSTRACTS (paper sessions)

A foodshed for Calgary

Jeff Wielki, TERA Environmental Consultants

Calgary is surrounded by agriculture land and is in the heart of Alberta's cattle country. In reality, much of this production is exported, but if it is assumed production surrounding the city flows into Calgary to meet production, how far does that food need to travel to meet the food demand? Statistics Canada's food production data for Alberta and BC in combination with road and land cover data was used to distribute the production of various food groups. The resulting foodshed was determined and shows that food production in Alberta does not meet the food demand in Calgary. A watershed can be described as the terrain, elevations and barriers which deflect raindrops into one river basin or another. A foodshed is similar, but the factors guiding the movement and distribution of food are economic. The results for Calgary's foodshed are depicted as a physical landscape in an effort to lend meaning to the food boundary and the landscape of food production.

Session: Cartography I: Data and Applications

Arctic Spatial Data Infrastructure – What, Who and How

Cameron Wilson, Natural Resources Canada

The Arctic Spatial Data Infrastructure is being built to serve the peoples of the North in a changing Arctic. The presentation outlines precisely what an Arctic Spatial Data Infrastructure is; both on the International stage and within Canada. The Infrastructure's suite of data, standards and policies are explained. The presentation demonstrates who the current contributors are and how future participants may contribute for the benefit of the greater community. The session concludes with a discussion on what academic resources could be accessed via the Arctic Spatial Data Infrastructure.

Session: Cartography I: Data and Applications

Carto 2.0 Interest Group and Canadian Cartographic Association 2020 Unconference

Cameron Wilson, Natural Resources Canada

The mandate of the Canadian Cartographic Association (CCA) is to promote interest in cartographic research, education and the exchange of ideas and information through meetings and publications. Excellent work and conversations have occurred over the long history of CCA and at the Congress of the Humanities and Social Sciences by way of annual meetings and newsletters. The Internet provides a rich and diverse platform for the sharing of cartographic thought. This session will demonstrate the results of a survey of cartographic information services and how this information can further the mandate of the CCA. After the presentation your ideas will form categories that will be discussed during an unconference workshop. The results of this workshop will help position the CCA for 2020.

Session: Carto 2.0 Interest Group and Canadian Cartographic Association 2020 Unconference

Mining Geodata From Social Media -A case study in set-jetting

Menquiang Yang, Concordia University

With the development of web 2.0 technologies, more and more geospatial data is generated via social media. This segment of what is now called "big data" can be used to further study human spatial behaviors and practices. This presentation aims to explore different ways of extracting geodata from social media in order to contribute to the growing body of literature interested in exploring the potential of the geoweb for human geography. More specifically, this presentation focuses on the potential of social media to study a

ABSTRACTS (paper sessions)

growing tourism phenomenon: set-jetting. Set-jetting refers to the activity whereby people travel to visit shooting locations that appear in movies (Joliveau, 2009). The case study presented here focuses on the Mansfield reformatory (Ohio, US) which was used as the shooting location for the film *Shawshank Redemption* (Dir. Frank Darabont, 1994). Through the analysis of georeferenced data mined from Twitter, Flickr, and Tripadvisor, this presentation presents and discusses the differences and similarities between these three platforms to share and access geodata associated to an alternative tourist destination. It also provides an overview of the origins and destinations of the tourists visiting these places and using these social media to share their experience. The next phase of this project is to use this data to determine the different spatial trajectories of these visitors in order to better understand how different social media can be used to track human mobility.

Reference: Joliveau, T. (2009). Connecting real and imaginary places through geospatial technologies: Examples from set-jetting and art-oriented tourism. *The Cartographic Journal*, 46(1), 36-45.

Session: Cartography II: Visualization

Comparison of Automatic Threshold Selection Approaches for Change Detection from Remotely Sensed Images

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Dongmei Chen, Department of Geography, Queen's University

Image differencing is one of most common techniques for detecting changes from multi-temporal remotely sensed data. When using this approach, threshold selection is a crucial component to determine change vs. non-change. Although several methods have been developed to automatically define an optimal threshold, the efficiency of these methods has not been examined in terms of isolating regions of change for remotely sensed images. In this paper, we first review image differencing method and its main considerations and issues in the literature of remote sensing. Second, we present six automatic threshold selection algorithms available from the literature including 1) Kapur's approach, 2) Rosin's approach, 3) Otsu's approach, 4) Tsai's approach, 5) Distribution-Estimation approach, and 6) EM (Expectation-Maximum) algorithm based on Bayes Framework. We tested these six approaches with multi-temporal images with different spectral and spatial resolutions including TM, IKONOS, and digital aero-photos. The results are evaluated using a feature-based evaluating framework. From initial testing results Kapur's and EM approaches show consistently high performances on the images with different resolutions while the effectiveness of other four methods varies by scales and image contexts.

Session: Developments in Volunteered Geographic Information, Web-based Mapping, and Remote Sensing

An approach to collect public visions toward urban places from the Geoweb

Shanqi (Ashley) Zhang, University of Waterloo (s72zhang@uwaterloo.ca)
Robert Feick, University of Waterloo
Colin Robertson, Wilfrid Laurier University

The explosion of location-aware technologies in the past five years gives people new methods of geotagging items and events; interacting with each other; and publishing their own opinions. New opportunities are emerging for urban planners to collect public visions from citizen-contributed place semantics in ways traditional public meetings cannot. A growing body of literature has thus explored the capacity of user-generated content to discover spatial and some non-spatial aspects of place. However, relatively little scholarship to date has focused on uncovering encoded meanings of place, such as peoples' feeling toward places, from web resources. In this paper, we investigate the capability of social media to capture public opinions toward urban places. Text posts are extracted from Twitter, the most popular micro-blogging platform, to build a local knowledge repository for the City of Waterloo, Canada. Opinion mining method is applied to extract sentiment expressed in these texts. The extracted sentiment expressions are then

ABSTRACTS (paper sessions)

associated with their according places based on geo-locations and place names. In this way, we are able to capture peoples' visions toward urban places from public input. Overall, this paper proposes a method that moves forward from mining place semantics only regarding locations and place names to discovering richer place semantics encoded in VGI.

Session: Applications and Development in GIScience II

ABSTRACTS (PechaKucha Night)

Using Map Elicitation Interviews to capture farmer perceptions of Ecosystem Services

Aiswarya Baskaran, School for Resource and Environmental Studies, Dalhousie University (CAG)
Kate Sherren, School for Resource and Environmental Studies, Dalhousie University

Agriculture is a resource based industry that is highly dependent on water availability. In turn, water resources and associated Ecosystem services can be impacted by agricultural activities. In recent years, there is considerable interest in understanding the spatial, temporal, and dynamic nature of Ecosystem Services. Moreover, there is considerable interest in understanding stakeholder perceptions of Ecosystem Service delivery. In this study, we particularly focus on farmer perceptions of Ecosystem Services and Dis-services. It is important to study farmer perceptions since, farmers are important beneficiaries of Ecosystem Services and have the capacity to impact ecosystems. We focus on a small farming community, the Musquodoboit Valley located within Nova Scotia, Canada. Using map-based elicitation and semi-structured interviews, we captured farmer perceptions of the different services and dis-services offered by water bodies. Through preliminary analysis of our interview data, we have identified that farmers attributed “provisioning” services to the River, for it provides fertile soil to adjacent agricultural land. Further analysis aims to capture the Ecosystem service flows and the management practices that influence the delivery of these services. Findings from this research will help us understand how farmers perceive water bodies surrounding their farm and their willingness to conserve these water bodies.

Near and Far: Exploring the small things hidden in big maps.

Chris Brackley, AstheCrowFliesCartography (CCA)

This presentation will showcase 10 maps, with two slides for each map. The first will be a detailed area

highlighting an interesting nugget of information or a beautiful pattern. The second will be a view of the entire map, showing the context from which the detail came. I will focus on some of the large floor maps (11 x 8 m) I've produced for Canadian Geographic in the last few years, as well as poster maps and various 3D renderings.

A framework of methodology for examining energy literacy

Runa Das, Ryerson University (ESAC)

Canadian households rely on energy to heat, cool, light their homes, heat domestic water, and operate appliances. Although these needs are largely unavoidable, rising levels of greenhouse gas emissions makes energy conservation an integral part of our energy future. Increasing energy conservation at the household level by influencing occupant behaviour change is an ideal strategy: behaviours performed voluntarily are typically strong and the associated costs for behavioural programs are generally lower in comparison to other tools such as technology. In order to apply effective behavioural strategies more work on occupant level variables is needed. This research therefore seeks to address an under examined area of research with the following objectives: 1) establish criteria for measuring energy literacy; and 2) develop a valid and reliable quantitative instrument to measure energy literacy.

Energy literacy will be broadly defined and then, more specifically, using other literacy frameworks. These frameworks as well as expert consultation will help determine benchmarks and question development. The questionnaire will go through rounds of pilot testing. The first pilot will be an item pilot, which will help determine items for retention and examine the number of subscales that result after analysis. Both statistical and qualitative criteria will be used to determine item retention/rejection. Retained items will be administered to another sample in order to once again examine questionnaire items as well as instrument validity and reliability. Statistical methods associated with factor analysis will be used to dictate the development of this instrument.

ABSTRACTS (PechaKucha Night)

Alt-Transport Movements of the 1890s

Michael L. Dorn, Stony Brook University (CCA)

Tim Cresswell (*On the Move*), and Glen Norcliffe (*Ride to Modernity*) have directed the attention of mobilities researchers to social movements on behalf of non-dominant transit and transportation modalities. A cultural geographer by training, at the CCA- and ESAC-sponsored *pecha kucha* evening I propose to highlight early initiatives to improve travel and trade in Great Lakes region of Canada and the United States. Towards the end of the nineteenth century, wheelmen (and wheelwomen) on both sides of the border allied with canal interests to improve local and regional travel. Images to be featured in the talk include a tourists' guidebook published by the Niagara Falls Advertiser in 1899, and a "side path map" published by the New York State Division of the League of American Wheelmen a year later.

Wildlife and Roads: Examining the Incorporation of Wildlife Management Strategies Into Our Road Infrastructure in Ontario

Kristin Elton, School of Planning, University of Waterloo (ESAC)

Our ever-expanding road infrastructure is having a profound negative impact on wildlife populations. Ample strategies, such as wildlife fencing and crossing structures, exist to mitigate these impacts but implementing them in the midst of a growing human footprint and limited financial resources is becoming increasingly difficult. In order for ecological strategies to be successful, we need to understand how to incorporate them in a way that balances the interests of both wildlife and society. The purpose of this study is to examine and understand the incorporation of these strategies into Ontario's road infrastructure. Qualitative semi-structured interviews with decision-makers and key stakeholders will be conducted to determine the experience of each project with regards to the development and implementation of the wildlife management strategy(s); 'experience' will include social, financial, political, legal, technological, and geographic elements. It is important to emphasize that this research is seeking to understand more than the traditional scientific recommendations alone, and instead include the influence of socio-political factors in decision-making with regards to these projects. This information will be analyzed to develop a grounded theory that identifies the key elements that lead to successful incorporation of wildlife management strategies. Using this information, a decision-support tool will be developed. Decision-makers will be able to compare the individual characteristics of their potential projects with the decision support tool to identify its likelihood of success, therefore more efficiently allocating the scarce resources available for ecological protection.

Climate Change Adaptation: How Ready and Resilient are Our Coastal Communities?

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Despite the growing evidence on the science of climate change impacts, little effort is directed in understanding the governance of climate change adaptation. We focus on coastal regions in understanding community resilience and investigate their readiness towards climate change threats. Coastal regions are unique because of the high level of interactivity between land and sea, the range of biodiversity and coastal habitats, risk of sea level rise and flooding, social complexity of urban settlements and maritime industries, and major investments in tourism and fisheries activities. Building upon an analytical framework by Ford and King 2013 on adaptation readiness, we plan to assess how climate smart and resilient our coastal regions are from a governance perspective. We are currently developing various criteria and rule-based approaches to

ABSTRACTS (PechaKucha Night)

assess key attributes of climate change adaptation architecture. These include: leadership, science and policy nexus, decision-making frameworks, stakeholder involvement, funding, R&D, ecosystem-based approaches, and technological innovation. The analyses initially focus on four case studies in Atlantic Canada and the Caribbean, under the Partnership for Canada Caribbean Community Climate Change Adaptation (ParCA) Project. The aim is to synthesize key findings on enabling institutional mechanisms, cross-sectoral synergies, stakeholder partnerships, community resilience, and knowledge mobilization in adapting to climate change.

The 9th ICA Mountain Cartography workshop, Banff, April 2014

Roger Wheate, University of Northern British Columbia (CCA)

The Mountain Cartography Commission meets biennially at a workshop organised somewhere in the mountains; in 2014 this was held for the first time in Canada, in Banff National Park, Alberta. This talk will summarise the workshop with an illustration from each of the ~20 presentations from Banff.

A Sea of Peaks

Jeff Wielki, TERA Environmental Consultants (CCA)

That stunning view while standing on a mountain summit of peaks poking through the clouds as far as you can see. It's like a new world, an undiscovered island chain. What if those clouds were truly an ocean and sailing ships could navigate those waters? What if this was mapped by James Cook and the crew of the Resolution on his third voyage in May, 1778? Based on these presumptions, the St. Elias mountain range, which contains the highest peaks in North America was drawn by hand in the style of James Cook's map of New Zealand from 1770. This map is not for navigation.

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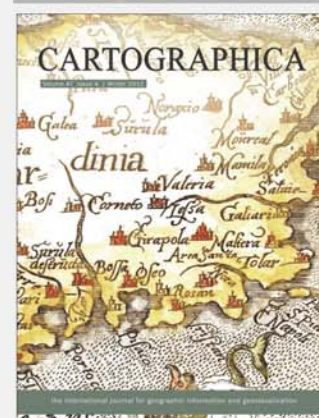
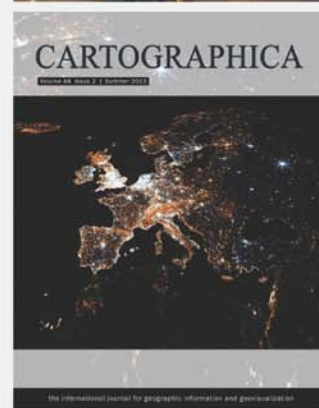
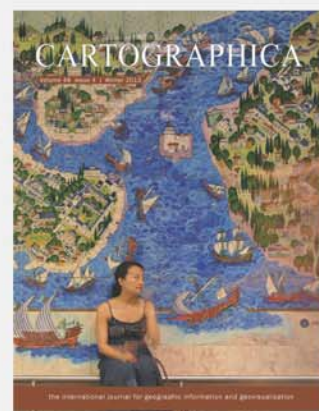
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