SSHRC CRSH 40 YEARS·ANS

Gros Morne Co-operating Association

GRENFELL CAMPUS | MEMORIAL UNIVERSITY

GRENFELL CAMPUS, MEMORIAL UNIVERSITY AND
THE GROS MORNE COOPERATING ASSOCIATION

Coastal communities in a changing climate:

IMPACTS, CHALLENGES AND SOLUTIONS FOR GROS MORNE

May 16-18, 2018

Corner Brook and Rocky Harbour, Newfoundland

May, 2018

As co-organizers, it is our pleasure to welcome you to this symposium on '*Coastal communities in a changing climate: impacts, challenges, and solutions for Gros Morne*'.

Jointly hosted by Grenfell Campus and the Gros Morne Cooperating Association, this event brings together researchers, practitioners, and community members from across Canada to exchange and extend current knowledge on the impacts of climate change on coastal communities. The symposium emerges from an expanding collaboration between researchers and graduate students at Grenfell Campus, Memorial University of Newfoundland, and the Gros Morne Cooperating Association, a non-profit organization working with communities and businesses in Gros Morne National Park.

Through this event, we seek to build new synergies that will allows us to grow our understanding of the intersections between climate change modeling, socio-economic impacts, and infrastructure requirements. Our aim is to create a venue for discussing adaptation options, tools, and techniques, and to build a framework for innovative solutions. Most of all, we hope that this symposium serves as a public forum for discussing climate change adaptation strategies, and strengthens knowledge networks in Newfoundland.

We wish to acknowledge the funding provided by the Social Sciences and Humanities Research Council (SSHRC) of Canada, and their Connections Grant program. The symposium is also supported by a Scholarship in the Arts grant, Grenfell Campus, and the work of staff and volunteers at the Gros Morne Cooperating Association. We are grateful for the logistics and organizational support provided by Charlene Connors of the Grenfell Office of Engagement. The symposium will be broadcast on community radio with the support of Fred Campbell of Ryakuga Grassroots Communications.

Best wishes,

Kelly Vodden, Associate Vice-President (Grenfell) Research, and Professor, Environmental Policy Institute, Grenfell Campus, Memorial University

Raymond Cusson, Chair, Board of Directors, Gros Morne Cooperating Association)

Patricia Manuel, Director and Professor, School of Planning, Dalhousie University

Roza Tchoukaleyska, Assistant Professor, School of Science and the Environment, Grenfell Campus, Memorial University

Ken Carter, Director, Grenfell Office of Engagement

Colleen Kennedy, Executive Director, Gros Morne Cooperating Association

Workshop schedule:

Day 1: Wednesday, May 16th (Grenfell Campus, Forest Centre)

Time	Activity	Presenters
9.00-9.15am	Registration	
9.15-9.45am	Workshop welcome:	Planning for climate change, the community context (Kelly Vodden, Environmental Policy Institute and Associate Vice President (Grenfell) Research, and Neil Bose, Vice President (Research), Memorial University)
9.45-10.30am	Keynote presentation:	Climate change in coastal Canada: What happens when the weather is out of control and ice caps melt? (Liette Vasseur, Department of Biological Sciences and UNESCO Chair, Brock University)
10.30-11.00am	Coffee break	
11.00-12.45pm	Presentations:	1) Climate change modelling data: global model designs that carry local implications in climate change scenarios (Myron King, Environmental Policy Institute, Memorial University 2) Assessing climate change in ecological and social systems: A regional integrated assessment of climate change adaptation in Newfoundland forest environments (Joseph (Joe) Bowden and Doug Piercey, Natural Resources Canada – Canadian Forest Service) 3) The effects of climate change on Qalipu First Nation communities (Ian Sullivan, Qalipu First Nation) Chair: Roza Tchoukaleyska
12.45-1.45pm	Lunch and poster/video presentations	
1.45-3.45pm	Panel discussion:	Understanding climate change impacts on coastal communities and building adaptation capacity. Panelists: Lakshman Galagedara (BERI Labs, Memorial University); Simon Jansen (Climate Watch NL); Annette George (City of Corner Brook); Brian Eddy (Natural Resources Canada, Atlantic Forestry Centre); Sean Manners (Environmental Policy Institute, Memorial University) Chair: Roza Tchoukaleyska

Day 2: Thursday, May 17th (Rocky Harbour, Gros Morne)

Time	Activity	Presenters
8.30-9.00am	Refreshments	
9.00-9.45m	Introductions and welcome	Workshop welcome and introduction (Raymond Cusson, Gros Morne Cooperating Association & Kelly Vodden, Roza Tchoukaleyska, Ken Carter, Grenfell Campus, Memorial University) & Video introduction by Catherine McKenna, Minister of Environment & Climate Change
9.45am-10.30am	Presentation:	Impacts: Assessing the risk to coastal erosion, landscapes and flooding under changing climate conditions in Newfoundland and Labrador (Melanie Irvine, Geological Survey of Newfoundland and Labrador, Government of Newfoundland and Labrador) Chair: Roza Tchoukaleyska
10.30-10.45am	Coffee break	
10.45am-12.15pm	Presentations:	Challenges: Co-constructing adaptation: rural capacity and addressing climate change, Sarah-Patricia Breen (School of Environment and Sustainability, University of Saskatchewan & the Canadian Rural Revitalization Foundation) & Lauren Rethoret (Columbia Basin Rural Development Institute, Selkirk College) Solutions: BAM! NL – Building asset management here (Kathleen Parewick, Municipalities Newfoundland & Labrador) Chair: Vincent Chireh
12.15-1.00pm	Lunch	
1.00-4.00pm	Presentation and Break-out session:	Solutions: Supporting adaptation decision-making in small coastal communities: an introduction to the Coastal Community Adaptation Toolkit (Patricia Manuel, School of Planning, Dalhousie University) Moderator: Raymond Cusson

Day 3: Friday, May 18th (Rocky Harbour, Gros Morne)

Time	Activity	Presenters
8.30-9.00am	Refreshments	
9.00-10.30am	Presentations:	Challenges: Climate change adaptation planning for NL communities: Conne River, case study (Neil Dawe, Tract Consulting) Solutions: Advancing adaptation in coastal Newfoundland and Labrador (Kimberley Olson, The Climate Change Branch of the Department of Municipal Affairs and Environment, Government of Newfoundland and Labrador) Chair: Sean Manners
10.30-10.45am	Coffee break	
10.45am-12.30pm:	Presentation and closing panel:	Solutions: Resilience on the shore: best practice in municipal climate action (Samantha Peverill, QUEST Canada) Concluding comments and roundtable: 'Collating experiences, future direction: Gros Morne adaptation in action' (Raymond Cusson and Colleen Kennedy, Gros Morne Cooperating Association; Kelly Vodden, Memorial University; Patricia Manuel, Dalhousie University) Chair: Abdul-Rahim Abdulai

Workshop abstracts:

Day 1: Wednesday, May 16th (Grenfell Campus, Forest Centre)

'Planning for climate change, the community context' (Kelly Vodden, Environmental Policy Institute and Associate Vice President (Grenfell) Research, and Neil Bose, Vice President (Research), Memorial University)

> This paper will establish a framework for the presentations and break-out sessions to follow. The presentation will briefly introduce key terms such as vulnerability, adaptation and resilience and provide an overview of how these ideas can be, and have been, translated to Gros Morne, the western region and other Atlantic Canadian coastal communities in the context of climate change. How vulnerability has been assessed and addressed in climate change policies and planning guides for Newfoundland will also be discussed, concluding with a reflection on the role of community-university-government partnerships in our evolving approach to understanding and addressing climate change vulnerability and community resilience in coastal Newfoundland.

'Climate change in coastal Canada: What happens when the weather is out of control and ice caps melt?' (Liette Vasseur, Department of Biological Sciences and UNESCO Chair, Brock University)

> Coastal rural communities worldwide must face many challenges not only related to climate change but also extreme events, environmental degradation, population growth, and conflict usage of the ecosystem. Historically, the economies of coastal rural communities have been based on the exploitation of natural resources, which has structured its territorial development. Such a development has led to some limitations in the way these communities can now adapt to climate change. In Atlantic Canada, sea level rise, continuous coastal erosion and increasing frequency in storm surges threaten the fragility of the coastal ecosystem. Various approaches have been used to try to reduce risks and improve adaptive capacity of communities. In this talk, I will describe some of the projects that I am involved to examine the potential impacts of climate change in Atlantic Canada, and the actions taken to try to adapt and improve resilience of communities and ecosystems.

Climate Change modelling data: Global model designs that carry local implications in climate change scenarios' (Myron King, Environmental Policy Institute, Memorial University)

> In this data-enriched session, I will first present global climate change models. For these models, I will outline their purpose, explain why a global scale was chosen, and comment on the variables which play a role in climate change projections. Through the session I will also comment on the methods that have been used to do this, and indicate how elements from the global scale can be downsized to local settings. The main part of the presentation will be an overview of how this local modelling is done, especially how design factors and variables can be translated to a more regional / locally meaningful way. Data review will involve some GIS methodology, and an explanation of how climate change data and measures can be visualized for a public audience. The focus is on making modelling techniques accessible to non-GIS experts.

Assessing climate change in ecological and social systems: A regional integrated assessment of climate change adaptation in Newfoundland forest environments (Joseph (Joe) Bowden and Doug Piercey, Natural Resources Canada – Canadian Forest Service)

> Climate change is a pervasive phenomenon that not only alters environmental and biological systems, but also has implications for social systems. For example, temperature changes and growing season length changes may alter forest structure and composition, which, in turn, affect other forest values such as habitat for wildlife and wood supply. The Canadian Forest Service (CFS-NRCan) recently concluded a course resolution, national scale assessment of predicted climate change impacts on forests and the forest sector across Canada. The results of this assessment ultimately highlighted the need for more focused regional assessments of potential climate change impacts given that decisions are most often made at this finer scale. It should also be noted that the regional issues and values likely impacted by climate change, and the relationships between them, are quite complex. This necessitates a multidisciplinary approach utilizing new technologies in collaboration, analysis and visualization, and emphasizing inclusion of subject-area experts, local/regional stakeholders and decision-makers throughout. CFS-NRCan Corner Brook are developing such an approach through a project entitled ACCESS – Assessing Climate Change in Ecological and Social Systems.

The Effects of Climate Change on Qalipu First Nation Communities (Ian Sullivan, Qalipu First Nation)

> Little is known about the potential effect climate change will have on the infrastructure, services and health of Qalipu First Nation communities. Many QFN communities are at risk from flooding and rising sea levels due to their proximity to the ocean and waterways. Using GIS and publicly available data we assessed the potential risk that climate change poses to 9 QFN communities using 5 criteria: Coastal flooding, the proximity of roads to coastline, community

connectivity and self sufficiency, water quality, and inland flooding. The results of each analysis were used to score the communities to better understand their vulnerability to climate change. In conjunction with the GIS analysis, interviews were conducted with members of the selected QFN communities to understand how they perceive the present and future effects of climate change on their communities.

Panel discussion: Understanding climate change impacts on coastal communities and building adaptation capacity. Panelists: Lakshman Galagedara (BERI Labs, Memorial University); Simon Jansen (Climate Watch NL); Annette George (City of Corner Brook); Brian Eddy (Natural Resources Canada, Atlantic Forestry Centre); Sean Manners (Environmental Policy Institute, Memorial University)

Representatives from academic, government and NGO sectors will kick off a wrap-up discussion to address the following questions:

1) What are the most important outstanding questions/knowledge gaps about how climate change may affect coastal communities, particularly in western NL?
2) How can we best work together to seek answers to these questions, and to ensure this knowledge is made available for use in community planning?
3) What other steps are needed to assist communities in adapting to current and future climate change? By whom?

All participants will be invited to share their thoughts on these questions as well.

Day 2: Thursday, May 18th (Rocky Harbour, Gros Morne)

Assessing the risk to coastal erosion, landscapes and flooding under changing climate conditions in Newfoundland and Labrador' (Melanie Irvine, Geological Survey of Newfoundland and Labrador, Government of Newfoundland and Labrador)

> The coastline along Gros Morne National Park and surrounding area includes coastal cliffs composed of loose sediments which are vulnerable to rapid slope movement and continuous erosion, as well as low-lying areas susceptible to coastal flooding. These landscape hazards will continue to occur due to rising sea level and changes in the climate. Since 2011, the Geological Survey of Newfoundland and Labrador has been conducting a systematic, long-term coastal monitoring program; there are over 100 sites across the Province including sites within GMNP. Through field studies, multi-date imagery is being collected with a drone, also known as an Unmanned Aerial Vehicle, to measure changes in the landscape, to quantify rates of cliff erosion and changes in beaches, and to delineate hazard-prone areas that could be affected by coastal flooding, erosion and landslides.

Co-constructing Adaptation: rural capacity and addressing climate change, Sarah-Patricia Breen (School of Environment and Sustainability, University of Saskatchewan & the Canadian Rural Revitalization Foundation) & Lauren Rethoret (Columbia Basin Rural Development Institute, Selkirk College)

> The contribution of the average small, rural community to the global climate crisis is relatively small. But the changes climate change brings - the shrinking glaciers, the changing precipitation and water patterns, the storms, the sea level rise - those will all be felt in rural places. And the related challenges - to infrastructure, to emergency planning, to community development - are something all rural residents and communities must face, meaning adapting to climate change is critical for rural places.
>
> But what does adaptation look like in reality? We know that rural places face capacity challenges. Finding data, expertise, and funds can be a barrier. Examples coming out of places like Vancouver don't really resonate in rural places. So how do we tackle adaptation in rural places? By working together and building processes and tools that makes sense for rural places.
>
> This presentation discusses these questions and uses the example of the State of Climate Adaptation Project from the Columbia Basin-Boundary region of British Columbia to demonstrate how a collaborative, rural made approach can work, and what lessons can be learned by other places.

'BAM! NL – Building Asset Management Here' (Kathleen Parewick, Municipalities Newfoundland & Labrador)

> Canada's latest Gas Tax Agreement calls on municipalities across the country to implement asset management planning (AMP), an evidence-based approach to decision-making for communities' tangible assets. Only a quarter of Newfoundland and Labrador's 276 municipalities have more than a single staff member, and levels of service here generally lag behind those of most Canadian jurisdictions. Supported by the Federation of Canadian Municipalities' (FCM) Municipal Asset Management Program (MAMP), Municipalities Newfoundland and Labrador and its partners have launched an asset management awareness and capacity-building campaign.
>
> This presentation provides an overview of the BAM! NL (Building Asset Management in Newfoundland and Labrador) program, including MNL's on-line version of the FCM's Asset Management Readiness Self-Assessment - the best place to start your town's asset management planning process.

'Supporting adaptation decision-making in small coastal communities: an introduction to the Coastal Community Adaptation Toolkit' (Patricia Manuel, School of Planning, Dalhousie University)

> From 2013 to 2015 the Atlantic Coastal Adaptation Solutions Association, in partnership with universities, industry, and municipalities, developed a guidance resource to help decision makers in coastal communities of the Atlantic Provinces select appropriate adaptation strategies and tools to manage climate change coastal impacts. The products of this work are a web-based decision support tool for coastal climate change adaptation planning and a compendium of engineering and land use planning best-practice tools for addressing coastal flooding and erosion. This presentation will outline the policy translation mechanisms imbedded in this decision making toolkit, contextualize the adaptation pathways to Gros Morne, and create a framework for applying the knowledge outlined in the preceding sessions to local municipal and community decision making.

Break-out session: Using CCAT to assess coastal vulnerability (Patricia Manuel, School of Planning, Dalhousie University)

> You can prepare yourselves by thinking about your community (or communities): What kind of community? Are you gaining or loosing population? Does your community have a community plan or other types of plans? What kind of governance, staff and volunteer capacity to you have? Do you have neighbours with whom you can collaborate? Does coastal flooding and erosion, or both, impact your community? Where? What kind of coastline to you have? How built up is it? Where is the development and how is it impacted by flooding and/or erosion. The tool will guide you through all of these questions and more.

1:50 to 3:00 -- using the CCAT web-tool in small groups of 2 to 3 people. Facilitators will set up access to the tool. When using the tool, focus on communities and issues familiar to members of the group. Use real, concrete examples for this session.

3:00 to 3:45 -- Small groups will combine into medium-sized groups of 5 to 6 people, plus a facilitator (who could also be one of the group members, if desired) to discuss the following questions, drawing from the results of using the tool and also previous sessions:
1) What are the coastal climate change issues in your community (or one(s) you know well) in Gros Morne? (Note: CCAT only addresses coastal flooding and erosion, so begin with these issues. But, there are many other possible issues, so you don't need to limit yourselves to only flooding and erosion in this discussion).
2) What issues do you share with other communities of Gros Morne?
3) What adaptation tools make sense to address these issues, and why?
4) What resources do you have already (e.g. expertise; governance (councils, committees, community planning, regulation, management); plans (what kind); collaborations; other)?
5) What and how can you share resources and adaptation strategies with other Gros Morne communities?

3:50 to 4:00 -- Reporting and wrap up. Each group reports the results of the discussion back to the workshop, by question. One group will start and the next groups will add only new information (information that no group before them presented).

Day 3: Friday, May 19th (Rocky Harbour, Gros Morne)

'Climate change adaptation planning for NL communities: Conne River, case study' (Neil Dawe, Tract Consulting)

> The *Municipal Climate Change Assessment and Adaption Planning* presentation will demonstrate how climate change adaption and municipal sustainability goals are integrated, to inform municipal decision-making about municipal infrastructure assets and services. The presentation will identify innovative alternatives to climate change adaption through the utilization of local knowledge, integrated land use planning, sustainable "green" engineering design standards, and climate change expertise to effectively respond to local circumstances and the specific needs of individual municipalities. The successful climate change adaption strategy is a community action strategy for that integrates the triad of: climate change adaption, sustainable "green" planning and asset management. To illustrate the Climate Change Adaption Planning process in action we will be presenting the *"The Climate Change Assessment and Adaption Plan",* Miawpukek First Nations (April 2013.) prepared by Tract Consulting Inc.

'Advancing adaptation in coastal Newfoundland and Labrador' (Kimberley Olson, The Climate Change Branch of the Department of Municipal Affairs and Environment, Government of Newfoundland and Labrador)

> To provide an overview of climate change in Newfoundland and Labrador, and set the context on how local climate change action fits within the broader national context. This will include sharing climate data for Newfoundland and Labrador to demonstrate the impacts of climate change in the province, and highlight the implications for coastal communities in Western Newfoundland, the location of the symposium. The opportunities for municipalities to take action on climate change will be explored, and information on key tools and resources available to support their climate leadership and enhance resilience to the impacts associated with climate change will be provided.

'Resilience on the shore: best practice in municipal climate action' (Samantha Peverill, QUEST Canada)

> In the Atlantic region QUEST is working with municipalities to help them take advantage of the benefits of energy management, such as operational cost savings and economic development opportunities. Through the Municipal Energy Learning Group in Nova Scotia, and as the Regional Climate Advisor for FCM-ICLEI's Partners for Climate Protection (PCP) Program, QUEST will present success stories and best practices in community energy. Tools that are available to communities and municipal governments such as the FCM Maturity Scales, existing and upcoming funding for both mitigation and adaptation and the benefits of PCP membership will also be discussed. Finally, a there will be sneak

peek at the Smart Energy Communities Scorecard, which is being developed to aid communities in benchmarking their progress towards becoming the resilient and future proofed regions that Atlantic Canadians want to live in.

Attending the workshop & listening to the workshop:

Up-to-date details on the workshop schedule, alongside information on community radio broadcasting and live-streaming, and the post-workshop teaching kits on coastal climate change, are available through our website: grosmorneclimatesymposium.wordpress.com

Day 1: Wednesday, May 16th (Grenfell Campus, Forest Centre)

Workshop sessions will be held in FC2014, the lecture hall on the main floor of the Forest Centre. The event is free, and open to all community members, practitioners, researchers, and students.

The Forest Centre is located at: 26 University Drive, Corner Brook, NL

Parking is available at the Corner Brook Civic Centre, and at the former RecPlex parking lot on University Drive.

Day 1 presentations will be live-streamed through Ryakuga Grassroots Communication: http://ryakuga.net

Day 2 and Day 3: Thursday May 17th – 18th (Rocky Harbour, Gros Morne)

To register for the Gros Morne sessions, please contact Charlene Connors, at the Grenfell Office of Engagement: cconnors@grenfell.mun.ca

Day 2 and Day 3 presentations will be broadcast live on VOBB (95.9 & 98.1 FM), and live-streamed through Ryakuga Grassroots Communication: http://ryakuga.net

Post-workshop teaching kits:

Visit our website to download free teaching kits geared towards university and high-school students. The teaching kits will include: i) summaries of research materials on coastal climate change; ii) podcasts and blogposts from the workshop; and iii) discussion questions to engage students in climate change adaptation strategies and issues.