



FALL 2013

Message from the Executive Director



As we wind down towards the end of 2013, the year's top climate issues serve as a reminder for the need to maintain fresh momentum and innovation in our quest for practical solutions to global warming. May 9 saw the world pass a carbon milestone as the concentration of carbon dioxide (CO₂) in the atmosphere **exceeded 400 parts per million** (ppm). This is the highest it has been in millions of years – in fact, the last time it reached these levels was likely 3-5 million years ago during the Pliocene (and sea level was dozens of metres above where it is today). The risks of rising CO₂ levels are well described in the Fifth Assessment Report (AR5) from the [Intergovernmental Panel for Climate Change](#) (IPCC), also released this year.

Throughout 2013, the physical, economic and societal consequences of climate change have continued to be felt. During November's UN Climate talks in Warsaw, the World Meteorological Organization announced that 2013 is tracking to be the 7th warmest year since records began in 1850. And while the rate of increase in global average surface temperature since the late 1990's has been less than that of previous decades (the popularly termed "hiatus"), other aspects of human-induced climate change have been proceeding without pause - for example, melting glaciers, Arctic sea-ice area decreasing and sea levels rising. Oceans are also absorbing a substantial portion of the trapped heat (about 90 per cent). The **long-term trend of global warming** is unequivocal.

Planners and policy-makers should be aware that there will almost certainly be a renewed increase in the rate of warming in coming years. Some of the heat that has penetrated into the upper ocean will be re-radiated back into the atmosphere during the next El Niño, the likes of which we have not seen since the then-record warm year associated with the 1997-98 El Niño.

These events bathe the eastern tropical Pacific with a widespread, thin layer of very warm water that radiates heat to the atmosphere and drives up global temperature.

As our climate evolves, so should our approach and ideas to finding workable solutions to global warming. In April 2014 PICS will welcome in a new restructured research program (Phase 2) that will see the "retiring" of the existing five-themes (the low carbon-emissions economy; resilient ecosystems; social mobilization: sustainable communities; and carbon management in BC forests), in favour of a more BC policy relevant research direction. The new structure will see interdisciplinary and inter-institutional teams conduct research on five questions (or issues) of critical importance to BC in the context of the climate-change challenge. These five are, in simplest terms, Liquefied Natural Gas (LNG), grid integration, energy efficiency in the built environment, transportation policy and carbon stewardship in BC's forests.

This fall has seen the foundations laid, with the holding of three workshops: the first, on *Developing a Natural Gas Research Agenda for BC* (Nov 21/22) examined the history and prospects for natural gas expansion in the province, and identified where the gaps in knowledge lie. It involved academic researchers, First Nations, and NGOs. The second was a *BC Oil and Gas Technical Greenhouse Gas Emissions Data Workshop* (Nov 28/29), involving 60 Canadian and US participants from industry, environmental consultants, First Nations, NGOs, federal and provincial agencies, and academic researchers. This event discussed the status of and needs for improvements to the BC GHG inventory process, especially from shale gas development. And the third *Carbon Management in BC Forests* (Dec 16/17) workshop involved leading academic and government researchers whose focus is to develop accurate, detailed models of how BC's forests will change in the coming decades, as well as policy and outreach tools to help translate research into action. 2014 will see these research teams hit the ground running.

The **final edition** of the PICS Climate News Scan for 2013 highlights our top picks for the climate-related issues of 2013, and there are many success

stories as well as challenges. PICS will continue to play its part in identifying the opportunities and means to help British Columbia and beyond transition to a low-carbon and economically vibrant future.

Stand-up economist talks climate change

"The best way to fight climate change is with the tools of economics," according to Yoram Bauman, an environmental economist and comedian from Seattle who drew a near capacity crowd at his one-off free show at UVic this fall. The October 9 event, co-hosted by PICS and the UVic Department of Economics, showed that comedy is a good way to reach younger audiences, judging by the majority student audience. Bauman's talk traversed subjects ranging from hyperinflation in the afterlife through to the need to put a price on carbon, crediting British Columbia's carbon tax as being "the best climate policy in the world".

"Just about all economists think that putting a price on carbon (with a carbon tax or cap-and-trade system, but especially with a revenue-neutral carbon tax) is necessary, if not sufficient, in tackling climate change," he says. "Market forces are the most powerful way to promote innovation in clean technology, and the best way to harness market forces is to put a price on carbon."



Stand-up Economist Yoram Bauman

Bauman is part of the CarbonWA.org effort to bring a BC-style carbon tax to Washington State. He has appeared in TIME Magazine and on PBS and NPR, and is the co-author of the two-volume *The Cartoon Introduction to Economics*, with a third book, *The Cartoon Introduction to Climate Change*, currently in the making. If you missed his talk you can see the [archived video](#) on the PICS website.

Thesis success for PICS fellows

Fall 2013 has seen a number of PICS Fellows successfully defend their thesis research. Three are profiled here:

Polly Ng, PICS fellow from 2010 to 2012, received her Master of Science from the School of Community and Regional Planning, UBC this fall, for her research on "[Making the business case for using development cost charges \(DCCs\) for climate change](#)

[mitigation](#)", in partnership with the City of Surrey.

DCCs are common fiscal tools that local governments use to fund a variety of public service infrastructure needs, including, potentially, environmental protection. Academic literature has identified the rationale and potential for using DCCs to offset the costs of reducing GHG emissions, but no research had been done on how a climate change mitigation DCC would be designed and applied in practice. Polly's project addresses this gap by developing the concept of a climate mitigation DCC that meets legal standards; developing a technically feasible methodology for establishing a program; and demonstrating how the concept can be applied in practice by calculating rates for a case study based on Surrey City Centre.



PICS Fellow Polly Ng - UBC

Polly presented her research at the annual conferences of the American Planning Association and Canadian Institute of Planners. She has also provided copies of her work to the Environmental Protection Agency, the Environmental Commissioner of Ontario, and BC Hydro, at the request of individuals in those organizations. Additionally, she is currently preparing publications for *Plan Canada*, *the Journal of the American Planning Association*, and *Mitigation and Adaptation for Global Change*.

Glaciers are among British Columbia's most iconic natural features and are also a highly visible indicator of climate change. PICS UNBC Fellow Matt Beedle dedicated his doctorate research to "*Glacier Change in the Cariboo Mountains of British Columbia, Canada (1946-2011)*", successfully defending his thesis in December, 2013.

Matt's research communicates the science and implications of climate change by reconstructing past glacier extent and monitoring current glacier fluctuations, with the ultimate goal of discerning climatic forcing of glacier change and implications for water resources in western Canada. Glaciers are a critical source of water flow for hydropower generation, and are among Canada's most important freshwater resources.

During Matt's research, meteorological measurements such as air temperature, wind speed, precipitation, and humidity were recorded to better understand what controls glacier nourishment and melt. Other measurements recorded include changes in the extent and movement of glaciers throughout the mountain ranges of western Canada. Matt's supervisor Dr. Brian Menounos is an Associate Professor at UNBC, and past PICS Program Committee member, who was just

awarded a Tier 2 Canada Research Chair that will further enhance his glacier research. Congratulations both Brian and Matt!



Matt Beedle (LHS) with his supervisor, Dr. Brian Menounos, measuring volume changes in the Cariboo Mountain's Castle Creek Glacier.

Rose Murphy, a SFU PhD Candidate and PICS fellow from 2009-2010, successfully defended her thesis this past November. Her research entitled "*Use of Empirically-Based Models to Evaluate the Potential of Energy Efficiency and Forest Carbon Sequestration for Mitigating Climate Change*" focuses on the analysis of two particularly challenging actions: accelerating natural rates of improvement in energy efficiency and increasing carbon sequestration in forests. Analysts using what is known as the conventional bottom-up approach find that each of these actions can achieve substantial mitigation of greenhouse gas emissions at low costs. In the three papers comprising her thesis, Rose develops and applies new models to test the findings of the bottom-up approach. Two articles have already been published as a result of her work (in *Energy Policy* and *The Energy Journal*). Links to the articles are provided in the [PICS website](#).

Salt Spring Island presentation

PICS UBC coordinator, Sara Muir Owen recently co-presented a public talk on climate change with Connie Severson, painter, sculptor and creator of Salt Spring Island's "*Red Listed*" (endangered or extirpated) species project. The talk, which was free of charge and open to the public, was held at the Salt Spring Island Library the evening of October 28, 2013. Sara provided an overview of the science of climate change and some of the anticipated global, regional and local

impacts, while Connie provided insight into her painting series, "*Endangered Species*" developed in partnership with the Salt Spring Island Conservancy. Audience members appreciated the global to local scale of climate change impacts, and had many questions around what they can do as individuals, and collectively to address climate change.

Calculating the Canada Games carbon footprint

The Canada Games is coming to the City of Prince George in 2015, and PICS is already assisting with calculating the event's carbon footprint. The games will be the largest multi-sporting and cultural event ever held in Northern British Columbia, featuring 3,600 athletes, coaches and officials, up to 6,000 volunteers, hundreds of media and medical professionals, and thousands of visitors. This event coincides with the City's 100th Birthday and the UNBC's 25th Anniversary.

PICS UNBC Program Coordinator and certified Greenhouse Gas Inventory Quantifier (GHG-IQ) Kyle Aben, attended the Fraser Basin Council's Sustainability Strategies Meet and Greet for the games during summer. Other guests included Ann Duffy, the architect of the Vancouver 2010 Olympic and Paralympic Winter Games Committee (VANOC'S) sustainability management and reporting system – the first ever used for an Olympics. Kyle is looking forward to the challenge of extending such sustainability practices to the Canada Games.



Global responsibility for climate change?

The complicated issue of global responsibility for climate change's impacts was tackled by in a special seminar organized by the Society for Bangladesh Climate Justice and held at the Liu Institute for Global Issues at UBC on October 24. UBC and SFU faculty and students, alongside other researchers from non-government organizations, attended the *Climate Change Impacts and Global Responsibilities: Challenges of Adaptation and Climate Refugees* event.

PICS UBC site coordinator, Sara Muir Owen chaired a session on *Climate Change Impacts - The Evolving Stories*, which featured speakers Dr. Milind Kandlikar from the Liu Institute and Dr. Harun Rashid Professor Emeritus from the University of Wisconsin-La Crosse. Dr. Kandlikar offered an overview of global carbon emissions and the issue of equity and

national or individual responsibility around these emissions. Dr. Rashid provided a stark summary of Bangladesh's future given climate change and sea level rise—a scenario he describes as “mega-disaster” as the impacts of even a single extreme weather event could affect more than 30 million people living along the coast.

A second session was chaired by Professor Robert Anderson from SFU, and included speakers Dr. Roger Beckie, Department of Earth and Ocean Sciences, UBC and Stephanie Gatto, Researcher, Canadian Centre for Policy Alternatives. Dr. Beckie outlined impacts on the hydrological cycle of Bangladesh, while Ms. Gatto offered a talk on how BC might address issues of migration. The Society plans to continue working with academics and organizations to further research anticipated climate change impacts in Bangladesh.

Workshops test energy conservation



Hillcrest Middle School students see how their decisions around energy use at home change the tree graphic on the right – lower energy use is rewarded with more cherries and fewer falling leaves.

A new “energy conservation game” has been added to the PICS SFU energy workshops that allows children to understand power consumption within their homes using different forms of visualizations. This tool is being developed by Mengting Sun, a SFU SIAT graduate student, under the supervision of Dr. Lyn Bartram, and tested in the workshops. The premise of the research is that informing people about power and energy use is the first step toward encouraging conservation efforts. During the study, participants get to make decisions over everyday home activities, such as using cold or hot water in the laundry, turning lights on or off, and using the fan instead of the air-conditioner to cool the house. The outcomes of those energy-related decisions then impact subsequent graphics. The feedback given will be used to fine-tune the game and its possible applications.

Nod to Canada’s “green university”

Canada’s trademarked Green University – UNBC – received two accolades this fall for its sustainability efforts. The Globe and Mail gave UNBC a top mark (A) among all Canadian universities for its environmental commitment. UNBC also captured the Environmental Leadership award from the Prince George Chamber of Commerce. UNBC’s vice president external relations, Robert van Adrichem, said receiving both local and national recognition was especially gratifying given the campus work underway in bioenergy, climate change, energy conservation, local food production, and resource management.

New Climate Research Lecture series

In September 2013, PICS UBC and SFU began a new joint lecture series to present the results of some of the projects funded across the four PICS universities. The series was launched with a presentation on *Engaging with Greenest City Conversations*, an interdisciplinary research project involving the City of Vancouver, SFU, UBC, BC Hydro, GRAND NCE, and MITACS. The project led by Dr. John Robinson, UBC and Dr. Alissa Antle, SFU aimed to develop multiple channels for public engagement on municipal sustainability policies.

The series’ second lecture in October 2013 was on “*Meeting the Climate Change Challenge – the MC3 project*” led by Dr. Ann Dale from Royal Roads University (RRU) and involving UBC and SFU researchers. In March 2013, the team released its “*Action Agenda for BC Decision-Makers*”. A panel - including Tofino Mayor, Josie Osborne, former Mayor of Fernie, Randall MacNair, and City of Surrey Councillor, Bruce Hayne - responded to audience questions on the agenda’s 12 recommendations, and the drivers and barriers they face in the process of climate policy innovation in their cities. Both events were held in Vancouver, attracting some 280 people in total plus 60 via the webcast.

Upcoming events

PICS UBC-SFU will continue co-hosting free public lectures in Spring 2014 including presentations on the outcomes of the following three PICS funded projects: The CIMS Community, an Energy and Emissions Forecasting Tool for Communities in BC; A Public Engagement Visualization Tool in Municipal Planning for Climate Change; and, A Day in my Carbon Neutral Life.

CONTACTS

Dr. Tom Pedersen
Executive Director
picsdir@uvic.ca

Dr. Lawrence Pitt
Associate Director
lpitt@uvic.ca

Megan Jameson
Administrative Officer
mjameson@uvic.ca

Robyn Meyer
Sr. Communications Officer
rmeyer@uvic.ca

Nancy Chan
Executive Assistant
nchan@uvic.ca

Stephanie Inman
Program Assistant
picsra@uvic.ca

Kyle Aben
Campus Coordinator
University of Northern BC
abenk@unbc.ca

Nastenka Calle
Campus Coordinator
Simon Fraser University
n_calle@sfu.ca

Sara Muir-Owen
Campus Coordinator
University of British Columbia
sara.muir-owen@ubc.ca

**Pacific Institute for
Climate Solutions**
University of Victoria
PO Box 1700 STN CSC
Victoria, BC V8W 3R5

Phone (250) 853-3595
Fax (250) 853-3597
E-mail pics@uvic.ca
www.pics.uvic.ca