Pacific Institute for Climate Solutions
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PICSnews

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Message from the Executive Director

Bread, climate change and adaptation

You may have noticed that it costs a lot more to buy a loaf of bread now than it did a year ago. The global market price for wheat then was about US $180/tonne, a little over half of today's price. The UN Food and Agriculture Organization (FAO) recently reported that global food prices are now the highest they have been since the agency began measuring them in 1990.

Many factors have contributed to the dramatic rise in the cost of food, including the depreciation of the US dollar (the currency of choice for commodities trades), speculation on the futures market, growing demand for cereal grains in China and India (representing one-third of the world's population), the announced intention of many countries to build up their grain reserves in a post-recession world, and the diversion of corn to ethanol production. But there is another factor: the severe weather events of the last 12 months. These comprise a long list: record flooding in Pakistan last summer submerged one-fifth of the country, including 69,000 km^2 of the most fertile agricultural lands in the Indus Valley; an historically unprecedented heatwave in Russia in July and August decimated wheat production, leading to an export ban that helped drive the global wheat price up by 60% over just the summer months; intense flooding in NE Australia at the end of the year severely impacted wheat and sugar production, contributing to some $17 billion in flood-related damages in the state and curtailing grain exports; and the very wet May and June in Alberta, Saskatchewan and Manitoba led to a 20% decline in Canada's wheat harvest last fall. This year may be little better in balancing supply and demand: the wheat yield in China is forecast to fall several million tons shy of last year's harvest as a consequence of severe drought in the northeastern region of the country.

Climatologists have warned for some time that as global warming continues, the probability of occurrence of extreme floods and droughts will rise. Such predictions are now finding support from studies (see, for example, Min et al., *Nature* 470, February 17, 2011) that have detected a human influence in the intensification of extreme precipitation events observed in the second half of the 20th century. While much research will be required to determine whether the extreme weather and climate events of 2010 are linked to human influence, they give considerable cause for reflection. Seen from the perspective of food production, the warnings from the scientific community and the global experience of 2010 should spur nations to invest more vigorously in adaptation planning for agriculture: we need to reduce the vulnerability of food supplies to anticipated future episodic weather shocks as well as longer-term climatic shifts.

That vulnerability is regional as well as global, and British Columbia (BC) is no exception. The immense agricultural enterprise in California's Central and Imperial valleys, for example, provides almost all of the fruit and vegetables consumed in western Canada in winter. Is that supply secure as we look ahead on the decadal to multi-decadal scale? Maybe, but maybe not. Snowpacks in the Sierra Nevada—read, spring and summer water supply to the Central Valley—are predicted to decline as global warming continues. To the south and east, the Colorado River basin that supplies all of the water used to irrigate the fertile Imperial Valley has been plagued by a persistent drought for over a decade. Extractions of water from the Colorado watershed for domestic and agricultural needs have outstripped supply for several years. Should the precipitation deficit in this overstretched region worsen in future—as climate models predict—the agricultural productivity of the Imperial Valley and the supply of vegetables to BC in winter could be compromised: adaptation will be a must.

Decisions we make in BC will not influence agricultural production in California, but there are steps that we can take to limit our own vulnerability to severe weather events and ongoing climate change. Increased probability of rain-on-snow events in the Fraser watershed, for example, is sharpening discussions on the need

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PICS is hosted and led by the University of Victoria in collaboration with the University of British Columbia, Simon Fraser University and the University of Northern British Columbia.

to reinforce dykes in the fertile Fraser Valley as the likelihood of severe flood events rises. A different issue is facing another major agricultural zone (and population growth centre)—the Okanagan Valley—where anticipated reduced precipitation and warmer summer temperatures are focusing attention on future water supplies.

PICS is now contributing to these discussions. Our fellowship programs are underpinning work on regional land-use, flood defenses, invasive species impacts, and urban agricultural issues. We are collaborating with a new initiative, the BC Agriculture Climate Change Adaptation Assessment, through which we are helping farmers in multiple regions in BC determine risk and practice adaptation to climate extremes that go beyond limits established by common experience. It is important work, for the integrity of the food supply is a contributor to the smooth functioning of any modern society.

There can be little doubt that adapting to a future, and different, climate will be a necessity soon upon us, and it will extend well beyond the agricultural sector. To raise the profile of both the issue and the need for early planning, PICS will also host a forum on adaptation in Vancouver this June 14 and 15. While the global wheat price or monsoon flooding in south Asia might not be directly addressed at the forum, they are contributors to the myriad of concerns that showcase the need to respond constructively to the climate change challenge.

PICS Fellow Tara Moreau, UBC.

Sharing the love for climate solutions

PICS fellows at annual symposium

Valentine's Day 2011 proved to be a meeting of minds, if not hearts, for a large group of PICS fellowship holders who gathered in Vancouver that day to share and discuss their research progress and ideas.

This annual symposium attracted 30 of the Institute's 33 current graduate and postdoctoral fellowship holders across the four PICS universities. Their presentations represented a wide spectrum of disciplines, ranging in topic from the integration of wind power into the BC electrical grid, the social acceptance of renewable energy options in the BC landscape, and the economic feasibility of producing bioenergy from woody biomass, through to the cultural resilience of First Nations communities, the effect of climate change on landscape patterns in the Carmanah Valley, and the dynamics of mountain pine beetle outbreaks in relation to historic climate patterns and current forest management practices.

PICS Fellow Christine Kormos, UVic.

PhD candidate Anita Girvan from the University of Victoria (UVic), for example, is exploring the metaphor of the "carbon footprint" (visit www.pics.ca/webstream.php#girvan to view a recording of her recent presentation as part of the Pacific Climate Seminar Series), and post-doctoral fellow Tara Moreau from the University of British Columbia (UBC) is studying sustainable urban agriculture and food policy, while MA candidate Alex Schare from the University of Northern British Columbia (UNBC) is looking at ways to reduce the carbon footprint of air traffic in BC, and Simon Fraser University (SFU) PhD candidate Rupananda Widanage is tackling the economic impact of invasive species in BC rangelands.

PICS Fellow Alex Schare, UNBC.

This annual event provides a valuable opportunity for researchers to share their work with the PICS community as well as establish both interdisciplinary and inter-university connections. For more information on PICS fellowships and fellowship holders, visit www.pics.ca/fellowships and www.pics.ca/fellowship_profiles.

PICS fellowship holders at the annual symposium on Feb. 14, 2011.

PICS UBC-SFU Lecture Series

This winter PICS, UBC and SFU continued their collaboration on the public evening lecture series held in downtown Vancouver, where professors from both universities share their knowledge on climate change issues at free public events. Organised by PICS' UBC and SFU campus coordinators, these lectures cover issues of climate change impacts, mitigation and adaptation by tapping into the expert knowledge base at PICS' partner universities. This series aims to help inform BC residents of the new insights, initiatives and innovative research related to climate change happening within the province.

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The first lecture for 2011, entitled "Creating a Climate for Change," featured Dr. Simon Donner, assistant professor in geography at UBC with his presentation on "Why You Don't Believe in Climate Change," followed by Dr. Alex Clapp, professor of geography at SFU with his talk on "Open Data: Diagnosis, Prognosis, and Prescription in Climate Science." Together, their presentations highlighted how long held religious beliefs coupled with present-day scientific practice create complexities around public perception, understanding and acceptance of climate change. Over 70 people attended the late January lecture, with another 35 watching the lecture live online.

Dr. Simon Donner, UBC.


Dr. Alex Clapp, SFU.

The next lecture on February 24 saw UBC and SFU professors and graduate students team together to talk about "Sustainable Systems as if People Mattered." The group included (from UBC) Dr. Stephen Sheppard, professor and director of the Collaborative for Advanced Landscape Planning and two PhD candidates in Resource Management and Environmental Studies, John Salter and David Maggs; and from SFU, Dr. Robert Woodbury, professor in the School of Interactive Arts and Technology (SIAT), and director of Art and Design Practice of the Games, Animation and New Media Network in Canada, and Dr. Lyn Bartram, assistant professor in SIAT and director of the Humans, Visualization & Interfaces Lab at SFU.

The team presented information about two multi-university research projects—the Greenest City Conversations Project and Human-Centred Systems for Sustainable Living. These projects explore the interaction of technology and people, at both individual household and community scales, in making better decisions on energy and resource use. More than 100 people attended, with an additional 24 people watching the webcast online.

Upcoming lectures this spring will cover topics including Health and Climate Change, Sustainable Energy and Organisations, and Climate Change and its Impacts. For more details, or to watch live or archived lectures, visit www.pics.uvic.ca/events.php.

PICS backs new SFU seminar series

SFU's new seminar series entitled "Global Warming: A Science Perspective" got off to a strong start this winter with more than 80 people attending the first lecture presented by Francis Zwiers, director of PICS' sister organization, the Pacific Climate Impacts Consortium. The series, which is sponsored by SFU's Office of the Dean of Science with support from PICS, runs weekly until the end of March 2011. Its one-hour lectures, followed by 90 minute audience discussions, aim to connect science students and faculty directly with climate change scientific research monitoring and modeling work being undertaken.

Zwiers' lecture, "The Instrumental Temperature Record and what it tells us about Climate Change" set the stage for further research findings on topics ranging from particle physics experiments to the melting polar ice-caps. PICS executive director Tom Pedersen will wrap up the series on March 30 with a lecture entitled "Responding to the Climate Change Challenge". This talk will explore steps that could (and should) be taken to slow Canadian CO_2 emissions, in particular making smarter use of electrical-generation capacity. The lectures are being webcast and stored online through SFU Faculty of Science web page. For more information visit www.sfu.ca/climatechange.

Prince George strives for leadership in carbon neutrality

The City of Prince George is pursuing its goal to become an environmental leader among BC local governments with the release of its 'Carbon Neutral Plan' in December 2010. The plan will help the municipality achieve carbon neutrality in 2012, as well as see a ten percent reduction in corporate greenhouse gas (GHG) emissions from 2002 levels, by 2012.

PICS UNBC campus coordinator Kyle Aben, who assisted in the development of the plan, says: "The City of Prince George is probably in the top five municipalities in BC for being progressive and planning for climate action." The city has voluntarily committed to carbon neutrality under the provincial 'Climate Action Charter' and the Green Communities Committee. Local government commitments to carbon neutrality are designed to be cost-neutral, with the carbon tax paid by municipalities rebated through BC's Carbon Action Revenue Incentive Program (CARIP).

By 2012, the City of Prince George predicts savings as high as $142,000 from energy saving projects and GHG reductions. Despite those predicted savings, the city's annual carbon footprint will still be approximately 5,300 tCO_2e and cost $133,000 in offsets, although the expected carbon tax rebate may be enough to cover the cost of these offsets. Prince George is deemed a leader in carbon neutrality, because the city sees it as a financial opportunity rather than a burden, while, at the same time, helping to improve the quality of both air and climate.

PICS outreach from east to west

PICS executive director Tom Pedersen has discovered that the Institute's unique four-university collaborative setup is attracting as much interest as his climate solutions message, as he continues his east-to-west national speaking tour organised by the Canadian Meteorological and Oceanographic Society. The tour, which began in St. John's in January 2011, has seen Dr. Pedersen address audiences from the Maritimes to the prairies, Quebec, Ottawa, and Toronto. This spring will see him give talks in Edmonton, Calgary, Lethbridge, Kelowna, Vancouver, Victoria and Prince George. Dr. Pedersen's call for interprovincial co-operation to successfully move Canada from a carbon-based to a renewable energy economy, plus the need for a national price on carbon, has sparked debate and media attention throughout the tour. But he says the setup of PICS—whereby universities that are traditionally competitors are collaborating on climate solutions research—is especially striking a chord with audiences keen to see similar arrangements happening in their own provinces. Visit www.cmos.ca/tourspkr.html for a tour schedule.

PICS research: new results and new funding

A major funding announcement for PICS research is now pending. Over the past six months, volunteer committee members comprising academics and local and provincial government practitioners have taken the PICS research themes of The Low Carbon Emissions Economy; Resilient Ecosystems; Sustainable Communities and Social Mobilization from vague ideas to about-to-be-launched multi-disciplinary research programs. Calls-for-proposals were issued last fall by each theme's steering committee, following intense workshops with leading researchers that helped to shape each theme's focus. The response was terrific, with more than 100 proposals submitted from around BC, resulting in a very competitive environment and heavy workload for our hardworking committees. PICS will formally announce the results of these funding calls this spring.

New PICS research already out the door this winter includes the publishing of two white papers to government – the 'Local Content Requirements in British Columbia's Wind Power Industry' report, and 'The Export Question: Designing Policy for British Columbia Electricity Trade' paper. The latter, a collaborative effort by UBC's Dr. George Hoberg and Amy Sopinka from UVic, identified the risks and gaps in BC's current policy framework and outlined ways to strengthen the electricity export platform should the province go down this route. The research attracted considerable media attention within BC and also the US Pacific NW. Likewise, the wind energy research paper was a collaborative effort involving four MBA candidates at UVic's Faculty of Business. That paper explored the possibility of BC using local content rules to kick-start its fledgling wind industry, concluding that it was too risky given the potential legal/trade backlash. Other options were recommended instead. All PICS white papers can be read at www.pics.uvic.ca/white_papers.php.

Spring 2011 preview

PICS is proud to announce that spring 2011 will continue to see it host both national and international speakers on a diverse range of solutions-oriented climate change topics. Subjects to be covered include sustainable communities, wind energy integration, human psychology and behaviour change, global emission reduction strategies and the mechanics of climate science. This spring's lineup of speakers includes Dr. Julian Agyeman, Tufts University; Dr. Sabine Pahl, University of Plymouth; Dr. Roger Pielke Jr., University of Colorado; PICS Graduate Fellow Amy Sopinka and computer scientist Dr. John Mashey. Visit www.pics.uvic.ca/events.php for more details.

Nancy Olewiler heads TransLink Board

PICS wishes to congratulate SFU professor Nancy Olewiler, director of SFU's School of Public Policy and PICS program committee member, for being elected chair of TransLink's board of directors, effective January 1, 2011. Dr. Olewiler was also reappointed last October for a second three-year term as a TransLink director, continuing to bring her expertise in economics, sustainability and environmental policy to the board.

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