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PCIC-BC Hydro Joint Workshop Held

PCIC reported on the results of its hydrological modelling project with BC Hydro during a recent joint workshop held in Burnaby April 20, 2010.

The PCIC-BC Hydro joint workshop "Assessing Hydrologic Impacts on Water Resources in BC: Current Accomplishments and Future Direction" featured technical presentations by PCIC as well as the University of Washington's Climate Impacts Group, the Western Canadian Cryospheric Network, Ouranos and Hydro

Québec. In addition to presenting PCIC preliminary project results, the workshop also offered a venue for exploring the implications of this research on the utility company's future adaptation and resource planning activities.

Chris O'Riley, BC Hydro's Senior Vice-President of Engineering, Aboriginal Relations and Generation, said in his opening remarks that BC Hydro needs to take a long-term view towards its operations and remain aware of the potential impacts of climate change on the delivery of its services. He also noted that the collaborative relationship between BC Hydro and PCIC has been a productive one and a source of pride for the crown utility.

PCIC hydrologic modelling has centred on three major BC watersheds: the Peace River (at W.A.C Bennett Dam), the Campbell River (at Strathcona Dam) and the Upper Columbia River (at Mica Dam). Preliminary results indicate a projected increase in streamflow and an earlier spring runoff for the Peace and Columbia Rivers. A shift to increased rainfall in the Campbell River in response to higher temperature and seasonal precipitation changes is also projected. However, there is considerable uncertainty involved with these future projections, a critical issue that requires further investigation of the hydrological processes involved as well as the development of higher resolution climate models.

Based on these results, BC Hydro is building on the project's success to-date by extending the agreement with PCIC for a second phase lasting another four years beyond December 2010.



PCIC Lead Hydrologist Markus Schnorbus presents preliminary project results during the joint workshop with BC Hydro April 20, 2010.

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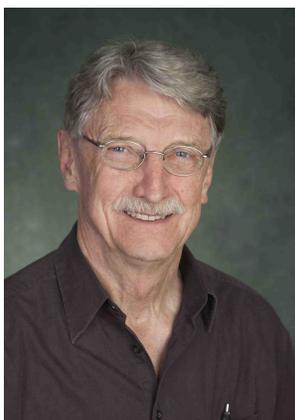
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PERSPECTIVE: Message from the Director



As I face the summer season, there is time to think about the future of PCIC. The major PCIC Themes have been addressed and there is now a track record and resident expertise in Regional Climate Impacts and Hydrologic Impacts. A start has been made in Climate Analysis and Monitoring. PCIC is focused on quantitative estimates of the impacts of climate change for adaptation while our sister organization, the Pacific Institute for Climate Solutions (PICS), is focused on policy issues and climate solutions. In this context I want to acknowledge and thank Ben Kangasniemi, who is the Chair of our Program Advisory Committee (PAC) as well as PICS Liaison. During the past five years Ben has been a valuable colleague and pathfinder as PICS and PCIC came to life. So far, so good. But where do we go from here? What's the long-term view?

First, PCIC needs to maintain its focus on the physical climate system in BC and Pacific North America, and support planning and actions that seek adaptation to the impacts of climate variability and change. The collaboration with the academic research community and our location at the University of Victoria is an essential part of that objective.

Having built that concept, PCIC needs to strengthen its delivery system to users who need climate information, climate data, and climate impact scenarios that extend out into the next 100 years. These users are the businesses, organizations, and institutions whose investments will be affected by future climate variability and change. Mother Nature has made them climate stakeholders. These stakeholders exist in every major socio-economic sector of the province, starting with water resources and power generation, and including ecosystems and community infrastructure. These are identified in the Research Plan for Regional Climate Impacts (see page 4).

Where is this taking us? I believe our effectiveness at conveying our estimates of climate impacts depends increasingly on an evaluation of the economic consequences of these changes. This is not a new direction; it is an extension of what PCIC is doing now, and it is a way of communicating our message on the necessity of adaptation. If so, PCIC will need to expand the consortium and resident expertise without losing its focus.

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Finally, I would like to state a concern. PCIC strength lies in its unique position in the gap between academic research and practical applications. PCIC must resist the allure of academic research, as well as avoid a dependence on short-term contract work. It is something in-between. Our commitment is to targeted research—the application of climate research technology to create benefits that protect investments—to prepare for adaptation to climate variability and change.

With all this in mind, the time has come to look for new leadership at the PCIC consortium. Senior staff members know what can be achieved with a focused effort and they know what is needed to move forward. A new President and CEO will take the lead in September. Together with a change in leadership of the Program Advisory Committee and the continued interest of the corporate Board of Directors, he will guide the evolution of PCIC into the future.

Dave Rodenhuis



Thanks, Dave!

As we transition now to new leadership in September we want you to remember that we are all sincerely grateful for the energy and dedication you've brought to PCIC and to our professional lives — PCIC Staff

Project Focus: Research Plan for Regional Climate Impacts

PCIC's Regional Climate Impacts (RCI) Theme reached an important milestone recently with the publication of the Research Plan for Regional Climate Impacts, co-authored by Trevor Murdock and Gerd Bürger. The research plan is a blueprint of PCIC's targeted research under the RCI Theme, structured around the following four components: 1) User Needs Assessment; 2) Regional Climate Change; 3) Impacts on Communities, Ecosystems and Water Resources; 4) Products and Services.

The objective of the RCI Theme is to deliver regional projections of future climate for the purpose of aiding adaptation to climate change impacts affecting communities, ecosystems and water resources. The research questions that are addressed through projects in this theme are motivated by the specific needs of an identified user-stakeholder.

This stakeholder-driven focus has been a prominent feature of all PCIC projects to-date, but in the RCI Theme it takes on an added importance. The theme targets a wide range of stakeholder groups with a diverse set of needs that tend to change over time.

For this reason, the RCI Research Plan emphasizes User Needs Assessment as an important starting point in the implementation of

PCIC projects. This involves a series of outreach activities to identify the particular vulnerabilities of each sector and discover how best to address user requirements and inform adaptation strategies. At the same time these events also provide opportunities for direct knowledge transfer to users, so that stakeholder groups have a chance to learn more about climate change. What is learned through these activities will be expanded upon by conducting user needs assessment workshops.

Another important outcome of User Needs Assessment is the identification of 'extramural champions': local experts in a particular sector affected by climate change who act as a primary interface for conducting collaborative work with PCIC.

The second component identified in the RCI Research Plan is an assessment of the various tools and techniques to generate future climate projections from global climate models, regional climate models and statistical techniques. Numerous research groups produce methods for downscaling (e.g., EDS, TreeGen, BCSD). The RCI Research Plan details projects to evaluate and inter-compare these available techniques for understanding regional climate change impacts. A crucial part of this component is quantifying the

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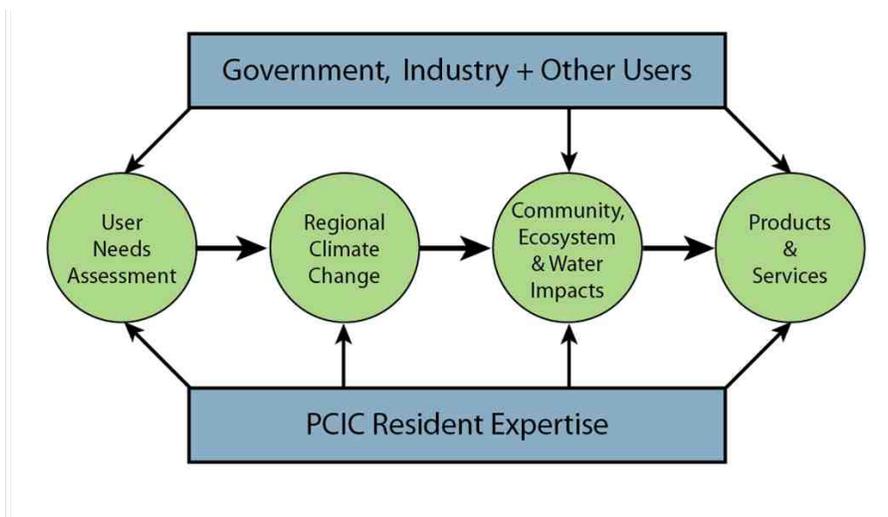


Figure showing PCIC and stakeholder engagement through the four Regional Climate Impacts Theme components defined in the RCI Research Plan.

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uncertainty inherent in model projections to ensure scientific credibility as well as relevance to risk-based decision-making.

The third component, Impacts on Communities, Ecosystems and Water Resources, produces quantitative estimates of climate change through the collaborative targeted research from the User Needs Assessment while considering the efficacy of the techniques evaluated during the Regional Climate Change component. The primary goal is to “build capacity” within stakeholder groups for addressing their own needs and making effective use of PCIC products and services.

Finally, the delivery of Products and Services is a logical extension to the quantification of regional

climate change and the culmination of this process. This final component to RCI projects goes beyond projections of future temperature and precipitation, seeking to estimate the impacts on communities, ecosystems and water resources in support of stakeholder needs for planning and decision-making.

“PCIC consistently focuses on the physical sciences,” notes PCIC’s Trevor Murdock, “but in order to take this to the next stage, impacts, we need involvement and contributions from the stakeholders themselves. The RCI Theme is not a restaurant where you can sit down and order a plate of future impacts with a side of downscaling. It’s more like a community kitchen.”

PICS Hosts *FutureGrid 2010* Forum in Vancouver

PCIC’s sister organization, the Pacific Institute for Climate Solutions (PICS), hosted its annual forum in Vancouver June 14–15. This year’s forum featured constructive debate surrounding BC’s future electricity regime.

The two-day forum titled “FutureGrid: BC’s Energy Options in a Changing Environment” provided an opportunity for informed debate among energy experts, climate change researchers and the public. A key question was raised: should BC expand its electricity production and become a major energy exporter, as laid out in the province’s Clean Energy Act?

Much discussion centred on the related question: under what conditions should BC become a major exporter of electricity? Led by UBC Professor George Hoberg, the session’s findings were distilled into six principles: conditions would have to be 1) economically advantageous, 2) reliable, 3) lead to greenhouse gas reductions, 4) respectful of First Nations rights and title, 5) foster public legitimacy and promote sustainability, and 6) be reversible. These concepts formed the basis of intense discussion at a special public panel event, attended by over 230 people.

Alan Hamlet of the University of Washington’s Climate Impacts Group co-authored a presentation

with PCIC on “Effects of Climate Change on Streamflow and Energy Supply and Demand in the Pacific Northwest: Implications for Transboundary Water Management”.

FutureGrid is the second annual forum in the PICS forum series. Last year’s forum was “Decoding Carbon Pricing: Achieving a Low Carbon Society in British Columbia.”



Public Forum – BC: A Clean Energy Exporting Powerhouse? Panelists (Left to Right) Vaughn Palmer (Columnist, Vancouver Sun), Josh Paterson (Staff Counsel, WestCoast Environmental Law), Judith Sayers (Hupacasath First Nation), Paul Kariya, (Executive Director, Independent Power Producers Association of BC), George Hoberg (Professor, UBC) and Tyseer Aboulnasr (Dean of Science, UBC). Photo courtesy of Ivan Watson.

PCIC Co-sponsors First PNW Climate Science Conference

PCIC co-sponsored the first Pacific Northwest Climate Science Conference on June 15-16, hosted by the Portland State University in Portland, Oregon.

PCIC's Trevor Murdock and Gerd Bürger presented three papers: "Regional Climate Model Results in the Pacific Northwest and the Upper Columbia Basin" authored by Trevor Murdock, "Modelling 2050s Climate Impacts to Streamflow and Snowpack in British Columbia Watersheds" authored by Katrina Bennett, Markus Schnorbus and Arelia Werner, and "Present and Future Steamflow of the Columbia River Above Donald" authored by Gerd Bürger.

The conference was the most comprehensive conference to-date concerning the science of climate variability and change in the Pacific Northwest and featured some 50 presentations in following general

topic areas:

- Past, Present, Future Climate in the Pacific Northwest;
- Climate Impacts on Hydrology and Fresh Water, Terrestrial/Aquatic/Marine Species and Ecosystems as well as Managed Resources and Human Systems;
- Greenhouse Gas Sinks and Fluxes;
- Human Responses and Policy Initiatives.

Other conference sponsors included several US federal and state agencies as well as a number of climate-related research institutions such as the University of Washington's Climate Impacts Group, Idaho's EPSCoR Program and Oregon State University's Oregon Climate Change Research Institute.

Ben Kangasniemi Retires from BC Environment

Ben Kangasniemi, Acting Manager of the Science and Adaptation Section of the BC Climate Action Secretariat, has retired after a successful career spanning 34 years with the BC Ministry of Environment.

Through his position at the Climate Action Secretariat and also as Chair of PCIC's Program Advisory Committee (PAC) Ben has exerted an extraordinary influence on PCIC since its inception. In fact, he conceived of and has been a tireless advocate for the "consortium of stakeholders" organizational model on which PCIC is based, recognizing the need for a single entity around which the diverse and scattered users of climate information could coalesce.

Ben was also instrumental in the development of the PCIC Strategic Plan and the recently published Research Plan for Regional Climate Impacts. He has

a stakeholder's perspective, advising PCIC to continue engaging with users and further developing the resident capacity to prepare them for climate change adaptation.



(Left to Right) Dave Rodenhuis, Cassbreea Dewis, Ben Kangasniemi and Trevor Murdock during Ben's farewell party in Victoria June 30, 2010. Photo courtesy of Meghan Stothers.

Other PCIC News

New Staff Member at PCIC

Leslie Gallacher has joined PCIC for one year as administrative assistant while Melissa Nottingham is on maternity leave. She is responsible for preparing administrative forms and travel expense reports, maintaining and reconciling financial records, supporting the Pacific Climate Seminar Series and visitors to PCIC as well as the general administrative functions of the office.



Leslie has extensive experience in administrative roles, most recently with the federally funded non-profit organization Canadian Council on Learning.

July 9 Party Honouring PCIC Director

PCIC is hosting an open-house celebration at the University of Victoria's University Club on July 9, 2010 in honour of PCIC Director Dave Rodenhuis for his four years of leadership and service.

Festivities start at 3:30 pm Pacific Time, with honorary remarks at 4:00 pm. R.S.V.P. to Leslie at PCIC by email (lgallach@uvic.ca) or telephone (250) 472-4682.

PCIC Departing Hydrologist

After a four-year term as PCIC Hydrologist, Katrina Bennett will be leaving in September 2010 to pursue doctoral studies at the University of Alaska Fairbanks.

Based in the department of Civil and Environmental Engineering, Katrina will be advised by Prof. John Walsh and Prof. Jessica Cherry at the International Arctic Research Centre. The focus of her research will be on the impacts of climate change on the hydrology of northern watersheds, with particular emphasis on changing snow patterns and processes. Katrina's studies will include coursework in the areas of Permafrost, Arctic Engineering, Groundwater Dynamics, Numerical Modeling and Parameterization Methods, Arctic Hydrology and more.



Katrina Bennett in front of instrumentation at Marmot Creek basin, Alberta. Photo courtesy of Scott Jackson.

Thank you for your continued interest in the Pacific Climate Impacts Consortium. We are committed to maintaining PCIC as a stakeholder-driven consortium, rooted in the academic research community, yet looking outward. Hence, we welcome and value feedback from researchers and stakeholders either through our online feedback form at <http://www.pacificclimate.org/aboutus/contactus/feedback/> or by contacting us directly via email at climate@uvic.ca, or telephone (250) 721-6236.